



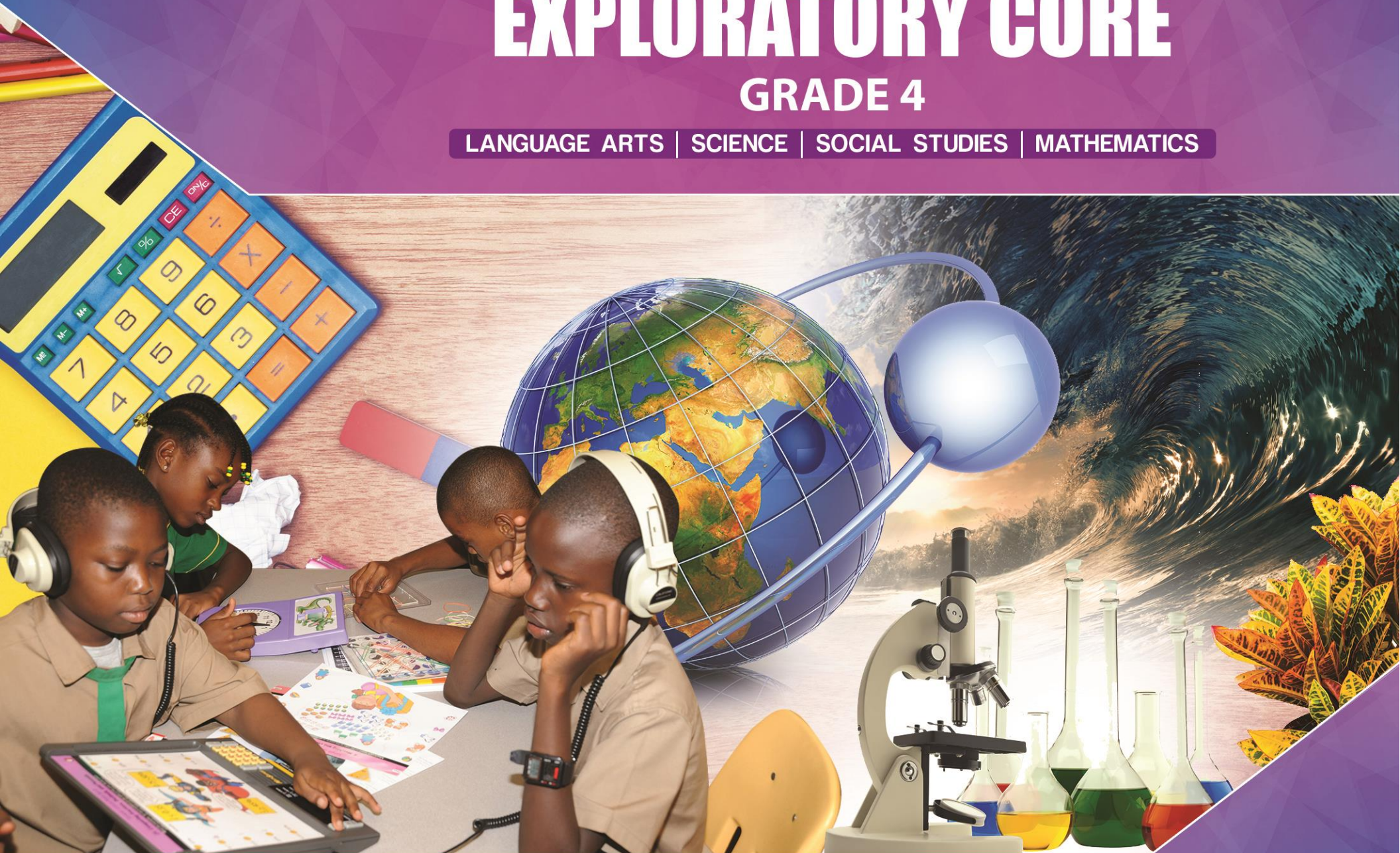
MINISTRY  
OF  
EDUCATION, YOUTH & INFORMATION  
*Every Child Can Learn, Every Child Must Learn*

# NATIONAL STANDARDS CURRICULUM

# EXPLORATORY CORE

## GRADE 4

LANGUAGE ARTS | SCIENCE | SOCIAL STUDIES | MATHEMATICS



NATIONAL STANDARDS CURRICULUM GUIDE

GRADE 4

# EXPLORATORY CORE

LANGUAGE ARTS | SCIENCE | SOCIAL STUDIES | MATHEMATICS



## ACKNOWLEDGEMENTS

Our connection with each other is unquestionable and so at the end of this arduous yet rewarding journey, the Ministry of Education, Youth and Information gratefully acknowledges the contributions of the following individuals and institutions who generously gave of their time and resources in the planning and development of the National Standards Curriculum (NSC):

- Mrs. Sharon Neil- former DCEO, Curriculum and Support Services, who provided leadership to the process during her tenure
- Mrs. Lena Buckle Scott- DCEO, Curriculum and Support Services, who provided leadership to the process
- Dr. Mary Campbell- former ACEO, Core Curriculum Unit, who started the process
- Mr. Derrick Hall- former ACEO (Acting), Core Curriculum Unit, who continued it
- Dr. Clover Hamilton Flowers- ACEO, Core Curriculum Unit, who completed the task
- Current and former Education Officers of the Core Curriculum Unit who led the writing of the curriculum and gave oversight to the development process:

Science	Social Studies	Language	Mathematics
Ms. Joan Higgins, former SEO (Acting)	Mrs. Lena Buckle Scott, former SEO	Ms. Daphine Simon, former SEO Languages	Mr. Derek Hall, former SEO Mathematics
Mr. Garfield King, former SEO (Acting)	Mrs. Winnie Berry, former Senior Functional Education Officer	Mrs. Paulette Roberts (late), former Language Officer	Mrs. Janice Steele, SEO Mathematics & Technology
Dr. Lennox Rowe, SEO (Acting)	Mrs. Maureen Paisley, former EO Social Studies	Mrs. Sophia Forbes Hall, former Language Officer	Dr. Lorna Thompson, EO Mathematics
Dr. Bernadette Ranglin, former EO Biology	Mrs. Sonia Glanville, former SEO Social Sciences	Mrs. Novelette Mclean Francis, SEO Languages	Mr. Seymour Hamilton, EO Mathematics

Science	Social Studies	Language	Mathematics
Dr. Francine Taylor Campbell, EO Chemistry	Mrs. Jacqueline Flinch Vassel, SEO (Acting)Social Sciences	Mrs. Fiona Morris Webb, Language Officer	
Ms. Carol Baker, EO Biology	Ms. Jasmine Waite, EO Geography	Mrs. Christa Ferguson Rainford, Language Officer	
Mr. Sadpha Bennett, National Science Coordinator	Mrs. Vivienne Pitter, EO History	Mrs. Olivette Lue Nicholson, former Language Officer	
		Mrs. Michelle Kerr, former Language Officer	
		Mrs. Tania Marsh Harris, Language Officer	
		Mrs. Gennette Clacken, former Language Officer	
		Mrs. Allecia Lindsay, Media Services Unit, former EO Evaluation and Utilization Section	

- Principals/ school administrators, lecturers, teachers and other resources persons who participated in the writing process
- Principals and staff of the forty (40) pilot schools who facilitated the two years of curriculum piloting in their schools
- Regional Directors and Territorial Education Officers who contributed to the development and implementation of the curriculum
- The team of Mathematics and Literacy coaches and specialists led by Dr. Tamika Benjamin and Dr. Andre Hill respectively who participated in the writing and review of the Mathematics and Language Arts curriculum documents

- Consultants:
  - Ms. Lila Oliver, Ms. Mary Surridge, Mr. Brian Male and Ms. Wendy Pemberton for their guidance in the development and design of the curriculum
  - Dr. Sherril Gardner and Mrs. Herma Meade Thompson for guidance in the area of integration at Grades 1-3
  - Dr. Nancy George and Mrs. Diane Browne for work on the evaluation of the draft curriculum documents
  - The team of local reviewers
  - The team of international reviewers led by Professor Jari Lavonen, Dr. Kaisa Hahl and Dr. Mary Jean Gallagher
- Miss Jean Hastings, former Director of the Education System Transformation Programme, who during her tenure in the post facilitated the processes of the Curriculum Units
- Mrs. Winnie Berry and Mrs. Sophia Forbes Hall, former Senior Function Educational Officers of the Core Curriculum Unit who provided administrative and technical leadership to the development process
- Mrs. Michelle Kerr, Senior Functional Education Officer (Acting) and Mrs. Coleen Clarke Russell, Functional Education Officer who provided administrative leadership to the production process
- The members of the Curriculum Secretariat, the administrator and secretaries in the Core Curriculum Unit who provided administrative support during the development and implementation of the curriculum
- The team of curriculum editors led by Mrs. Taina Williams, Miss Keisha Hill, Dr. Donna Powell Wilson and Mrs. Claudia Alliman
- The team of curriculum formatters led by Mr. Marlo Scott and Ms. Janielle Flowers
- The various stakeholder groups, who provided valuable information on societal needs in relation to the curriculum
- All others whose names do not appear, but who contributed to the production of the NSC

## M E S S A G E



Education has always been pivotal to societal and economic development. It is for this reason that Jamaica remains unshaken and hopeful of a realized vision to be “the place of choice to live, work, raise families and do business.” The assurance of the possibility of all that such a vision entails comes from the recognition that Jamaica is endowed with tremendous God-given talent and creative potential and as a people of strong faith in spiritual principles and resilience; we are able to harness our capabilities, to make significant influence on the world. It is through this new National Standards Curriculum (NSC) that we hope to propel this vision of the education system whilst becoming more relevant, current and dynamic.

The team at the Ministry of Education Youth and Information is cognizant of the fact that the curriculum is the heart and mind of education and remains the most powerful means by which any country can develop and be sustainable. It is for this reason that the NSC has been designed with the understanding that people, learning and national development are at the core of our existence in a time of rapid change in the physical, social, economic and other dimensions of the global landscape. As a consequence, we celebrate the wisdom of the developers who through the engagement of numerous stakeholder groups, have responded favourably to the need for that kind of education that prepares our young people for life; while challenging our more mature to join in this lifelong journey of learning to learn.

Our commitment to the development of each learner and our support and appreciation of the various stakeholder groups that are partnering with us in providing quality education, remain at the forefront of our efforts in ensuring that this journey transforms education. This commitment is conveyed through our adoption of a Pathway Approach to learning that demands of us to provide customized programmes, differentiated learning experiences and specialized support for our learners. Our actions have been fruitful as is evident by the systems and conditions we have put in place for successful implementation.

Like the rest of Jamaica, I look forward to the testimonials of students, parents, teachers and other stakeholders of the empowering effect of this learner- centred curriculum and remain confident that it will contribute to make Jamaica renown.

**The Honourable, Senator Ruel Reid,CD**

**Minister of Education, Youth & Information**

## M E S S A G E



Building a modern society where young people can prosper and achieve their aspirations is paramount on the Ministry of Education, Youth and Information's (MoEYI) agenda. In its bid to advance this agenda the team at the MoEYI has developed the National Standards Curriculum (NSC) on a clear set of values that will permeate learning and become embedded in young people's approach to life. Young people need to be clear about their Jamaican identity. Justice, democracy, tolerance and respect need to be more than mere words; they need to become an essential part of people's lives. Young people's understanding of, and commitment to, sustainable development is critical to the future of Jamaica and of the world. These values that permeate the new curriculum and more importantly, will by its use, be ingrained in the fabric of the Jamaican society.

The development of a new curriculum is a major achievement in the life of any country. It is even more noteworthy because this curriculum embodies the set of knowledge, skills, values and attitudes that our country deems relevant at this particular time. It is intended that these attributes be conveyed to the next generation as a means of cultural continuity in preparation to cope with the future, both nationally and individually.

I am particularly excited about the prospects of the NSC honing key twenty-first century skills such as communication, collaboration, critical thinking and creativity in our youth as they prepare to take on their roles as global citizens. I encourage parents, students, teachers and indeed the community to partner with us as we prepare our young people not just for today, but for the rapidly changing times ahead.

### **The Honourable, Floyd Green, MP**

**State Minister in the Ministry of Education, Youth & Information**

## M E S S A G E



In responding to the challenges confronting education in Jamaica, The Ministry of Education Youth and Information has taken strategic measures to address the need for a national curriculum that is relevant for the 21st century, the dynamics of the Jamaican context and the profile of the learners at the pre-primary, primary and secondary levels. One major output of these strategic actions is the National Standards Curriculum. This curriculum is intended to be one of the means by which the Jamaican child is able to gain access to the kind of education that is based on developmentally-appropriate practice and the supporting systems and conditions that are associated with high quality education.

This curriculum has the potential to inspire and provide challenges in the form of problem situations that all our learners can handle in ways that are developmentally appropriate. It compels us to move beyond the traditional functional perspectives of being literate to a focus on the physical and physiological as well as the ethical, social and spiritual.

I invite all our stakeholders to fully embrace this new curriculum which promises to excite imaginations, raise aspirations and widen horizons. Learners will become critical and creative thinkers with the mindset required for them to be confident and productive Jamaicans who are able to thrive in global settings as they take their place in the world of uninhibited change.

### **Mr. Dean Roy Bernard**

**Permanent Secretary, Ministry of Education, Youth & Information**



## M E S S A G E



It was the mandate of the Curriculum Units of the Ministry of Education, Youth and Information to spearhead the crafting of a new curriculum for the nation, in keeping with international standards, global trends in the educational landscape and societal goals and aspirations. The mandate had several facets: to establish clear standards for each grade, thereby establishing a smooth line of progression between Grades from 1 to 9; to reduce the width, complexity and amount of content; to build in generic competencies such as critical thinking across the subjects; to ensure that the curriculum is rooted in Jamaica's heritage and culture; to make the primary curriculum more relevant and more focused on skills development, and to ensure articulation between primary and secondary curricula, especially between Grades 6 and 7. To achieve this, the MoEYI embarked on an extensive process of panel evaluations of the existing curricula, consultation with stakeholders, (re)writing where necessary and external reviews of the end products.

Today, we are indeed proud that, the curriculum development teams have succeeded in crafting a curriculum which has met these expectations. Under the National Standards Curriculum (NSC) focus will be given to project-based and problem-solving learning, with an integration of Science, Technology, Engineering and Mathematics/Science, Technology, Engineering, Arts and Mathematics (STEM/STEAM) methodologies across the system. Learners will benefit from more hands-on experiences which should enhance the overall learning experience and cater to the different kinds of learners in our classroom. In addition, they will be exposed to work-based learning opportunities that will help them become productive citizens of Jamaica and the world at large.

It is anticipated that as school administrators and teachers system-wide implement the National Standards Curriculum that improvements will be evident in the general academic performance, attitude and behaviour of our students.

We anticipate the participation of all our stakeholders in this process as we work together to improve the quality of life and prospects for all the children of Jamaica and to realize our mantra that *every child can, and must, learn*.

### **Dr. Grace McLean**

**Chief Education Officer, Ministry of Education, Youth & Information**



The Ministry of Education Youth and Information (MoEYI) is committed to providing high quality education to all Jamaican children. We have heard the cries from the various sectors of the Jamaican society about the level of preparedness/readiness of our students for life in the 21st century; and we are taking the necessary steps to ensure that our students graduate with marketable skills. The MoEYI has reviewed and redesigned the Grades 1-9 curricula around the principles of Vision 2030 Goal number one; “Jamaicans are empowered to achieve their fullest potential”.

The National Standards Curriculum (NSC) will lay the foundation for students by preparing them for working lives that may span a range of occupations, many of which do not currently exist. This has been done by way of designers carefully integrating the theoretical principles of Science, Technology, Engineering and Mathematics/Science, Technology, Engineering, Arts and Mathematics (STEM/STEAM) methodologies into the curricula at all grade levels. The NSC illustrates that in order to make education effective for our 21st century children; we need to change how we teach, and what we teach.

We are satisfied that the curriculum designers and writers have produced a curriculum that is indeed fitting for the 21st century. The NSC was designed to develop students’ understandings of subject matter and their ability to apply what is learnt; it fosters their ability to communicate and solve problems collaboratively, think critically and create novel solutions.

The success of our children is dependent on the participation of all stakeholders in the learning process. We encourage you all to be our committed partners in education as the true impact of this curriculum will only be felt when we have all hands on board. I am indeed proud to be associated with the development and implementation of this curriculum; it will inspire hope in our nation and future generations; kudos to the various teams that contributed to its development.

## **Mrs Lena Buckle Scott**

**Deputy Chief Education Officer,**

**Curriculum and Support Services, Ministry of Education, Youth & Information**

## M E S S A G E



The National Standards Curriculum (NSC) rests on the belief that all learners are endowed with the capabilities, gifts and talents to fulfil their divine purpose. These attributes are to be further enhanced or improved in a nurturing, inspiring and inclusive environment; one that caters to the whole person (soul, spirit and body - spiritual, emotional, social, physical and mental). As learners assume their roles and responsibilities individually and as communities of learning in such an environment, they become critical-reflexive thinkers, creative problem solvers, effective communicators and natural collaborators.

A curriculum design of this nature, calls for transformative change at the societal level (Elkind, 2004)<sup>1</sup> and not just at the school and classroom levels. This is a call for all stakeholders, as users of the curriculum, to adopt a critical - reflective and reflexive stance and join learners in the quest for meaning, purpose and stability as they help to shape the world. By integrating principles from various disciplines and their related methodologies, learners who interact with the curriculum are provided with enriching experiences, opportunities for creative expressions and authentic exploration of problems from a classical standpoint as well as in the context of workplace learning. This is due to the fact that the NSC recognizes the importance of each discipline in the problem solving process and in development.

Assessment as an element of the curriculum becomes primarily a learning process for charting progress through self-corrective measures that are informed by feedback from peers and teacher-facilitator. By providing assessment criteria statements in the curriculum, teachers are encouraged to facilitate learners functioning as self and peer assessors. This approach should see the learner developing self-direction with the support of mentors and coaches and forming an intrinsic desire to succeed. These attributes prepare them to face high stakes assessment as problems to be confronted with courage, a sense of readiness, insight and creative prowess.

These features of the NSC have the potential to influence learners' profile as Jamaicans who are gratified by an identity of cultural excellence that embodies moral obligations, intellectual rigour, innovativeness, environmental stewardship and productivity. The curriculum echoes the sentiments of our National Anthem, National Song and Pledge and serves as rich and credible source of the values and virtues that are woven together to convey the Jamaican identity. I wish for our school administrators, teachers, students and other stakeholders much success as they work with the document.

### **Dr Clover Hamilton Flowers**

**Assistant Chief Education Officer, Core Curriculum Unit, Ministry of Education, Youth & Information**

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# **MINISTRY OF EDUCATION, YOUTH & INFORMATION**

## **NATIONAL STANDARDS CURRICULUM**

### **LANGUAGE ARTS**

#### **GRADE 4**

#### **UNITS OF WORK**

## PHILOSOPHICAL STATEMENT

The Language Arts programme developed for the National Standards Curriculum (NSC) is underpinned by the general theory of learner-centredness which is specified in the National Education Strategic Plan (2011-2020). This plan clearly outlines the following objective: “Develop learner-centred and competency-based curricula at all levels.” (pg. 44). The learner is, therefore, at the core of all teaching/learning experiences and the objectives, skills, activities, assessment criteria and learning outcomes of all units are written from the learner’s perspective. The learner’s full engagement and differences are taken into account and the dimensions of ability levels, interests, learning styles and gender are critical factors that were given great consideration during the development of the teaching units. This means that the traditional text-centred and teacher-centred approaches to English Language teaching/learning are now given far less focus (aspects of which are not totally eliminated) and learning through authentic real life contexts is being promoted. Learners now, for example, will engage in simulations in order to develop targeted skills; analyze and respond critically to literature; use different language/literature media to respond to given scenarios; create original products and use a replicable process to develop written pieces.

Language Arts teaching in the NSC embraces the integration of learning which is promoted by the existing primary and secondary curricula. As students learn Language skills related to the various strands and sub-strands, they will interface with content and methodologies from a range of disciplines including Science, Social Studies, Information Technology, Drama, Food and Nutrition, Guidance and Counselling to name a few. These disciplines, which are termed ‘cross-curricula links,’ are the avenues through which the Language content/skills are learnt and applied in authentic contexts.

The 21<sup>st</sup> century skills of communication, collaboration, critical thinking and creativity are also fully embraced and are promoted through the methodologies of simulations, group/peer-work, problem-based tasks and adequate allowance for exploration and innovation. The affective dimension is also foregrounded through specific objectives which when met, will help to facilitate the development of the aforementioned 21<sup>st</sup> century skills. Other values and attitudes, besides those exemplified through effective communication and cooperativeness in collaboration, are also developed through the inclusion of the affective dimension. Additionally, the themes selected, especially at the grades 7-9 level, are meant to help in shaping students to face the 21<sup>st</sup> century as rounded individuals. It is the hoped that students will benefit from the learning contexts of

these themes as they learn language and literature skills that will shape/guide them in becoming life-long learners who will make intelligent and wise choices.

Aspects of the Science, Technology, Engineering and Mathematics (STEM) methodology are embedded within the language programme but will not be explicitly reflected as in other disciplines which are the pillars of the methodology, such as Science, Mathematics and Technology. In Language Arts, STEM is reflected through the processes of learning and manipulating the language, such as the writing process; the communication and collaboration which help to drive processes and the responses of the Language learner to real-life issues through effective oral and written communication. It is also that aspect of creativity that enriches life's experiences and solves problems. The STEM methodology is used as the general approach to language application. It provides opportunities for learners to use their knowledge of the English Language to solve problems and function as valuable citizens.

In an attempt to achieve the objectives of true integration, the STEM methodology and foster the development of skills necessary for the 21<sup>st</sup> century learner, the Progressive Language Teaching model was used as the basis for the development of the Language programme from Grades 1-9. Progressive language teaching is task oriented, student-centred and provides opportunities for students to negotiate meaning and interact meaningfully with the language, rather than participating in activities that demand accurate repetition and memorization of sentences and grammatical patterns. It is believed that with this underpinning philosophy, learners will become more rounded users of the language and will be better able to negotiate meaning, expand their language resources, analyse how language is used, and take part in meaningful social interactions.

## GRADE 4

### STRAND: LISTENING AND SPEAKING

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	UNIT 2	UNIT 1	UNIT 2	UNIT 1
<ul style="list-style-type: none"> <li>Demonstrate respect for other participants and their ideas</li> </ul>	<ul style="list-style-type: none"> <li>Reflect on their own speech and its effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate respect for other participants and their ideas</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate confidence and conviction while communicating</li> </ul>	<ul style="list-style-type: none"> <li>Respond to enjoyable features of different creative pieces</li> </ul>
<ul style="list-style-type: none"> <li>Monitor their own listening and that of their peers by applying specific strategies</li> </ul>	<ul style="list-style-type: none"> <li>Monitor their own listening and that of their peers by applying specific strategies</li> </ul>		<ul style="list-style-type: none"> <li>Listen to and assess the speech of others</li> </ul>	<ul style="list-style-type: none"> <li>Monitor their own listening and that of their peers by applying specific strategies</li> </ul>
<ul style="list-style-type: none"> <li>Speak fluently and confidently using SJE/JC</li> </ul>		<ul style="list-style-type: none"> <li>Speak freely on a given/chosen topic</li> </ul>	<ul style="list-style-type: none"> <li>Use language forms-SJE/JC appropriately</li> </ul>	<ul style="list-style-type: none"> <li>Respond to the effectiveness of language choices</li> <li>Select and use language forms appropriately</li> </ul>
<ul style="list-style-type: none"> <li>Extract relevant information from different media</li> </ul>	<ul style="list-style-type: none"> <li>Generate and answer questions from what is heard</li> </ul>			<ul style="list-style-type: none"> <li>Generate and answer questions from stories heard/read</li> </ul>
	<ul style="list-style-type: none"> <li>Use verbal cues to solve problems or respond to set scenarios during role plays and other simulation exercises</li> </ul>	<ul style="list-style-type: none"> <li>Use language (SJE/JC) to express different feelings e.g. humour, empathy, fear</li> </ul>	<ul style="list-style-type: none"> <li>Use language (SJE/JC) to express different feelings e.g. humour, empathy, fear</li> </ul>	



## GRADE 4

### STRAND: FLUENCY AND RECOGNITION (WORD RECOGNITION AND VOCABULARY DEVELOPMENT)

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	UNIT 2	UNIT 1	UNIT 2	UNIT 1
<ul style="list-style-type: none"> <li>Recognize and explain the use of particular strategies to decode unfamiliar vocabulary</li> </ul>	<ul style="list-style-type: none"> <li>Recognize and explain the use of particular strategies to decode unfamiliar vocabulary</li> </ul>	<ul style="list-style-type: none"> <li>Defend their use of particular strategies to decode/encode unfamiliar words</li> </ul>	<ul style="list-style-type: none"> <li>Defend their use of particular strategies to decode/encode unfamiliar words and meaning</li> </ul>	<ul style="list-style-type: none"> <li>Reflect on and share their use of particular strategies to decode/encode unfamiliar words and meaning</li> </ul>
<ul style="list-style-type: none"> <li>Use elements of structure to identify words including the use of familiar word chunks</li> <li>Use knowledge of root words and affixes to determine the meanings of words</li> </ul>	<ul style="list-style-type: none"> <li>Use knowledge of root words and affixes to determine the meanings of words</li> </ul>	<ul style="list-style-type: none"> <li>Infer word meaning using knowledge of Inflectional endings- s, es, ed, ing, ly</li> </ul>	<ul style="list-style-type: none"> <li>clarify meaning of words through the use of a dictionary</li> </ul>	<ul style="list-style-type: none"> <li>Generate games and activities to enhance vocabulary development</li> <li>clarify meaning of words through the use of a dictionary</li> </ul>
<ul style="list-style-type: none"> <li>Review and use common spelling rules to spell grade level words</li> </ul>				<ul style="list-style-type: none"> <li>Create mnemonics to recall the spelling of sight words</li> </ul>
<ul style="list-style-type: none"> <li>Identify sight words and other words appropriate to grade level</li> </ul>	<ul style="list-style-type: none"> <li>Identify and use sight words appropriate to grade level</li> </ul>	<ul style="list-style-type: none"> <li>Identify and use sight words appropriate to grade level</li> </ul>	<ul style="list-style-type: none"> <li>Identify and use sight words appropriate to grade level</li> </ul>	<ul style="list-style-type: none"> <li>Identify and use sight words appropriate to grade level</li> </ul>

## GRADE 4

### STRAND: READING FOR MEANING AND INFORMATION (COMPREHENSION)

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	UNIT 2	UNIT 1	UNIT 2	UNIT 1
<ul style="list-style-type: none"> <li>Reflect on their own use of monitoring strategies employed during reading</li> </ul>	<ul style="list-style-type: none"> <li>Independently select and employ strategies to monitor their own comprehension</li> </ul>	<ul style="list-style-type: none"> <li>Willingly participate in group discussion and activities during reading activities</li> </ul>	<ul style="list-style-type: none"> <li>Reflect and comment on their progress as readers</li> </ul>	<ul style="list-style-type: none"> <li>Reflect and comment on their progress as readers</li> </ul>
<ul style="list-style-type: none"> <li>Make inferences using text clues</li> </ul>	<ul style="list-style-type: none"> <li>Explain implicit ideas citing evidence from text</li> </ul>	<ul style="list-style-type: none"> <li>Differentiate between explicit and implicit ideas in text.</li> </ul>	<ul style="list-style-type: none"> <li>Analyse cause and effect relationship in texts</li> </ul>	
<ul style="list-style-type: none"> <li>Examines the use a variety of strategies to monitor reading (e.g. rereading, searching for clues, pausing)</li> </ul>	<ul style="list-style-type: none"> <li>Monitor own reading using self-questioning and teacher questioning</li> </ul>		<ul style="list-style-type: none"> <li>Determine the relationships between questions and answers when responding to texts</li> </ul>	<ul style="list-style-type: none"> <li>Recognise authors purpose when reading grade level texts</li> </ul>
	<ul style="list-style-type: none"> <li>Analyse texts and explain how specific elements in them contribute to meaning</li> </ul>	<ul style="list-style-type: none"> <li>Use context clues to clarify understanding during reading</li> </ul>	<ul style="list-style-type: none"> <li>Interpret and clarify information in text by visualizing and creating mental pictures</li> </ul>	<ul style="list-style-type: none"> <li>Compare and contrast ideas, events and experiences in texts read</li> </ul>
<ul style="list-style-type: none"> <li>Combine main ideas to summarize information read</li> </ul>		<ul style="list-style-type: none"> <li>Construct graphic organizers to summarize texts read/heard</li> </ul>		<ul style="list-style-type: none"> <li>Distinguish statements of facts and opinions in expository materials</li> </ul>

## GRADE 4

### STRAND: READING FOR INFORMATION (RESEARCH/ STUDY SKILLS)

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	UNIT 2	UNIT 1	UNIT 2	UNIT 1
<ul style="list-style-type: none"> <li>Skim and scan for information</li> </ul>	<ul style="list-style-type: none"> <li>Skim and scan for main ideas</li> </ul>			
<ul style="list-style-type: none"> <li>Use external text features to locate and use information</li> </ul>	<ul style="list-style-type: none"> <li>Begin to apply the knowledge of text features to find information efficiently</li> </ul>	<ul style="list-style-type: none"> <li>Apply knowledge of text features to find information efficiently</li> </ul>	<ul style="list-style-type: none"> <li>Analyze the effects of text features in locating information</li> </ul>	<ul style="list-style-type: none"> <li>Utilize text features in presenting research information</li> </ul>
<ul style="list-style-type: none"> <li>Compare and contrast external text features of fiction and non-fiction texts</li> </ul>	<ul style="list-style-type: none"> <li>Use information retrieved from fiction and nonfiction texts to compile simple reports</li> </ul>	<ul style="list-style-type: none"> <li>Compile own fiction and nonfiction texts using external text features of each genre as appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Evaluate the effectiveness of text features used by peers to develop own fiction and non-fiction texts</li> </ul>	
<ul style="list-style-type: none"> <li>Identify elements of a dictionary - spelling, pronunciation, parts of speech</li> </ul>	<ul style="list-style-type: none"> <li>Use elements of a dictionary to support different oral and written activities.</li> </ul>	<ul style="list-style-type: none"> <li>Extract information from graphs and tables</li> </ul>	<ul style="list-style-type: none"> <li>Interpret information presented using maps</li> </ul>	<ul style="list-style-type: none"> <li>Develop simple maps to present information researched</li> </ul>
		<ul style="list-style-type: none"> <li>Begin to use on-line sources to locate information</li> </ul>	<ul style="list-style-type: none"> <li>Begin to organize information located from various sources</li> </ul>	<ul style="list-style-type: none"> <li>Investigate a problem through the use of a mini-research</li> </ul>
<ul style="list-style-type: none"> <li>Explain the purpose/purposes of the different sections of a library</li> </ul>	<ul style="list-style-type: none"> <li>Begin to use the library to find different sources of information – books, magazines, Internet and off-line sources</li> </ul>	<ul style="list-style-type: none"> <li>Continue to develop ability to navigate different library sources</li> </ul>	<ul style="list-style-type: none"> <li>Continue to develop ability to navigate different library sources</li> </ul>	<ul style="list-style-type: none"> <li>Conduct basic research, using the library with greater degree of independence</li> </ul>

## GRADE 4

### STRAND: LANGUAGE STRUCTURE (GRAMMAR AND CONVENTIONS)

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	UNIT 2	UNIT 1	UNIT 2	UNIT 1
<ul style="list-style-type: none"> <li>Identify and use conjunctions in sentences</li> </ul>	<ul style="list-style-type: none"> <li>Modify speech and writing with noun substitutes</li> </ul>	<ul style="list-style-type: none"> <li>Recognise and use collective nouns</li> </ul>	<ul style="list-style-type: none"> <li>Use object pronouns correctly</li> </ul>	<ul style="list-style-type: none"> <li>Use reflexive pronouns</li> </ul>
<ul style="list-style-type: none"> <li>Use degrees of adjectives in sentences</li> </ul>	<ul style="list-style-type: none"> <li>Indicate singular and plural possessives through the use of the apostrophe</li> </ul>	<ul style="list-style-type: none"> <li>Identify and use prepositions of time</li> </ul>	<ul style="list-style-type: none"> <li>Learn and use basic sentence types – interrogative imperative and declarative</li> </ul>	
<ul style="list-style-type: none"> <li>Apply correct capitalization and punctuation</li> </ul>	<ul style="list-style-type: none"> <li>Recognize and use adverbs of manner to create vibrant and engaging text.</li> </ul>	<ul style="list-style-type: none"> <li>Use commas to separate phrases within sentences</li> <li>Identify and use adverbs of time</li> </ul>	<ul style="list-style-type: none"> <li>Practise the use of punctuation marks (full stop, quotation marks, question mark) in context of composing different sentence types</li> <li>Learn and use linking/transitional words appropriately</li> </ul>	<ul style="list-style-type: none"> <li>Use adverb of time</li> <li>Use contractions - words with 'will' and 'shall'</li> <li>Use modal auxiliaries to convey various conditions.</li> </ul>
<ul style="list-style-type: none"> <li>Use common and proper nouns</li> </ul>			<ul style="list-style-type: none"> <li>Practice the use of the present, past and future tenses</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate the correct use of present, past and continuous tense</li> </ul>
<ul style="list-style-type: none"> <li>Identify and construct compound sentence</li> </ul>			<ul style="list-style-type: none"> <li>Determine parts of speech based on word functions</li> </ul>	<ul style="list-style-type: none"> <li>Form and use the Past Perfect Tense</li> </ul>



## GRADE 4

### STRAND: COMMUNICATION (WRITING)

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	UNIT 2	UNIT 1	UNIT 2	UNIT 1
<ul style="list-style-type: none"> <li>Extend the length and structure of paragraphs through the use of transitional words/phrases e.g. first, finally, in addition to</li> </ul>	<ul style="list-style-type: none"> <li>Create vibrant and engaging texts using knowledge of adverbs</li> </ul>	<ul style="list-style-type: none"> <li>Use picture prompts to compose simple narratives</li> </ul>	<ul style="list-style-type: none"> <li>Write descriptive pieces, using adjectives and adverbs appropriately and with appeal to the senses</li> </ul>	<ul style="list-style-type: none"> <li>Organize paragraphs to reflect text structure; e.g. compare and contrast, problem and solution</li> </ul>
<ul style="list-style-type: none"> <li>Edit drafts for specific purpose such as to ensure standard usage, sentence structure and appropriate choice of words.</li> </ul>	<ul style="list-style-type: none"> <li>Use knowledge of the writing process to compose letters of request</li> </ul>	<ul style="list-style-type: none"> <li>Apply the writing process to compose letters for a variety of purposes</li> </ul>	<ul style="list-style-type: none"> <li>Formulate relevant questions to guide simple interview</li> </ul>	<ul style="list-style-type: none"> <li>Begin to use figurative language to impact writing</li> </ul>
<ul style="list-style-type: none"> <li>Write vivid descriptions, employing the use of adjectives</li> </ul>	<ul style="list-style-type: none"> <li>Engage in journal writing to reflect on their use of the writing process</li> </ul>		<ul style="list-style-type: none"> <li>Review their writing and make adjustments where necessary</li> </ul>	<ul style="list-style-type: none"> <li>Formulate and deliver clear information, directions and explanations</li> </ul>
<ul style="list-style-type: none"> <li>Write letters, directions, instructions, explanations, to include relevant features/elements</li> </ul>		<ul style="list-style-type: none"> <li>Write information pieces and reports to include relevant features/elements</li> </ul>		<ul style="list-style-type: none"> <li>Use persuasive language to compose pieces for presentation</li> </ul>
<ul style="list-style-type: none"> <li>Compose written pieces to give directions</li> </ul>				



## LANGUAGE ARTS UNIT – Term 1 Unit 1

### INTRODUCTION TO THE UNIT

In this unit, titled 'Our Common Heritage' with subtheme 'Culture and Heritage', students will be sensitized to the richness and variety of language. A major objective is to assist them in acquiring the target language, Standard Jamaican English. The programme is therefore organized to provide practice in the four areas into which the Language Arts is divided – oral language (listening and speaking), reading, writing and language awareness (linguistic components including structure and mechanics).

The **suggested** activities in the units indicate the methodology for integrating the Language Arts skills. Elements of grammar, mechanics, phonics, spelling and vocabulary are identified and practiced each time opportunities to do so present themselves naturally in the materials being used for listening, spelling, reading and writing.

The methodology also suggests a moving away from traditional exercises such as filling in the blanks, to placing greater emphasis on having pupils use language to express ideas in speech and writing. It is hoped that the explicit teaching of the features of language enables students to see how language works, and be able to use language to make meaning as they read and write.

Most of the activities give students an opportunity to practise specific language skills. The teacher may need, however, in some cases to explicitly teach rules, structures and strategies prior to these activities. The content outline for grade 4 may therefore be consulted for details on the scope of content/skills to be delivered.

**Prior Learning**

Check that students:

- Have received explicit instruction in word recognition and comprehension strategies/content.
- Know sight words appropriate to grade level
- Are exposed to various literary genres
- Understand and can follow instructions
- Have received differentiated instructions based on learning needs

**UNIT OF WORK GRADE 4 - TERM 1 Unit 1 - 7 weeks**

Focus Question: "How do I effectively share ideas about cultural practices which have helped to shape our national and regional identity?"

**SPEAKING & LISTENING****ATTAINMENT TARGETS**

- *Listen to, recall, understand and respond to speakers' messages, whether implicit or explicit*
- Communicate with confidence and competence for different purposes and audiences, using SJE and JC appropriately and creatively

**OBJECTIVES****Students will:**

- Monitor their own listening and that of their peers by applying specific strategies
- Extract relevant information from different media and respond to information gleaned
- Speak fluently and confidently using SJE/JC
- Demonstrate respect for other participants and their ideas

**ICT ATTAINMENT TARGETS:**

- **ICT ATT 1 COMMUNICATION AND COLLABORATION**-use technology to communicate ideas , information and understanding for a variety of purposes
- **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING**- students will use technology to develop a logical process for decision making and problem solving
- **DIGITAL CITIZENSHIP**- students recognize the ethical, social and legal issues and implications surrounding the use of technology

**SUGGESTED TEACHING AND LEARNING ACTIVITIES****KEY SKILLS****ASSESSMENT**



<b>STUDENTS WILL:</b>		
In groups, formulate questions about a particular musical form in a Caribbean country, excluding Jamaica. Use the questions to guide their focus as they listen to a recorded presentation about the musical form. Write briefly, responses to their questions as they listen, and then share these with the whole class.	<ul style="list-style-type: none"> <li>• Formulate and use guiding questions</li> <li>• Listen to answer questions</li> </ul>	<p>Questions formulated accurately reflect alignment to the topic/ focus of recording</p> <p>Written responses adequately provide answers to questions formulated</p>
Collaborate with teacher to develop checklist focused on identifying behaviours that evidence active listening. Use developed checklist to monitor the attention of group members as they listen to presentations and share information gleaned.	<ul style="list-style-type: none"> <li>• Monitor attention of peers</li> </ul>	<p>Completed checklist highlights behaviours observed during listening activity</p>
Watch excerpts of documentary by foreign journalists on negative issues such as tourist harassment and positive issues such as Jamaica's dominance in track and field. Describe, share, and discuss their personal reactions to a range of topics and subjects mentioned in the documentaries using SJE structures (pronouns, subject/verb agreement, etc.) appropriately	<ul style="list-style-type: none"> <li>• Listen with a purpose</li> <li>• Extract relevant information</li> <li>• Share/discuss ideas using SJE</li> </ul>	<p>Discussions adequately focused on describing and highlighting personal reactions to the information presented in the documentary</p>
Engage in a discussion regarding elements of fluent and confident discussions (eye contact, body language, enunciation, pronunciation etc.)	<ul style="list-style-type: none"> <li>• Engage in discussion</li> <li>• Identify elements of good discussion</li> </ul>	<p>Discussions adequately reflect an understanding of the elements that evidence fluent and confident discussions</p>
Work in groups to research information based on an aspect of the Jamaican culture. Plan and prepare a presentation to share information gleaned with class ensuring that the information is presented confidently and fluently. Develop a rubric to peer assess the speaker's use of SJE	<ul style="list-style-type: none"> <li>• Prepare presentation</li> <li>• Speak fluently and confidently</li> <li>• Design rubric</li> <li>• Evaluate speaker's use of language</li> </ul>	<p>Presentations accurately capture the information about the specific aspect of the Jamaican culture studied. Information is presented confidently and fluently. Rubric appropriately designed and used to assess speaker's use of SJE</p>

**Focus Question: “How do I effectively share ideas about cultural practices which have helped to shape our national and regional identity?”**

**Reading With Fluency & Recognition  
(Word Recognition & Vocabulary Development)**

ATTAINMENT TARGETS	OBJECTIVES	
<ul style="list-style-type: none"> <li>• Use a range of word recognition clues to identify new words</li> <li>• Automatically recognise words (including basic sight word lists) through repeated exposure and mnemonic devices</li> <li>• Use a range of approaches to learn and spell irregular words</li> <li>• Build vocabulary through various strategies</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• Use elements of structure to identify words including the use of familiar word chunks</li> <li>• Identify sight words and other words appropriate to grade level</li> <li>• Review and use common spelling rules to spell grade level words</li> <li>• Use knowledge of root words and affixes to determine the meanings of words</li> <li>• Recognize and explain the use of particular strategies to decode unfamiliar vocabulary</li> </ul>	
SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT
<p>Identify unfamiliar words in grade level texts related to culture, including supplementary materials, which are difficult to read. Observe as teacher models applying word recognition strategies, including the use of phonetic rules for blends and digraphs, word family clues (onsets/rimes) to help establish patterns and structural analysis skills such as the use of chunking/syllabication, compound words, inflection ending.</p>	<ul style="list-style-type: none"> <li>• decode words</li> <li>• use structural elements</li> </ul>	<p>Words accurately identified using a variety of structural elements.</p>
<p>Engage in a pair reading exercise that requires that they employ the use of various structural elements to decode unfamiliar vocabulary. Use a table to identify the unfamiliar vocabulary encountered as well as the elements that they employed to decode each. Share their tables with another pair. Engage in a discussion focused on highlighting whether or not the elements used for each word was appropriate and say why.</p>	<ul style="list-style-type: none"> <li>• Use structural elements</li> <li>• Read texts</li> </ul>	<p>Tables reflect all the unfamiliar words encountered and the structural element used to aid pronunciation of each.</p> <p>Discussion focused on helping each other to further understand the various structural elements and the appropriate situations to use each.</p>
<p>Work in groups to create games such as scrabble, crossword puzzle etc., for recognition, spelling and use of sight and</p>	<ul style="list-style-type: none"> <li>• Create sight word games</li> </ul>	<p>Sight word games satisfactorily developed using grade level appropriate words.</p>

<p>other vocabulary words, related to culture and heritage. Exchange and play games with other groups.</p>	<ul style="list-style-type: none"> <li>• Use knowledge of sight words</li> </ul>	<p>Games accurately completed/played using knowledge of sight words</p>									
<p>Engage in a discussion using PowerPoint presentation/hand-out focused on four uncommon spelling rules and accompanying examples (e.g. o-r may say, /er/when w comes before the o-r as in the word 'works')</p>	<ul style="list-style-type: none"> <li>• Engage in discussion</li> <li>• Review spelling rules</li> </ul>	<p>Discussion and presentation adequately focused on developing an understanding of the spelling rules being taught.</p> <p>Examples cited are aligned to the rules studied</p>									
<p>Work in pairs to research and present information on additional spelling rules selected/ assigned by the teacher. Present their findings with examples to the class.</p>	<ul style="list-style-type: none"> <li>• Review spelling rules</li> </ul>	<p>Presentations depicting accurate information and examples regarding the rules assigned.</p>									
<p>Engage in an oral spelling quiz competition. Use the knowledge garnered about spelling rules to spell words given.</p>	<ul style="list-style-type: none"> <li>• Use spelling rules</li> </ul>	<p>Words accurately spelt using rules studied</p>									
<p>Engage in a discussion to review affixes previously learnt. Work in pairs to complete table illustrating different affixes, their meanings and examples.</p> <table border="1"> <thead> <tr> <th>Prefix / Suffix</th> <th>Meaning</th> <th>Examples</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Prefix / Suffix	Meaning	Examples							<ul style="list-style-type: none"> <li>• Engage in discussion</li> <li>• Review affixes and their meanings</li> </ul>	<p>Discussion focused on reviewing affixes previously learnt, their meanings and examples.</p> <p>Tables accurately completed to reflect information reviewed</p>
Prefix / Suffix	Meaning	Examples									
<p>Complete worksheet focused on adding affixes to root words to complete sentences/paragraphs.</p>	<ul style="list-style-type: none"> <li>• Add affixes to root words</li> </ul>	<p>Worksheets accurately completed using knowledge of how affixes are added to root words to form new words.</p>									

**Focus Question: “How do I effectively share ideas about cultural practices which have helped to shape our national and regional identity?”**

**Reading for Meaning and Enjoyment (Comprehension)**

**ATTAINMENT TARGETS**

- Read for meaning, fluency and enjoyment of texts, using a variety of clues to gain information and identify ideas and events
- Read fluently and with appreciation
- Use deduction and inference to interpret information and ideas and to predict outcomes

**OBJECTIVES**

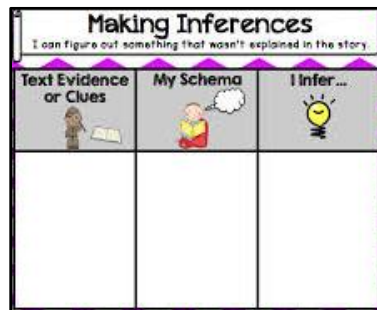
Students will:

- Make inferences using text clues
- Examines the use a variety of strategies to monitor reading (e.g. rereading, searching for clues, pausing)
- Make connections to the text from prior knowledge and experiences
- Combine main ideas to summarize information read
- Reflect on their own use of monitoring strategies employed during reading

**SUGGESTED TEACHING AND LEARNING ACTIVITIES**  
**STUDENTS WILL:**

Collaborate with their teacher to review and examine a “How to Make Inferences Chart”. Engage in a discussion focused on using the chart as a guide to making inferences using a text related to any aspect of the Jamaican culture or heritage. Be randomly selected to make inferences using the selected text along with the inferences chart.

Sample inference chart.



**KEY SKILLS**

- engage in discussion
- make inferences

**ASSESSMENT**

Discussion focused on highlighting the processes involved in making an inference using the chart as a guide.  
  
Inferences made are adequately aligned to the information in selected text

Do a choral presentation of the poem *Song of the Banana Man* or other culturally relevant poems. Use expression to communicate

- Do choral presentation

Discussion focused on examining the poem to identify elements of Jamaica’s history that are

meaning and appreciation. Discuss poem and tell what it says about Jamaica’s history. Make connections to the poem from prior knowledge and experiences, where applicable and use details in poem to make inferences and determine important message. Present their inferences using an inference chart. E.g.

Name: \_\_\_\_\_

**Inference Chart**  
Directions: Fill in a chart for each reading section of your novel.

Reading Section #1		
Inference <small>What do you think will happen?</small>	Hint <small>A quote that led you to that inference. ***Cite Correctly***</small>	Outcome <small>A quote that proves whether or not your inference was correct. Cite Correctly!</small>

- Make connections to the poem
- Make inferences

highlighted as well as the message being communicated by the poet.

Inference charts evidence students’ ability to make connections with the ideas expressed in the poem and their own experiences.

Select text clues from a mystery bag. Then use the text clue along with their prior knowledge to make an inference.

- Make inference

Inferences made are accurate and aligned to the clues in the text.

Watch a Youtube video or demonstration highlighting use of rereading and searching for clues as monitoring strategies used during reading. Engage in a discussion focused on reviewing the processes involved in the demonstration observed as well as the benefits of monitoring one’s own reading.

- Engage in discussion
- Comment on the use of monitoring strategies

Discussion focused on examining the demonstration as well as outlining the steps involved and importance of monitoring one’s own reading

Read any story about Caribbean folklore; monitor reading (e.g. rereading, searching for clues, pausing) to ensure that meaning is gained. Summarize story using Think Aloud to communicate the main points of the story.

- Monitor own reading
- Summarize texts

Strategies employed are appropriate and effective based on the needs of the reader and the text

Select grade level text relating to any aspect of the Jamaican culture. Select and utilize various monitoring strategies during reading to aid comprehension. Reflect on the processes engaged in and record in their journals the strengths and weaknesses of monitoring their own reading. Share with their classmate the strategy they found most effective and why.

- Monitor own reading
- Engage in reflection

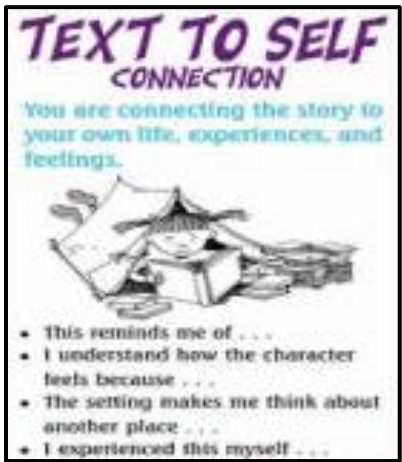
Strategies selected and used effectively during reading

Journal entries outline students reflection on their own use of the strategies

Presentations rationalise for the strategy selected and provide concrete examples



Engage in a brainstorming session to examine the idea of text to self connections and what it means. Be randomly selected to give their understanding of the both terms – text and self. Collaborate with their teacher to peruse a text-self strategy poster with sample prompts as well as examples of possible connections. E.g.



- Define text-self connections
- Comment on examples of text-self connections

Brainstorming activity focused on activating students’ schema regarding text-self connection  
 Explanations that highlight students’ understanding of text-self connections

Discussions focused on developing an understanding of how connections are made between the ideas in the text and those in students’ experiences

Read grade level text s relating to any aspect of the Jamaican culture. Use reader response journal to record text-self connection using the prompts on the strategy poster as a guide (e.g. This reminds me of..., I experienced this myself....) Be randomly selected to read their entries to the class.

- Make text-self connection
- Use reader response journal

Journal entries outlining the connections students were able to make using the text selected along with the strategy poster.

Work in pairs to read grade level text. Select a character or event to which they can relate or have had a similar experience. Discuss connections with their partner. Draw picture(s) to reflect the similarities and differences between their experience and that of the character or event in the text.

- Make text-self connections
- Engage in reflection

Discussion focused on making a direct link with their experiences and that which has been outlined in the text.

Pictures drawn reflect, support and distinguish the connections made during discussion.

Peruse picture worksheet to identify main idea. Share their completed sheets with the class. E.g.

- Identify main idea

Main idea worksheet accurately completed



Work in small groups to read and analyze different portions of a text to identify the main idea of the portion assigned. Collaborate with their teacher to examine and combine all the main ideas generated to summarize the original text using a graphic organizer.

- Identify main idea
- Combine main ideas
- Summarize text

Main ideas accurately identified and combined to compose summary of the text read

Engage in a whole class read aloud exercise. Monitor their reading, paying attention to the big ideas in the text. Respond to questions focused on identifying and inferring the main idea of sentences, paragraphs and the whole text.

- Identify main idea
- Combine main ideas

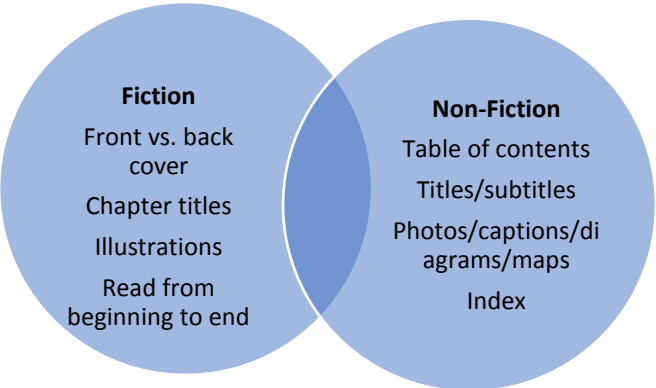
Text read accurately and fluently incorporating the use of one or more monitoring strategies.

Main ideas accurately identified and combined to present summary of text read

**Focus Question: “How do I effectively share ideas about cultural practices which have helped to shape our national and regional identity?”**

**Reading for Information ( Research & Study Skills)**

<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>	
<ul style="list-style-type: none"> <li>• Research activities on issues and interests by generating ideas and exploring texts using a range of strategies</li> <li>• Identify and use text features to support navigation of texts, retrieving and synthesize information gained from a range of sources</li> </ul>	<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Skim and scan for information</li> <li>• Use x external text features to locate and use information</li> <li>• Compare and contrast external features of fiction and non-fiction texts</li> <li>• Explain the purpose/purposes of the different sections of a library</li> <li>• Identify elements of a dictionary - spelling, pronunciation, parts of speech</li> </ul>	
<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b> <b>STUDENTS WILL:</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
<p>Watch a video on any particular celebration/custom, and then read related content. Collaborate with teacher through discussion to skim and scan text for information to answer set questions.</p> <p>Work in groups to skim and scan assigned texts to extract information relating to specific topic. Present their findings in a creative format.</p>	<ul style="list-style-type: none"> <li>• Skim and scan for information</li> </ul>	<p>Discussions highlight relevant information extracted and accurate responses to questions.</p> <p>Information extracted is aligned to the topic and made relevant in presentations</p>
<p>Observe the teacher modeling how to identify and use text features in an article.</p> <p>Read several informational texts and create graphic organizers to identify and explain the importance of text features in each article and how they help to better understand what is read.</p>	<ul style="list-style-type: none"> <li>• Observe teacher model</li> <li>• Create graphic organizers</li> <li>• Identify text features</li> <li>• Explain text features</li> </ul>	<p>Graphic organizers accurately capture text features in article and explain the importance of each.</p>
<p>Work in groups to identify and explain the use of text features in an article, and then present their work to the class.</p>	<ul style="list-style-type: none"> <li>• Identify text features</li> <li>• Explain text features</li> <li>• Use text features</li> </ul>	<p>Presentation offers thorough explanation for the uses of various text features in given article</p>

<p>Work individually to complete a scavenger hunt to identify and use text features in one final article</p>		
<p>Compare and contrast the text features of a fiction book and a non-fiction book. Use a Venn diagram to document their findings and present to class.</p> 	<ul style="list-style-type: none"> <li>• Compare/contrast text features</li> </ul>	<p>Venn diagram accurately outlines the features of fiction and non-fiction text</p>
<p>Select social studies text from class/school library. Use text features to locate and extract explicit information regarding music and dance in the Caribbean</p>	<ul style="list-style-type: none"> <li>• Use text features</li> </ul>	<p>Information regarding music and dance in the Caribbean located and extracted using appropriate text features</p>
<p>Participate in a field trip to the school/community/parish library. Observe the layout of the library focusing on the various sections such as: <i>fiction, non-fiction, reference, children's literature, etc.</i></p> <p>Interview the librarian to ascertain the purpose of the various sections and take relevant notes.</p>	<ul style="list-style-type: none"> <li>• Observe layout of library</li> <li>• Interview librarian</li> </ul>	<p>Notes reflect careful and analytical information garnered from observation and interview.</p>
<p>Listen to a presentation by a resource person (librarian) relating to the various sections of the library and their purposes.</p> <p>Take notes during presentation using teacher designed table</p>	<ul style="list-style-type: none"> <li>• Take notes</li> <li>• Construct questions</li> <li>• Ask questions</li> </ul>	<p>Notes highlight accurate information garnered from listening and asking questions.</p>

Sections	Purposes		
Construct and ask questions to seek clarity/extend ideas.			
Engage in a discussion focused on identifying and explaining the elements of a dictionary. Observe as the teacher models using the dictionary to aid pronunciation of an unfamiliar term related to cultural practices.		<ul style="list-style-type: none"> <li>• Engage in discussion</li> <li>• Use dictionary</li> </ul>	Discussion highlights and explains the various elements of a dictionary
Provide words associated with cultural practices to be written on chalk board. Work in pairs to place words in alphabetical order, and find the parts of speech, using a dictionary. Present information in tabular format.		<ul style="list-style-type: none"> <li>• Alphabetical ordering</li> <li>• Use dictionary</li> </ul>	Tables completed with words accurately placed in alphabetical order and parts of speech correctly positioned



**Focus Question: “How do I effectively share ideas about cultural practices which have helped to shape our national and regional identity?”**

**Language Structure (Grammar & Conventions)**

<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>
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<ul style="list-style-type: none"> <li>• Write sentences, paragraphs and extended pieces which are grammatically accurate and correctly punctuated, using SJE and JC appropriately</li> <li>• Use and adapt a range of sentence structures according to context, distinguishing between SJE and JC</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• Identify and use conjunctions in sentences</li> <li>• Use degrees of adjectives in sentences</li> <li>• Apply correct capitalization and punctuation</li> <li>• Identify and construct compound sentence</li> <li>• Use common and proper nouns</li> </ul>
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<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b> <b>STUDENTS WILL:</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
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<p>Listen to tape recorder with a conjunction song to give a definition for conjunction. In small groups, formulate definition from the recording and present to class. Discuss the definitions and arrive at a correct definition. Examine their readers to identify examples of conjunctions. Discuss with their partners the uses they observe.</p>	<ul style="list-style-type: none"> <li>• Define conjunction</li> <li>• Identify conjunction</li> </ul>	<p>Conjunction accurately defined with appropriate examples identified and discussed</p>
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<p>Examine given sentences on sentence strips identifying word [s] which may be used to connect two sentences.</p> <p>E.g.          Jamaica’s culture is rich          Jamaica’s culture is diverse.          Jamaica’s culture is rich and diverse</p> <p>In small groups, examine a paragraph to identify words used to join sentence. Make a list of joining words identified in the paragraph and use to create a conjunction Tree.</p>	<ul style="list-style-type: none"> <li>• Identify conjunctions</li> <li>• Use conjunctions</li> <li>• Create a conjunction tree</li> </ul>	<p>Conjunctions accurately identified in given sentences/paragraph.</p> <p>Compound sentences formulated using conjunctions appropriately.</p> <p>Conjunction tree accurately contains conjunctions.</p>
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<p>Proofread a hand out with paragraph relating to Jamaica’s culture. Insert appropriate conjunctions where necessary to join sentence.</p>	<ul style="list-style-type: none"> <li>• Use conjunctions</li> </ul>	<p>Paragraph reflects the accurate use of conjunctions.</p>
<p>Review adjectives by playing a short true or false trivia game. E.g. Kingston has a large population.</p> <p>Identify the adjectives used in each sentence and state the degree [positive, comparative and superlative].</p> <p>Revise the rule that governs the degree of adjectives [positive describes one object, comparative compares two objects and Superlative refers to three objects].</p>	<ul style="list-style-type: none"> <li>• Review adjective</li> <li>• Identify the degree of adjectives</li> <li>• Revise rules for degree of adjective</li> </ul>	<p>The degree of adjectives accurately identified in sentences.</p>
<p>Use degrees of comparisons (adjectives) in sentences, to communicate ideas about culture.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>• Jamaicans from the rural areas have a stronger sense of culture than those from urban areas.</li> <li>• We walked the slowest up the track to the Blue Mountain Peak.</li> </ul>	<ul style="list-style-type: none"> <li>• Use adjectives comparatively</li> </ul>	<p>Sentences accurately reflect the correct use of degrees of adjectives.</p>
<p>Analyse articles from the newspaper, Children’s Own or any other source of material in groups, identifying the use of capital letters and punctuation [paying close attention to end punctuation marks- full stop and question mark]. Make note of when the capital letters and end punctuation marks are used and discuss the use of each in the paragraph.</p> <p>Revise the rules which govern the use of capital letters and end punctuation marks. <i>E.g. Capital letters are used at the beginning of a sentence. End punctuation marks – A full stop is used at the end of a statement.</i></p>	<ul style="list-style-type: none"> <li>• Identify the use of capital letters</li> <li>• Use capital letters and punctuation mark</li> <li>• Revise rules</li> </ul>	<p>Discussion reflects the correct understanding of the use capital letters and end punctuation mark in articles.</p> <p>Paragraph demonstrates the correct use of capital letters</p>
<p>Correct a previously prepared paragraph related to cultural practices by putting in the capital letters and end punctuation</p>	<ul style="list-style-type: none"> <li>• Use capital letters and punctuation</li> </ul>	<p>Presentations highlight the accurate use of punctuation marks</p>

marks in the correct places. Present and critique each other's work orally and comment on the use of the capital letters and punctuation marks	<ul style="list-style-type: none"> <li>marks</li> <li>• Critique presentations</li> </ul>	
In small group, brainstorm and formulate accurate definition of common and proper nouns and differentiate between them. Critique each other's definition and arrive at the correct definition.	<ul style="list-style-type: none"> <li>• Brainstorm definition of nouns</li> <li>• Critique definition</li> </ul>	<p>Words accurately sorted based on use in sentence.</p> <p>Definition reflects correct meaning of common and proper nouns.</p>
Sort given words as common or proper nouns. Compose their own sentences using words on a given list to reflect different functions of the nouns	<ul style="list-style-type: none"> <li>• Use common and proper noun in sentences</li> <li>• Sorting nouns</li> </ul>	Sentences written to show different functions of the targeted nouns.
While music is being played, pass around a box with phrases/sentences related to the history of Jamaican food. When the music stops the students who have the box will remove two cards and use a conjunction from the conjunction tree created earlier to join the sentences. These sentences will be placed on the board where the whole class will critique the use of the conjunctions.	<ul style="list-style-type: none"> <li>• Critique use of conjunctions to join sentences.</li> </ul>	Sentences showcase the appropriate use of conjunctions to join simple sentences.
Participate in a discussion understanding that conjunctions may be used to join two simple sentences to make a compound sentence. They will revisit the sentences presented on the board to rearrange cards to form other compound sentences orally.	<ul style="list-style-type: none"> <li>• Use conjunctions to form compound sentences</li> </ul>	Meaningful discussion reflecting the understanding of the use of conjunctions to form compound sentences
Construct compound sentences about Jamaican Nation Builders and their contributions and use them to make a compound sentence collage and mount in classroom	<ul style="list-style-type: none"> <li>• Construct compound sentences</li> </ul>	Sentences constructed demonstrate a clear understanding of the forming of compound sentences.

**Focus Question: “How do I effectively share ideas about cultural practices which have helped to shape our national and regional identity?”**

**Communication (Writing)**

<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>	
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- |   |  |  |
|---|--|--|
| <ul style="list-style-type: none"> <li>• Develop approaches to the writing process to enable them to organise their ideas into a coherent structure including, layout, sections and paragraphs</li> <li>• Write well-constructed paragraphs which have linking sentences within and between them</li> </ul> | <p>Students will:</p> <ul style="list-style-type: none"> <li>• Extend the length and structure of paragraphs through the use of transitional words/phrases e.g. first, finally, in addition to</li> <li>• Edit drafts for specific purpose such as to ensure standard usage, sentence structure and appropriate choice of words.</li> <li>• Write vivid descriptions, employing the use of adjectives</li> <li>• Write letters, directions, instructions, explanations, information pieces and reports to include relevant features/elements</li> <li>• Compose written pieces to give directions</li> </ul> |  |
|---|--|--|

<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b> <b>STUDENTS WILL:</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
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<p>Peruse a piece of writing that includes at least a few transition words presented to students as a fill-in-the-blank style exercise with the transition words removed.</p> <p>Watch a censored version of a video newscast about cultural practices in order to identify a few examples of transitional words.</p> <p>Compile a list of comparison/contrast signal words. Discuss the use of two words and provide sentence examples</p> <div style="border: 2px solid black; padding: 5px; margin-top: 10px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px 10px;">However</td> <td style="padding: 2px 10px;">though</td> <td style="padding: 2px 10px;">still</td> <td style="padding: 2px 10px;">just</td> </tr> <tr> <td style="padding: 2px 10px;">Similar</td> <td style="padding: 2px 10px;">but</td> <td style="padding: 2px 10px;">also</td> <td style="padding: 2px 10px;">compare</td> </tr> </table> </div>	However	though	still	just	Similar	but	also	compare	<ul style="list-style-type: none"> <li>• Peruse text with signal words</li>   <li>• Identify transitional words</li>   <li>• Compile list of transitional words</li> </ul>	<p>Fill-in-the-blanks exercise accurately completed using the appropriate transition words</p> <p>Transitional words accurately identified.</p> <p>List depicts signal words that are used to compare and contrast.</p> <p>Sentences are accurately constructed using compare and contrast signal words</p>
However	though	still	just							
Similar	but	also	compare							

<p>Read given sentences carefully. Then, locate and circle each transition word that compares or contrasts.</p>	<ul style="list-style-type: none"> <li>• Locate transition words</li> </ul>	<p>Transitional words accurately identified.</p>
<p>Use the internet to conduct research on cultural aspects of a particular Caribbean island <b>and</b> models of good writing to guide their composition of information pieces which compare and contrast the regional customs and traditions with their own.</p> <ul style="list-style-type: none"> <li>• Use Venn Diagram to plan writing</li> <li>• Include relevant details</li> <li>• Include appropriate signal words to compare and contrast ideas</li> <li>• Use appropriate format</li> </ul> <p>Revise and edit drafts to ensure proper paragraph development and transitions</p>	<ul style="list-style-type: none"> <li>• Compare and contrast customs and traditions</li> <li>• Use signal words appropriately</li> <li>• Apply writing process</li> <li>• Revise and edit drafts</li> </ul>	<p>Research conducted focuses on a particular cultural aspect in the Caribbean.</p> <p>Venn diagram shows comparison and contrast of the two customs being studied.</p> <p>Drafts accurately revised and edited to demonstrate proper paragraphing and effective use of transitional words to compare and contrast</p>
<p>Compose letters to new friends abroad about an aspect of our cultural heritage. Letters should employ the use of both simple and compound sentences, the effective use of adverbs, conjunctions, pronouns as noun substitutes and transitional words and phrases. The use of an acceptable format should be reinforced. Letters may be emailed/ posted on class blog/class wiki for display and feedback.</p>	<ul style="list-style-type: none"> <li>• Use simple and compound sentences</li> <li>• Use adverbs , conjunctions, transitional words/phrase and pronouns appropriately and effectively</li> <li>• Use acceptable letter format</li> </ul>	<p>Letters reflect specified sentence types, elements of grammar, transitional words and phrases and the use appropriate formats</p>
<p>Write a <i>piece</i> with specific step-by-step directions explaining how to make or do something (e.g. preparing a favourite local meal, eating a mango). Include appropriate signal words to show chain of events and include terms to give the directions a cultural flavour. Place unfamiliar terms in quotation marks or italics and explain them below the directions/instructions;</p>	<ul style="list-style-type: none"> <li>• Write directions/instructions</li> <li>• Use signal words appropriately</li> </ul>	<p>Directions/instructions written demonstrating effective use of signal words.</p>

<p>e.g. *tups - a little or a dash of an ingredient</p> <p>As a whole class, make up a story or poem about any cultural practice by:</p> <ul style="list-style-type: none"> <li>• Brainstorming</li> <li>• Organizing related information into clusters</li> <li>• Revising and editing</li> <li>• Publishing-display work</li> </ul>	<ul style="list-style-type: none"> <li>• Apply the writing process</li> <li>• Participate in collaborative writing task</li> </ul>	<p>Story / poem composed through application of the writing process.</p>
<p>Write a new version of a folktale/'duppy' story. Check their own writing to ensure inclusion of story elements - an engaging plot, a culturally relevant setting, credible characters, a clear obstacle/problem to overcome and a resolution, correct use of punctuation, spelling and conventions.</p> <p>Write a plan for culture day giving specific details as to the format, items to be presented and a schedule of the day's activities</p>	<ul style="list-style-type: none"> <li>• Compose version of traditional story</li> <li>• Apply writing process</li> <li>• Do self- assessment of story</li> <li>• Plan culture day</li> <li>• Create schedule</li> </ul>	<p>New version of story written to include story elements, relevance of details and accuracy/appropriateness of conventions &amp; grammar</p> <p>Culture day activities planned outlining specific details and scheduled activities</p>
<p>Go on a field trip to a cultural place of interest (e.g. Bob Marley Museum). Write a report on the visit, being sure to include its main purpose/focus, special areas, activities and other information garnered.</p>	<ul style="list-style-type: none"> <li>• Use appropriate report format</li> <li>• Include relevant details</li> </ul>	<p>Report written using appropriate report format and relevant details</p>
<p>In groups, examine samples of brochures and flyers which are produced by different local organizations, such as the Jamaica Tourist Board (JTB) and the National Environment Protection Agency (NEPA), as well as computer designs of same. Share findings on the features of these brochures/flyers and use the computer to create brochures for the purpose of attracting tourists and flyers for the purpose of preventing tourist harassment.</p>	<ul style="list-style-type: none"> <li>• Create brochures/flyers</li> <li>• Formulate statements</li> <li>• Use computer designs/templates</li> </ul>	<p>Brochures/flyers depict details of design that will attract tourist and prevent tourist harassment.</p>



<p>Present a <i>Culture Capsule</i> of a paragraph or two of an <b>explanation of one difference</b> between a Jamaican celebration/practice and a related Trinidadian celebration/practice. Use signal words of comparison/contrast in explanation.</p>	<ul style="list-style-type: none"> <li>• Compare and contrast celebrations/ practices</li> <li>• Use signal words of comparison/con-trast</li> </ul>	<p>Culture Capsule presented reflects the difference between a Jamaican celebration and a related Trinidadian practice using appropriate signal words</p>
<p>Examine and respond to the features of posters (Layout, content density, use of pictures/illustrations and other text features., then create a ‘Me Poster’ (to show interests, favourites, photographs, etc.) that reflects aspects of their culture, then use the poster to focus on and write about one selected aspect of the poster .Elaborate with details (<i>Example: My favourite athlete is ...My favourite music is ..., I like to visit...</i>) Use pronouns in their writing</p>	<ul style="list-style-type: none"> <li>• Include relevant details</li> <li>• Identify and use text features of posters appropriately</li> <li>• Use pronouns</li> </ul>	<p>Posters reflect the inclusion of relevant details; use pronouns appropriately and effectively use text features to set out information Select and elaborate on one aspect of the poster</p>
<p>Pretend to be one of the national heroes. Write the ideas you will share with people in the community informing them of specific challenges (e.g. poor working conditions etc.). Use appropriate sentences, paragraph structures and sequence ideas using transitional words and phrases.</p>	<ul style="list-style-type: none"> <li>• Include relevant details</li> <li>• Use paragraph structures</li> <li>• Sequence ideas</li> <li>• use transitional words</li> </ul>	<p>Ideas written include relevant details, sentence and paragraph structure used appropriately and are properly sequenced, using transitional words and phrases.</p>
<p>Imagine you are a tourist in any Caribbean country; write a narrative/account about your favourite experiences. Include relevant details, including names of particular places of interests, descriptions of gripping encounters and convey vivid descriptions of emotions and reactions. Use different forms of nouns (common, proper, abstract), as well as other parts of speech, including adverbs and adjectives appropriately. Include simple and compound sentences</p>	<ul style="list-style-type: none"> <li>• Include relevant details</li> <li>• write simple and compound sentences</li> <li>• Use parts of speech</li> <li>• Use writing process</li> </ul>	<p>Written narrative reflects the experiences of a tourist in a Caribbean country. It also includes relevant details, accurate sentence structure and parts of speech</p>
<p><b>Learning Outcomes</b>  Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Listen effectively using specific strategies such as guiding questions and attention monitoring to achieve the purpose of extracting specific information</li> <li>✓ Speak confidently, using SJE structures appropriately</li> </ul>		

- ✓ Comment on the choice of SJE/JC in oral contexts
- ✓ Effectively locate information by using text features such as headings/subheadings
- ✓ Apply word recognition strategies including those related to sight words, phonics and structural analysis
- ✓ Build vocabulary by exploring synonyms, antonyms and the meanings of local terms, including those in JC
- ✓ Make inferences, such as what motivates characters
- ✓ Use online and other sources, as well as text features and the skills of skimming and scanning to locate information on a range of language specific and content –specific areas
- ✓ Learn and use parts of speech including different forms of nouns , degrees of adverbs and adjectives and pronouns as noun substitutes appropriately and effectively
- ✓ Appropriately apply the steps in the writing process
- ✓ Apply the use of transitional words/phrases to sequence ideas appropriately
- ✓ Write with attention to the different elements of specific text forms, including stories, poems, explanations, instructions, information pieces, accounts
- ✓ Apply the use of text features in designing and developing posters, brochures and flyers

**Points to note**

- The unit includes links to:  
Social Studies (culture and heritage)  
ICT (research and designing of several text forms), Food and Nutrition (writing recipes)  
Social Studies (giving directions),  
Music (singing folk songs)
- Pupils should be immersed in various literary genres
- Teaching needs to be differentiated to meet the learning needs of children. Activities in this unit are geared towards learners with different intelligences and abilities. Further work may be required on the part of the teacher

**Extended Learning**

- Students might independently seek out more examples of the same genre, theme, or author

**Resources**

- Class readers and other grade level text with stories/information related to culture and heritage of the Caribbean
- Internet
- Technology equipment , including laptop, multi-media projectors

**Key vocabulary**

- culture
- heritage
- audience,
- prompt,
- proofread,

- |  |   |
|--|---|
|  | <ul style="list-style-type: none"><li>• abstract nouns, noun substitutes/pronouns,</li><li>• pre write,</li><li>• draft,</li><li>• paragraph,</li><li>• simple and compound sentences,</li><li>• main idea,</li><li>• fiction, non-fiction,</li><li>• skim, scan,</li></ul> |
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## **LANGUAGE ARTS UNIT – Term 1 –Unit 2**

### **INTRODUCTION TO THE UNIT:**

This unit seeks to extend the language skills addressed in Unit 1 via the theme 'Why are Sense Organs Important?' and the sub-theme, 'The Skin, Nose and Tongue'. The unit emphasizes the use of active listening and well-developed speaking skills, mainly in Standard Jamaican English (SJE). It focuses on key comprehension skills, including the interpretation of graphics, the identification of main ideas and story elements and generally reading for different purposes. It seeks to build students' knowledge of structures in areas such as the use of signal words, pronouns and adverbs. It continues work on the use of the writing process to improve writing quality and to sharpen students' awareness of the use of story elements.

Most of the activities in this unit give students an opportunity to practise specific language skills. The teacher may need, however, in some cases to explicitly teach rules, structures and strategies prior to these activities. The content outline for grade 4 may therefore be consulted for details on the scope of content/skills to be delivered.

**Prior Learning**

Check that students:

- Know the senses and their uses
- Know the meaning of pronouns and adverbs

**Focus Question: “How do I construct meaning from information about the senses?”****SPEAKING & LISTENING****ATTAINMENT TARGETS**

- *Listen to, recall, understand and respond to speakers’ messages, whether implicit or explicit*
- Recognise, value and make distinctions between home language and SJE to improve/acquire language and literacy competencies

**OBJECTIVES**

Students will:

- Monitor their own listening and that of their peers by applying specific strategies
- Use verbal cues to solve problems or respond to set scenarios during role plays and other simulation exercises
- Generate and answer questions from what is heard
- Reflect on their own speech and its effectiveness

**ICT ATTAINMENT TARGETS:**

- **ICT ATT 1 COMMUNICATION AND COLLABORATION-use technology to communicate ideas , information and understanding for a variety of purposes**
- **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING- students will use technology to develop a logical process for decision making and problem solving**
- **DIGITAL CITIZENSHIP- students recognize the ethical, social and legal issues and implications surrounding the use of technology**

**SUGGESTED TEACHING AND LEARNING ACTIVITIES****STUDENTS WILL:**

Listen to/watch an advertisement online or offline for a product which claims to do wonders for one of or the three sense organs covered in the Unit (the tongue, skin, and nose)

**KEY SKILLS**

- Ask clarifying and probing questions

**ASSESSMENT**

Questions asked are relevant to information heard/seen.

<p>[the advertisement can be teacher created]. Pose questions, listen to the ideas of others, and contribute own information and ideas in group discussions about the claims made in the advertisements.</p>	<ul style="list-style-type: none"> <li>• Listen for specific information in order to respond to questions</li> <li>• Elicit responses from peers</li> <li>• Discuss ideas raised</li> </ul>	<p>Participation in group discussion is meaningful and related to topic.</p>
<p>Read information online and offline (adapted/teacher created/science web-sites for children) about diseases which affect the various sense organs- skin, nose and tongue and how these are treated. Pretend to be health workers dealing with these diseases and present orally to the class, how you, as a health worker, would “diagnose” and “treat” these diseases. Use image capturing device to -record presentation and play back presentation for class discussion</p>	<ul style="list-style-type: none"> <li>• Demonstrate respect for the opinions of others in oral, written, and visual material.</li> </ul>	<p>Oral presentation addresses the issue of diagnosis and treatment of the disease in clear and precise manner</p>
<p>Observe and listen to a pre-prepared role-play about a local citizen who describes a skin problem to the other. The role-play is done in Jamaican Creole (JC) and includes examples of false homophones (e.g. at/hot, kin/skin, an/hand, bun/burn) based on the Standard Jamaican English (SJE) / JC language situation. Make note of all the false homophones used and bearing in mind the context in which they are used in the role play, convert JC terms to SJE and repeat the role-play using the SJE</p>	<ul style="list-style-type: none"> <li>• Use SJE appropriately</li> <li>• Listen for information</li> <li>• Identify false homophones</li> <li>• Convert JC terms to SJE</li> </ul>	<p>False homophones identified</p> <p>Jamaican Creole terms accurately converted to Standard Jamaican English</p>



**Focus Question: “How do I construct meaning from information about the senses?”**

**Reading With Fluency & Recognition  
(Word Recognition & Vocabulary Development)**

**ATTAINMENT TARGETS**

- Use a range of word recognition clues to identify new words
- Use a range of approaches to learn and spell irregular words
- Automatically recognise words (including basic sight word lists) through repeated exposure and mnemonic devices

Build vocabulary through various strategies

**OBJECTIVES**

Students will:

- Identify and use sight words appropriate to grade level
- Recognize and explain the use of particular strategies to decode unfamiliar vocabulary
- Use knowledge of root words and affixes to determine the meanings of words
- Identify and use grade appropriate homophones and homonyms in context.
- Decipher the meaning of unknown words using antonyms and synonyms context clue

**SUGGESTED TEACHING AND LEARNING ACTIVITIES  
STUDENTS WILL:**

Develop bank of sight words related to the sense organs and learn these words –e.g. scent, odour, taste, disease, tongue, layer, sense, health, healthy, infection, treatment, hygiene

Use the new vocabulary encountered in the oral presentation, as well as those supplied by teacher, to create a Semantic Feature Analysis Chart then use this information to create a paragraph.

<b>Diseases</b>	Redness	Swelling	Inflammation	Pain
<b>Features</b>				
Eczema	✓	x	✓	X

**KEY SKILLS**

- Develop bank of sight words
- Learn words
- Associate meaning with new vocabulary

**ASSESSMENT**

Sight word bank created using grade level words related to the sense organs

Semantic Feature Analysis accurately created using vocabulary from oral presentation

<p>Research the meaning of prefixes and suffixes related to the skin, nose and tongue and give at least one word to match each affix; e.g. anti -, epi -, -gist, and -ness. Present information in the form of a table</p> <p>Use words with prefixes related to skin, nose and tongue in sentences</p> <table border="1"> <thead> <tr> <th>Prefix/Suffix</th> <th>Meaning</th> <th>Example</th> </tr> </thead> <tbody> <tr> <td>Anti -</td> <td>against</td> <td>anti-fungal</td> </tr> </tbody> </table> <p>My mother bought some <u>antifungal</u> cream at the pharmacy.</p>	Prefix/Suffix	Meaning	Example	Anti -	against	anti-fungal	<ul style="list-style-type: none"> <li>• Research the meanings of affixes</li> <li>• Supply examples of affixes</li> <li>• Use affixes in sentences</li> </ul>	<p>Table presents prefixes and suffixes relating to the skin, nose and tongue, their meanings and examples.</p> <p>Sentences accurately utilises the words with the prefixes and suffixes</p>
Prefix/Suffix	Meaning	Example						
Anti -	against	anti-fungal						
<p>Listen to sentences containing homophones. Identify words that were heard twice in the sentences. Engage in whole class discussion about the definition of Homophones and the use in each sentence.</p> <p>E.g. What colour hair does a hare have? The word “hair” and “hare” is pronounced the same but spelt differently and has a different meaning. Research the spelling and meaning of the words.</p>	<ul style="list-style-type: none"> <li>• Identify homophones in context</li> </ul>	<p>Homophones accurately identified in sentences and understanding of the concept evident.</p>						
<p>Create a list of pairs of homophones and use them in sentences. Share sentences in class.</p> <p>E.g. 1. The <b>maid made</b> up the bed. 2. Jennifer <b>ate eight</b> slices of pizza!</p>	<ul style="list-style-type: none"> <li>• Provide a list of pairs of homophones</li> </ul>	<p>Sentences reflect the correct use of pairs of homophones</p>						
<p>Play a game of Charade where selected student will be given a word. Demonstrate actions/clues that will help their classmates figure out the mystery word with its different spelling and meaning</p>	<ul style="list-style-type: none"> <li>• Supply and spell homophones</li> </ul>	<p>Homophones accurately supplied.</p>						

<p>Design a homophone book containing pairs of homophones from list previously created. Insert pictures as well as sentences to demonstrate the difference in spelling and meaning. Publish their book in the class library.</p>	<ul style="list-style-type: none"> <li>• Design homophone book</li> </ul>	<p>Homophone book accurately reflects the spelling and meaning of targeted words.</p>
<p>View puppet show. Listen as puppets use similar words communicating different meanings. E.g. The word 'bark' Puppet 1- Mikey, speaks of the word referring to the action of his dog Puppet 2- Pinky, uses the word to speak of a park of a tree.</p> <p>Engage in discussion focused on developing understanding of the meanings being communicated to establish a category label [homonyms].</p> <p>Be randomly selected to record on board/screen the words heard twice in the puppet show and the different meanings given</p>	<ul style="list-style-type: none"> <li>• Use homonyms</li> <li>• Discuss meanings of words</li> <li>• Engage in discussion</li> </ul>	<p>Puppet Show accurately communicates the meaning of words</p> <p>Discussion reflects the understanding of homonyms.</p> <p>Words accurately identified and spelt on board/screen.</p>
<p>Play a game of "Follow the Leader". Listen as the leader gives a word and identifies a pair. Collaborate with their partner to give the meaning/sentences reflecting the meanings of the word given by the leader [Each partner should give a different meaning/sentence reflecting the meanings].</p>	<ul style="list-style-type: none"> <li>• Give meaning of homonyms</li> </ul>	<p>Meanings/sentences supplied highlight different meaning of the same target word.</p>
<p>Engage in meaningful discussion to understand two types of clues that are sometimes used to determine the meaning of unknown words [<i>Paying close attention to Synonyms and Antonym clues</i>]</p> <p>E.g. 1. Mom had to <b>sterilize, or clean</b>, the baby's bottle. [<i>Synonym clues</i>] 2. Although Tom was <b>anxious</b> about the test, Tina was</p>	<ul style="list-style-type: none"> <li>• Decipher the meaning of unknown words using context clues.</li> </ul>	<p>Discussion focuses on developing understanding of antonym and synonym clues</p>

<b><i>not worried</i></b> at all. [ <i>Antonym clues</i> ]		
Work in pairs to write four sentences. Two exemplifying synonym clues and two exemplifying antonym clues to decipher the meaning of unknown words in sentences. Share sentences with class. Then mount on Context clues chart.	<ul style="list-style-type: none"> <li>• Write sentences with synonym and antonym clues</li> </ul>	Sentences accurately reflect the understanding of the use of synonym and antonym clues in deciphering the meaning of unknown words.
Read hand-out/text on homophones and homonyms and create a strategy poster/chart depicting their understanding and providing examples with words related to senses Eg homophones- nose, knows see, sea	<ul style="list-style-type: none"> <li>• Identify homophones/homonyms</li> </ul>	Strategy posters/ charts provide a definition and examples of homophones and homonyms
Review script/text about senses; identify homophones incorrectly used based on context and intended meaning of homonyms used.  Rewrite the script/text with the correct homophones	<ul style="list-style-type: none"> <li>• Identify and use homophones</li> <li>• Identify and use homonyms</li> </ul>	Incorrectly used homophones identified  Intended meaning of homonyms identified  Revised script/text highlights accurate use of homophones based on context.
Read text with antonyms and synonyms context clues to decipher meanings of underlined words. State the clue that aided their understanding of the underlined word.	<ul style="list-style-type: none"> <li>• Use context clues</li> </ul>	Synonyms and antonym clues accurately identified.

**Focus Question: “How do I construct meaning from information about the senses?”**

**Reading for Meaning and Enjoyment (Comprehension)**

**ATTAINMENT TARGETS**

- Read for meaning, fluency and enjoyment of texts, using a variety of clues to gain information and identify ideas and events
- Use deduction and inference to interpret information and ideas and to predict outcomes

**OBJECTIVES**

- Students will:
- Monitor own reading using self-questioning and teacher questioning
  - Analyse texts and explain how specific elements in them contribute to meaning
  - Explain implicit ideas citing evidence from text
  - Independently select and employ strategies to monitor their own comprehension

**SUGGESTED TEACHING AND LEARNING ACTIVITIES  
STUDENTS WILL:**

**KEY SKILLS**

**ASSESSMENT**

View PowerPoint presentation regarding Using Questioning to monitor one’s reading. Engage in a discussion focused on explaining and developing understanding using what has been communicated in the presentation.

- Engage in discussion

Discussions focused on scaffolding students’ understanding of the Questioning technique to monitor reading and ensure comprehension

Collaborate with teacher to discuss different types/levels (literal, inferential and evaluative) of questions that readers ask themselves. View sample questions as well as where these may be recorded or how they may be treated during reading. E.g.

- Does what I am reading make sense?
- What am I supposed to be learning?
- How does this relate to what I already know?
- What am I learning?

- Engage in discussion
- Analyse questions

Discussion focused on developing understanding of the various types of questions that strategic readers ask during reading to monitor and aid comprehension

These may be recorded in the margins of the text, audio recording or semantic map.

Observe as teacher models use of the teacher and self-questioning technique to model his/her own reading. Engage in a discussion focused on examining the model observed.

- Engage in discussion
- analyse teacher

Model focused on demonstrating how strategies readers utilise the questioning technique to monitor their own reading/comprehension

	model	
Engage in a whole class reading and discussion of a text focused on the senses. Pause at interval to utilise self and teacher questioning techniques as a means of monitoring comprehension of the text.	<ul style="list-style-type: none"> <li>• Use self-questioning</li> <li>• Use teacher questioning</li> </ul>	Questions asked and answered during reading, evidence active monitoring of students' comprehension during reading.
Independently select and read grade level text about the senses. Using self and teacher questioning chart as a guide, note the questions they would ask to clarify interpretation and understanding in the margins or using sticky note pads.	<ul style="list-style-type: none"> <li>• Use self-questioning</li> <li>• Use teacher questioning</li> <li>• Monitor reading</li> </ul>	Questions asked and answered during reading are relevant and appropriate to ensuring understanding of the focus text
Work in small groups to review the elements of narrative and expository texts and their purposes using classroom library, notes, internet etc. Present their findings to the class. Collaborate with their teacher to prepare and mount a summary strategy poster outlining the elements and their purpose.	<ul style="list-style-type: none"> <li>• Review elements of the narrative text structure</li> <li>• Review elements of expository text structure</li> </ul>	<p>Presentations highlight accurate information regarding the elements of narrative and expository texts and their purposes</p> <p>Strategy posters present accurate information regarding the elements of narrative and expository text structures</p>
Work in pairs to read grade level text about the senses. Analyse the text to identify and explain different elements and how they contribute to the meaning of the text. E.g. "How does the author use the setting to establish the mood of the text?" Present their findings to the class for discussion.	<ul style="list-style-type: none"> <li>• Analyse elements of texts</li> <li>• Comment on the effectiveness of text elements</li> </ul>	Presentations outline the specific element and how it is used to convey meaning by the author as well as aid the reader in deriving meaning.
Listen to grade level text read by the teacher or their peer. Talk about the elements and comment on their effectiveness through a class discussion.	<ul style="list-style-type: none"> <li>• Analyse elements of texts</li> <li>• Comment on the effectiveness of text elements</li> </ul>	Comments made reflect critical analysis of the elements and highlight how they contribute to the meaning of the text.
Observe as teacher models using the Think Aloud strategy to express his/her opinion on the ideas in text citing appropriate evidence to support his/her claims. Engage in a discussion to reflect on the model provided and	<ul style="list-style-type: none"> <li>• Engage in discussion</li> <li>• Reflect on demonstration</li> </ul>	Model that outlines the steps involved in expressing opinions about the ideas in a text and citing appropriate evidence.



how they will transfer the skill during and after their own reading.	observed	
Utilise the “ <i>Tea Party Comprehension Strategy</i> ” to discuss phrases, sentences and quotes from grade level text read about the senses. Socialise with their peers in a tea party atmosphere, sharing their opinions on the ideas expressed on the cards issued. Construct “ <i>I Think</i> ” statements to capture their general opinions and reactions to the text. Present/post their statements to the class	<ul style="list-style-type: none"> <li>• Express opinions about ideas in text</li> <li>• Cite evidence from texts</li> <li>• Explain implicit ideas</li> </ul>	<p>Socialisation discussion reflects critical analysis and reactions to the information in text.</p> <p><i>I Think</i> statements outline students’ opinions about the text citing appropriate evidence.</p>
Read grade level text as a class. Stand in a circle and listen as teacher recalls or reads different aspects of the text. Select an emotion card to depict their feelings/opinions about that part of the text. Cite one or more examples/evidences from the text to support their choice.	<ul style="list-style-type: none"> <li>• Express opinions</li> <li>• Rationalise for decision taken</li> <li>• Explain implicit ideas</li> </ul>	Emotion cards and evidence cited captures and rationalises for students’ opinion about the information in the text
<p>Follow a “word trail” in order to determine the character traits evidenced in the story.</p> <p>Following on the story, create a Reader’s Theatre script about a particular sense/sense organ. Assume the characters and perform the script.</p> <p>Make connection with the “characters” in the story about the senses by using</p> <p>Sentence starters:</p> <ul style="list-style-type: none"> <li>-The part when...</li> <li>-Reminds me of...</li> <li>-This helps me understand the story better because...</li> </ul>	<ul style="list-style-type: none"> <li>• Express opinions about character</li> <li>• Make connections with story characters</li> <li>• Explaining implicit ideas</li> </ul>	Connections made are aligned to the characteristics of the characters in the text
Engage in a “hot seat” game to conference with their peers about the strategies they select and use during independent reading as well as say why the particular strategies were chosen/benefits to be gained.	<ul style="list-style-type: none"> <li>• Engage in reflection</li> </ul>	Reflections outline the strategies students independently employ during reading as well as the reasons or benefits derived from using them.

**Focus Question: “How do I construct meaning from information about the senses?”**

**Reading for Information ( Research & Study Skills)**

**ATTAINMENT TARGETS**

- Research activities on issues and interests by generating ideas and exploring texts using a range of strategies
- Identify and use text features to support navigation of texts, retrieving and synthesize information gained from a range of sources

**OBJECTIVES**

- Students will:
- Use elements of a dictionary to support different oral and written activities.
  - Begin to apply the knowledge of text features to find information efficiently
  - Skim and scan for main ideas
  - Begin to use the library to find different sources of information – books, magazines, Internet and offline sources

**SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:**

Work in pairs to find a word in the dictionary, Circle everything about the word and discuss the elements/components identified. Share findings with class.

Engage in a discussion to discuss each element and its purpose. Discussion will be guided using a power point/chart focusing on the elements and their purposes.

Elements	Purposes
Parts of Speech	
Meaning	
Spelling	
Pronunciation	

**KEY SKILLS**

- Use Elements of a dictionary

**ASSESSMENT**

Discussions evidence understanding of the elements/components of a dictionary.

<p>Engage in a dictionary quiz that will require them to find words and their purposes, e.g. <i>find the word custom and give its part of speech/find the word ancestor and give its meaning.</i></p>	<ul style="list-style-type: none"> <li>• Use dictionary</li> <li>• Identify elements</li> <li>• Use elements</li> </ul>	<p>Responses to quiz questions are accurate and demonstrate students understanding of how to use the dictionary.</p>				
<p>Review text features in a text features scavenger hunt game. Listen and note as the teacher reads clues for each text feature then search the classroom to find the feature being hinted at in the clue.</p>	<ul style="list-style-type: none"> <li>• Define text features</li> </ul>	<p>Text features accurately identified based on the clues given by the teacher</p>				
<p>Work in groups to find different kinds of information based on assigned tasks (e.g. find the meaning of the words sensory and cochlea based on usage in the text). Decide as a group which text feature they will utilise to locate/find the information requested by the teacher. Then make presentation to the whole class. Presentation must include the information sought as well as identification of the text feature used and the reason for selecting and using that text feature.</p>	<ul style="list-style-type: none"> <li>• Use text features</li> </ul>	<p>Presentations reflect accurate/appropriate selection of text features, logical reasons for choosing same and accuracy in the information presented.</p>				
<p>Engage in discussion with the teacher to define the terms skim and scan based on a YouTube Video or dramatization planned by the teacher. Discuss elements of skimming and scanning for e.g.</p> <table border="1"> <tr> <td>Skimming</td> <td> <ul style="list-style-type: none"> <li>• read the title and look at any accompanying visuals</li> <li>• read the beginning and end of an article, ignoring the details</li> <li>• read just the first sentence of every paragraph</li> </ul> </td> </tr> <tr> <td>Scanning</td> <td> <ul style="list-style-type: none"> <li>• look for content words or visual clues that speaks to the main idea (s)</li> <li>• read in blocks of words rather than word by word</li> </ul> </td> </tr> </table>	Skimming	<ul style="list-style-type: none"> <li>• read the title and look at any accompanying visuals</li> <li>• read the beginning and end of an article, ignoring the details</li> <li>• read just the first sentence of every paragraph</li> </ul>	Scanning	<ul style="list-style-type: none"> <li>• look for content words or visual clues that speaks to the main idea (s)</li> <li>• read in blocks of words rather than word by word</li> </ul>	<ul style="list-style-type: none"> <li>• Engage in discussion</li> <li>• Define skim and scan</li> </ul>	<p>Discussions focused on establishing understanding of the terms skim and scan and their purposes in reading for information.</p>
Skimming	<ul style="list-style-type: none"> <li>• read the title and look at any accompanying visuals</li> <li>• read the beginning and end of an article, ignoring the details</li> <li>• read just the first sentence of every paragraph</li> </ul>					
Scanning	<ul style="list-style-type: none"> <li>• look for content words or visual clues that speaks to the main idea (s)</li> <li>• read in blocks of words rather than word by word</li> </ul>					

<p>Skim and scan content area texts and supplementary sources for information related to the sense organs. Skim for main ideas based on topic as well as headings/sub-headings used and scan for details based on certain guiding questions asked by the teacher. Present information using graphic organizer of choice.</p>	<ul style="list-style-type: none"> <li>• Skim for main ideas</li> <li>• Scan for details</li> </ul>	<p>Graphic organiser contains accurate information based on the text utilised.</p>
<p>Engage in a virtual/physical tour of a library to identify various sections and the kinds of information found in each. Make journal entries to document their learning as well as requests or further information</p>	<ul style="list-style-type: none"> <li>• Use a library</li> </ul>	<p>Tour results in sensitising students to the various sections of a library and the kinds of information found in each. Journal entries captures students learning/ the lack thereof</p>
<p>Select a topic related to understanding the senses and conduct library research using one or more of the sections and types of information discussed earlier. Present their information in a creative form. Make journal entries to reflect on the process engaged in.</p>	<ul style="list-style-type: none"> <li>• Use the library</li> </ul>	<p>Information researched and presented is accurate and highlight the use of correct sources</p>

**Focus Question: “How do I construct meaning from information about the senses?”**

**Language Structure (Grammar & Conventions)**

<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>	
<ul style="list-style-type: none"> <li>• Write sentences, paragraphs and extended pieces which are grammatically accurate and correctly punctuated, using SJE and JC appropriately</li> <li>• Use and adapt a range of sentence structures according to context, distinguishing between SJE and JC</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Modify speech and writing with noun substitutes</li> <li>• Indicate singular and plural possessives through the use of the apostrophe</li> <li>• Recognize and use adverbs of manner to create vibrant and engaging text.</li> </ul>	
<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
<b>STUDENTS WILL:</b> Listen to recording of poem related to senses. As they listen, students will snap fingers when a noun is heard. Orally identify the nouns they heard in the poem.	<ul style="list-style-type: none"> <li>• Listen for and identify nouns in poem</li> </ul>	Nouns accurately identified in given poem
Create a cartoon dialogue about an aspect of any one of the sense organs. Use contractions - such as <i>we'll, I'll, let's</i> - in the dialogue.	<ul style="list-style-type: none"> <li>• Create cartoon</li> <li>• Compose dialogue using contractions</li> </ul>	Contractions appropriately used in dialogue
Engage in a turn-taking board game where they will be required to complete sentences or answer questions using appropriate pronouns.	<ul style="list-style-type: none"> <li>• Use noun substitute in sentences.</li> </ul>	Sentences reflect appropriate use of pronouns
Pluralise words related to the sense organs in the context of sentences and paragraphs – e.g. fungus-fungi, stimulus-stimuli, sense-senses, tongue-tongues, germ – germs , body-bodies	<ul style="list-style-type: none"> <li>• Form regular and irregular plurals</li> </ul>	Demonstrate ability to accurately supply regular and irregular plurals of targeted words

<p>Compose sentences with singular and plural possessive forms-e.g.</p> <p>➤ My nose caught the scent of my <u>mother's</u> cornmeal pudding.</p> <p>The <u>children's</u> tongues were purple after they had sucked on the grape-flavoured sweet.</p>	<ul style="list-style-type: none"> <li>• Compose sentences</li> <li>• Use singular/plural possessive forms</li> </ul>	<p>Demonstrate ability to accurately use singular and plural possessive forms in sentences</p>								
<p>View sentence[s] on board /sentence strips to identify verb in the sentence and tell what word is describing/modifying the verb. Discuss the definition of adverb and its purpose in sentences and how they can be identified [paying special attention to 'ly' endings]</p>	<ul style="list-style-type: none"> <li>• Identify verbs and adverbs in sentences</li> <li>• Discuss definition and purpose of adverb</li> </ul>	<p>Discussion engaging and reflects clear understanding of the use of adverbs in sentences.</p>								
<p>Examine a poem relating to the senses. Identify the verb and the word used to modify the verb in sentences. Record sentences and place parts of speech in correct column in their books.</p> <p>E.g. 1. Mary's tongue rolls the food into tiny balls quickly.  2. I close my eyes tightly.  3. My nose smells the aroma of the chicken instantly.</p> <table border="1"> <thead> <tr> <th>Verb</th> <th>Adverb</th> </tr> </thead> <tbody> <tr> <td>rolls</td> <td>quickly</td> </tr> <tr> <td>close</td> <td>tightly</td> </tr> <tr> <td>smells</td> <td>instantly</td> </tr> </tbody> </table>	Verb	Adverb	rolls	quickly	close	tightly	smells	instantly	<ul style="list-style-type: none"> <li>• Identify verb and adverbs in poems</li> <li>• Place verbs and adverbs in columns</li> </ul>	<p>Table accurately completed with verbs and adverbs identified correctly.</p>
Verb	Adverb									
rolls	quickly									
close	tightly									
smells	instantly									
<p>Work in small groups, to create a slogan to advertise a product appealing to the sense. Ensure that the slogan utilizes adverb to create emphasis. Present their slogan to the class.</p>	<ul style="list-style-type: none"> <li>• Create slogan</li> <li>• Utilize adverbs</li> </ul>	<p>Slogan reflects the appropriate use of adverbs</p>								



<p>Participate in discussions relating to the different types of adverb. Focus on adverb of manner and its purpose.</p> <p><i>[Adverb of Manner tells how something is done or how someone does something. They usually come after the verbs they describe</i></p> <p>Example: The tortoise walks slowly. The word 'slowly' describes how the tortoise walks.</p>	<ul style="list-style-type: none"> <li>• Discuss the purpose of adverb</li> </ul>	<p>Discussion demonstrates a clear understanding of use of adverb of manner in sentences</p>
<p>Use adverbs of manner to describe the position of particular sense organs relative to other organs. Arrange words to construct sentences placing the adverb of manner at the end e.g. <i>to / softly / spoke / she / him</i> She spoke to him softly.</p>	<ul style="list-style-type: none"> <li>• Use adverbs appropriately</li> </ul>	<p>Sentences accurately constructed and reflect a clear perception of adverb of manner and the positioning.</p>
<p>Complete worksheets by supplying an appropriate adverb of manner in each sentence.</p>	<ul style="list-style-type: none"> <li>• Supply adverbs of manner</li> </ul>	<p>Sentences completed reflects appropriate adverb of manner.</p>
<p>With the assistance of the teacher, examine text about the senses to identify signal words and determine what clues those words provide for the reader e.g. continuation (similarly), change of direction (instead of), sequence (while), time (during), illustration (such as), emphasis (a key feature), etc. Independently complete a "signal word sort"</p>	<ul style="list-style-type: none"> <li>• Use signal words to enhance meaning construction</li> <li>• Categorize signal words</li> </ul>	<p>Explain and use signal words appropriately in spoken and written contexts</p>

**Focus Question: “How do I construct meaning from information about the senses?”**

**Communication (Writing)**

**ATTAINMENT TARGETS**

- Develop approaches to the writing process to enable them to organise their ideas into a coherent structure including, layout, sections and paragraphs
- Write well-constructed paragraphs which have linking sentences within and between them

**OBJECTIVES**

- Students will:
- Create vibrant and engaging texts using knowledge of adverbs
  - Use knowledge of the writing process to compose letters of request
  - Engage in journal writing to reflect on their use of the writing process

**SUGGESTED TEACHING AND LEARNING ACTIVITIES**  
**STUDENTS WILL:**

**KEY SKILLS**

**ASSESSMENT**

In pairs, write poems or songs about care and functions of selected sense organ  
Collaborate with teacher to develop adverb checklist for editing of students’ written pieces  
Then exchange and edit written pieces using checklist developed

- Compose poems or songs
- Collaborate to develop checklist
- Edit written pieces

Poems/songs depict accurate and appropriate use of adverbs.  
  
Editing checklist developed to include the use of adverbs

Imagine being in a park having a delicious ice-cream.  
Complete the bubbles using adverbs related to the sense organ used (tongue).



- Supply adverbs

Adverbs supplied are related to the sense organ used in the scenario given as well as the item being enjoyed

Demonstrate the ability to create poems or songs and to collaborate in the development of checklist for editing the written pieces. .Provide Cloze passages - Given a list of personal pronouns, insert these into the correct places  
Report on test clearly written

Compose a short story based on your evening in the park.  
Include as many adverbs from the bubbles in your composition and give it a title.

- Identify story elements

Story accurately aligned to the content as well as utilises a variety of adverbs to add vibrancy and creativity to the text

<p>Recall the content learned about the senses to develop stories employing story grammar (beginning, middle, and end) and story elements (characters, setting, plot etc.) e.g. Fill out the following outline/template.</p> <p style="text-align: center;">Story Grammar Map</p> <p><b>Title of Story:</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;"><b>Characters</b></td> <td style="width: 33%; text-align: center;"><b>Place</b></td> <td style="width: 33%; text-align: center;"><b>Time</b></td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>Theme</b></td> </tr> <tr> <td colspan="3" style="text-align: center;">Events</td> </tr> <tr> <td colspan="3" style="text-align: center;">Resolution</td> </tr> </table>	<b>Characters</b>	<b>Place</b>	<b>Time</b>	<b>Theme</b>			Events			Resolution			<ul style="list-style-type: none"> <li>• Compose short story</li>   <li>• Use story grammar</li> </ul>	<p>Short story utilises adverbs to create vibrancy and engagement based on topic of choice.</p>
<b>Characters</b>	<b>Place</b>	<b>Time</b>												
<b>Theme</b>														
Events														
Resolution														
<p>In small groups pretend to be a sense organ. Develop interview questions with one group member assuming the role of the interviewer while the others take turn in answering the questions. Use the answers to write a summary of the “conversation.” Remember to employ the use of adverbs to add clarity.</p>	<ul style="list-style-type: none"> <li>• Construct questions</li> <li>• Develop summaries</li> <li>• Use adverbs</li> </ul>	<p>Interview sessions and summary reflect accuracy in using adverbs to add clarity.</p>												
<p>Examine a sample business letter provided to introduce the format of business letters. They will identify and label the main parts of a business letter (heading, inside address, greeting, body, closing, and signature)</p> <p>Complete a letter of request plan, which will specify the</p>	<ul style="list-style-type: none"> <li>• Identify main parts of a business letter</li> </ul>	<p>Parts of a business letter accurately identified</p>												

<p>elements of a letter of request</p> <p>In groups organize sentence strips containing contents of a request letter in the recommended /required order Work in pairs on sample letter of request to see how many errors they can identify-grammar, spelling , punctuation, organization and format</p> <p>Develop a rubric that describes the necessary information, form, and conventions students should include in their letters of request.</p> <p>Compose a letter to the principal of your school requesting the use of the school’s auditorium for a symposium with the theme “Know Your Sense Organ ”</p> <p>Identify a problem with a product used or service experienced regarding one of their sense organs and write a letter requesting a meeting with the manager of the company to express their dissatisfaction with the product/service.</p>	<ul style="list-style-type: none"> <li>• Complete letter of request plan</li> <li>• Edit letter</li> <li>• Develop editing rubric</li> <li>• Compose letter of request</li> <li>• Compose letter of request</li> </ul>	<p>Letter of request plan accurately completed outlining the elements of a letter of request</p> <p>Sentence strips accurately organised</p> <p>Errors in letter accurately identified</p> <p>Editing rubric reflect elements/features to be considered when composing a letter of request</p> <p>Letter of request accurately completed including all elements of a letter of request as well as accuracy in content and grammar</p> <p>Letter of request accurately completed with all elements and outlines their intention to meet with the manager.</p>
<p>Be introduced to the RAFT strategy by the teacher who will explain the meaning of each letter:- <b>Role</b> of the Writer: Who or what are you as the writer? A pilgrim? A soldier? The President? <b>Audience:</b> To whom are you writing? A friend? Your teacher? Readers of a newspaper? <b>Format:</b> In what format are you writing? A letter? A poem? A speech? <b>Topic:</b> What are you writing about? Why? What's the subject or the point? Be instructed to view and read a completed <b>RAFT</b> example</p>	<ul style="list-style-type: none"> <li>• Explore RAFT strategy</li> </ul>	<p>Active participation through viewing and reading to identify elements of the RAFT</p>

on the board. E.g.

- R** = car in a junk yard
- A** = teen who destroyed the car
- F** = farewell letter
- T** = take care of your car (scolding)

**Dear Claude,**

**I've been forced to sit in this junk yard for the past year. Every day I've had to face the loss of more and more body parts until there is almost nothing left of me. But tomorrow, my time is up; I'm scheduled to be compacted, so I have to write this letter now. It is hard for me to say this, but I think you need to know you are a real jerk!**

**I gave you the best years of my life, and how did you treat me? You refused to change my oil on a regular basis. (I get cranky when I have a dirty crankcase!)**

**You always fed me the cheapest fuel, never letting me have any fuel containing detergents to help keep my parts clean. You constantly slammed on the brakes, wearing the treads from my tires. You never checked my tire pressure. I had to work extra hard to move with such low pressure in my tires. Do you know how much gas money you wasted over the years by driving on underinflated tires? You never gave me a lube job even though I was constantly screaming for one.**

**I tried so hard to do my best, but you did not lift a finger to help. Oh, no! Here it comes, the big crunch! I've reached the end of my road....CRUNCH!**

Discuss the above activity to identify each element of the strategy

- Identify elements of RAFT

- Engage in discussion
- Respond to prompt

Identification of elements established through discussion.

<p>Have students practice responding to prompts individually, or in small groups.</p> <p>As a class think-aloud to come up with ideas for the piece of writing that they will create as a group relating to the senses</p> <p>Observe as teacher models on a whiteboard, overhead/multimedia projector, or chart paper how to write in response to a prompt.</p> <p>Be given another writing prompt (for which they have already chosen the role, audience, format, and topic) to react to either individually or in small groups. Read their written pieces aloud. Have a class discussion about how each student created their own version of the RAFT while using the same role, audience, format, and topic.</p> <p>Write a journal entry after each experience using the RAFT writing template as a guide. Reflect on the process of journaling and their experience with using the strategy.</p>	<ul style="list-style-type: none"> <li>• Use think-aloud strategy</li>   <li>• Compose written text</li>   <li>• Engage in reflection</li>   <li>• Write journal entries</li> </ul>	<p>Responses provided are accurately aligned to the given prompt</p> <p>Written pieces accurately captures the request of the writing prompts chosen/assigned</p> <p>Journal entries capture students' experiences while using the RAFT writing strategy.</p>
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<p><b>Learning Outcomes</b></p> <p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>✓ Listen for specific information , appropriately elicit peer responses and respectfully discuss ideas</li> <li>✓ Use SJE and JC as appropriate to context</li> <li>✓ Use knowledge of SJE/JC structures to effect conversions – e.g. converting JC words in false homophone pairs to SJE</li> <li>✓ Demonstrate the ability to compose questions, ask these questions to and answer questions posed by their peers</li> <li>✓ Use SJE structures and conventions ,including contractions, possessives, noun plurals, pronouns and signal words, appropriately</li> <li>✓ Use text features and non-fiction sources, including online references, to locate information</li> <li>✓ Showing grasp of word recognition strategies by learning and recognizing grade appropriate sight words, using context clues</li> <li>✓ Demonstrate understanding of information read by making connections to the text, identifying main ideas and supporting details, and by summarizing information</li> <li>✓ Read , interpret and use graphic information</li> <li>✓ Compose sentences and narratives to display grasp of concepts taught such as SJE structures and story grammar</li> <li>✓</li> </ul>
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**Points to Note**

- Teachers should carefully model all strategies the students need to learn and use.
- Students should be carefully monitored as they use the Internet
- The unit includes link to:  
Science (diseases associated with the skin, nose and tongue)  
Drama (Role-play)
- Where an objective appears in more than one unit, (eg), ensure that different aspects of the objectives are taught

**Extended Learning**

- Students should continue to use the SJE structures learnt (possessives, noun plurals, contractions, etc.) in their oral/written contexts outside of the English class and even school.
- The use of text features and reference sources , including online references should extend way beyond the English Language classroom into their personal lives as they learn to research based on personal interests

**Resources**

- Grade level texts, including supplementary readers with content /ideas linked to the sense organs
- Samples of graphic organizers including semantic maps and Semantic Feature Analysis Chart
- Discussion die
- Internet
- Computer software
- Recorded (audio/video) clippings of advertisement about tongue, skin or nose
- Sample semantic map

**Key vocabulary**

- Sense organs
- Signal words
- Story grammar
- Text features
- Skim
- Scan
- Guide words
- Character traits
- Standard Jamaican English (SJE)
- Jamaican Creole (JC)
- Scent
- Odour
- hygiene

## **LANGUAGE ARTS UNIT – Term 2 – Unit 1**

### **INTRODUCTION TO THE UNIT**

This unit seeks to build on the skills taught in Term 1 via the theme of ‘The Physical Environment’ and the sub-theme ‘Our Physical Landscape.’ It facilitates the development of active listening and appropriate listening skills through discussion of current events and national issues. It also attempts at developing reading fluency through the application of the grade appropriate word recognition strategies of sight words, and structural elements such as inflectional endings and affixes. Students are given the opportunity to reinforce and extend their knowledge of identifying main ideas, summarizing information and making inferences. They are also able to conduct basic knowledge search/research by effectively utilizing parts of books and a range of sources, including online sources. In this unit, they also continue to practise the use of stages of the writing process in an attempt to produce well-written pieces.

Most of the activities give students an opportunity to practise specific language skills. The teacher may need, however, in some cases to explicitly teach rules, structures and strategies prior to these activities. The content outline for grade 4 must therefore be consulted for details on the scope of content/skills to be delivered.

### Prior Learning

Check that students:

- Have begun to work with the Communication Protocol
- Know sight words appropriate to the grade level
- Are able to identify and use structural analysis skills to aid word recognition
- Know basic skills of comprehension – recalling and recognizing ideas, inferring details
- Know how to use major parts of a book and text features to aid research or the location of information
- Understand the basic steps in the writing process

### **UNIT OF WORK GRADE 4 - TERM 2 Unit 1 - 7 weeks**

**Focus Question:** “How do we communicate information about our Jamaican landscape?”

#### **SPEAKING & LISTENING**

##### **ATTAINMENT TARGETS**

- Communicate with confidence and competence for different purposes and audiences, using SJE and JC appropriately and creatively

##### **OBJECTIVES**

Students will:

- Respond to and relate information about current events
- Prepare, practice, and present information using notes and/or visual aids.
- Demonstrate respect for other participants and their ideas.

##### **ICT ATTAINMENT TARGETS:**

- **COMMUNICATION AND COLLABORATION** - Use technology to communicate ideas, information and understanding for a variety of purposes
- **DESIGNING AND PRODUCING** - Use technology to design and produce multimedia products to demonstrate their creative thinking
- **DIGITAL CITIZENSHIP** - Recognise the ethical, social and legal issues and implications surrounding the use of technology.

##### **SUGGESTED TEACHING AND LEARNING ACTIVITIES**

##### **STUDENTS WILL:**

View a documentary or listen to a taped recording of a current event related to some aspect of the Jamaican physical landscape – e.g. flooding etc. Use the strategy ‘It

##### **KEY SKILLS**

- Listen and respond
- Draw conclusions

##### **ASSESSMENT**

Strategy effectively used to corroborate the information from clips with students prior knowledge to draw conclusions.

<p>Says- I Say- And So' to respond giving reaction to the documentary.</p> <p>It Says: the information from the video/audio clip I Say: your thoughts on the matter And So: the conclusions that you draw</p>		
<p>Gather information on a topic related to the Jamaican Landscape in their community. Make presentations to share this information with their classmates using a visual aid</p>	<ul style="list-style-type: none"> <li>• Relate information</li> <li>• Make presentations</li> <li>• Use appropriate visual aids</li> </ul>	<p>Presentations are clear, concise and related to a feature of the Jamaican landscape in various communities.</p>
<p>View samples presentations of different quality and use a checklist to evaluate each. Use colour coded sticky notes to to note strengths and weaknesses identified. Engage in discussion focused on how the weaknesses may be avoided/corrected.</p>	<ul style="list-style-type: none"> <li>• Critique presentations</li> <li>• Use presentation checklist</li> </ul>	<p>Sticky notes accurately used to identify strengths and weaknesses of the presentation.</p> <p>Discussion highlights practical solutions/safeguards against the weaknesses highlighted</p>
<p>Select a topic related to the Jamaican landscape. Work in groups to research and present the information using notes and visual aids as is necessary. Make their presentations in class paying attention to the elements of a good presentation.</p>	<ul style="list-style-type: none"> <li>• Make presentations</li> </ul>	<p>Presentations focused on the theme, employs the use of notes and visual aids and exemplifies the attributes of good presentations</p>

**Focus Question:** “How do we communicate information about our Jamaican landscape?”

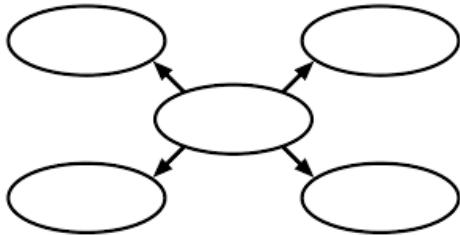
**Reading With Fluency & Recognition  
(Word Recognition & Vocabulary Development)**

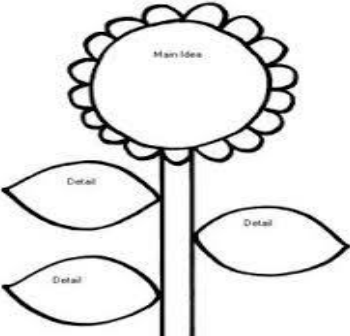
ATTAINMENT TARGETS	OBJECTIVES	
<ul style="list-style-type: none"> <li>• Use a range of word recognition clues to identify new words</li> <li>• Use a range of approaches to learn and spell irregular words</li> <li>• Build vocabulary through various strategies</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Identify and use homographs in context.</li> <li>• Apply syllabication rules to aid pronunciation and spelling of unfamiliar vocabulary</li> <li>• Infer word meaning using knowledge of Inflectional endings- s, es, ed, ing, ly</li> </ul>	
SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT
Peruse hand-out/chart/presentation explaining what are homographs and examples of homophone in and out of context. Engage in discussion to monitor their understanding of the concept as well as provide examples of their own.	<ul style="list-style-type: none"> <li>• Engage in discussion</li> <li>• Give examples of homographs</li> </ul>	Discussion focused on developing understanding of the information outlined on hand-out/chart/presentation  Examples of homographs accurately cited
Complete a worksheet that requires them to select correct meaning of homographs based on the context of the sentence. E.g.	<ul style="list-style-type: none"> <li>• Identify homographs</li> </ul>	Worksheet completed with the meanings of homographs accurately selected based on the context provided in the sentence
Listen to recordings/audio clips of syllabication rules being applied to aid pronunciation and spelling of words related to the Jamaican landscape. Share what they have learnt from the clipping with their classmates.	<ul style="list-style-type: none"> <li>• Listen to understand syllabication rules</li> </ul>	Discussion focused on explaining and clarifying understanding garnered from the clipping.
Read aloud grade level texts or other materials related to physical landscape and use syllabication rules to assist in the accurate pronunciation of unfamiliar words. Use recording device to record words being ‘orally’ syllabicated and play back for critique. Request support in the form of modelling pronunciation where challenges exist.	<ul style="list-style-type: none"> <li>• Apply syllabication rules</li> <li>• Engage in critique</li> </ul>	Syllabication rules accurately applied to aid pronunciation of unfamiliar vocabulary  Critique seek to justify or refute students’ application of the syllabication rules
Work in groups to review different inflectional endings. Focus	<ul style="list-style-type: none"> <li>• Review inflectional</li> </ul>	Charts/hand-outs accurately depicts information regarding

on usage and provide examples in context and in isolation. Present their findings on chart or hand-out to the class. Collaborate with teacher to correct misconceptions/errors.	ending <ul style="list-style-type: none"> <li>Identify inflectional ending</li> </ul>	the various inflectional endings and appropriate examples
Observe as teacher models using knowledge of inflectional endings to infer word meaning. Take turns in using inflectional endings to infer word meaning	<ul style="list-style-type: none"> <li>Use inflectional endings</li> <li>Infer word meaning</li> </ul>	Students accurately model how to use knowledge of inflectional endings to infer word meaning
Read grade level texts in groups and model using inflectional endings to infer word meanings.	<ul style="list-style-type: none"> <li>Read grade level text</li> <li>Infer word meaning</li> </ul>	Reading models good use of inflectional endings to infer word meaning

<b>Focus Question:</b> “How do we communicate information about our Jamaican landscape?”		
<b>Reading for Meaning and Enjoyment (Comprehension)</b>		
<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>	
<ul style="list-style-type: none"> <li>Read for meaning, fluency and enjoyment of texts, using a variety of clues to gain information and identify ideas and events</li> <li>Use deduction and inference to interpret information and ideas and to predict outcomes</li> </ul>	Students will: <ul style="list-style-type: none"> <li>Differentiate between explicit and implicit ideas in text.</li> <li>Construct graphic organizers to summarize texts read/heard</li> <li>Use context clues to clarify understanding during reading</li> <li>Willingly participate in group discussion and activities during reading activities</li> </ul>	
<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b> <b>STUDENTS WILL:</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
Engage in a discussion focused on reviewing the terms explicit and implicit ideas in text. Observe as teacher models identifying ideas that are explicitly stated in text and implicitly communicated.	<ul style="list-style-type: none"> <li>Engage in discussion</li> <li>Observe and comment on teacher model</li> </ul>	Discussion focused on reviewing the terms explicit and implicit which were previously taught.
Work in pairs to read grade level text about the Jamaican landscape. Use sticky note pads to identify two sections of the text that contain explicit ideas and implicit ideas. Discuss with their partners why the ideas identified are implicit and	<ul style="list-style-type: none"> <li>Identify explicit and implicit ideas</li> <li>Comment on decision taken</li> </ul>	Explicit and implicit ideas accurately identified and communicated.  Comments are valid and rationalise for the decision taken



explicit. Share their findings with the class.		
Review grade level text previously read in class. Work in teams to engage in a competitive game of search and find that will require that they locate and categorise ideas on sentence strips hidden in the classroom. Work to ensure that their team finds and accurately categorise the most ideas.	<ul style="list-style-type: none"> <li>• Categorise explicit and implicit ideas</li> <li>• Work collaboratively</li> </ul>	Explicit and implicit ideas accurately categorised / differentiated
Independently select and read grade level text about the Jamaican landscape. Extract and write down explicit and implicit ideas from the text. Exchange their text with a classmate and check if the ideas extracted were accurately categorised as implicit and explicit.	<ul style="list-style-type: none"> <li>• Extract explicit and implicit ideas</li> </ul>	Grade level text read with accuracy and fluency. Explicit and implicit ideas accurately extracted and validated
Work in pairs to examine graphic organisers that are used to summarize information from texts. Engage in a discussion to look at the type of information that is recorded in the graphic organiser as well as the relationship (e.g. graphic organiser that shows a process – step by step, graphic organisers that show relationship and connection among ideas)	<ul style="list-style-type: none"> <li>• Examine graphic organisers</li> <li>• Comment on the uses of graphic organisers</li> </ul>	Discussion focused on developing understanding of the types of graphic organisers that are used to summarise information from text as well as the type of information that is recorded in graphic organisers
Read grade level Social Studies text about the physical features of the Jamaican landscape – location of major mountains, plains, valleys, rivers. Identify and construct a graphic organiser to summarise the information read. Present their graphic organiser to the class.	<ul style="list-style-type: none"> <li>• Construct graphic organisers</li> <li>• Use graphic organisers to present summary</li> </ul>	Graphic organisers accurately constructed to summarise the information about the physical features of the Jamaican landscape
Read excerpts from grade level texts or supplementary texts on aspects of our Jamaican landscape (e.g. Duppy River, the Golden table, Mount Diablo). Extract and record the main ideas using graphic organiser. E.g.  	<ul style="list-style-type: none"> <li>• Use graphic organisers to present summary</li> </ul>	Graphic organiser accurately captures and summarises the information from text

		
<p>View /peruse PowerPoint presentation/hand-out focused on types of context clues and how they help the reader to clarify understanding during reading. Engage in a discussion to ensure understanding of the information presented.</p>	<ul style="list-style-type: none"> <li>• Examine presentation / hand-out</li> <li>• Engage in discussion</li> </ul>	<p>Presentation and discussion focused on helping students to develop understanding of context clues and how they help readers to clarify meaning during reading.</p>
<p>Read grade level text focused on the physical features of the Jamaican landscape to predetermined stopping points. Engage in a game of “I Spy” where a word, phrase or sentence will be identified and they will search for clues that can aid them in clarifying its meaning. Then shout “I Spy” and direct the class to that portion of the text that provides a clue that may help the class to clarify understanding.</p>	<ul style="list-style-type: none"> <li>• Identify context clues</li> <li>• Use context clues</li> </ul>	<p>Context clues identified are accurate and provide clarity in deciphering the meaning of the word, phrase or sentence.</p>
<p>Observe as teacher utilises think aloud strategy to model using context clues to clarify meaning during reading. Engage in a discussion to highlight the processes engaged in.</p>	<ul style="list-style-type: none"> <li>• Observe teacher model</li> <li>• Engage in discussion</li> </ul>	<p>Model focused on demonstrating the use of context clues to clarify meaning during reading.</p> <p>Discussion evidences active learning of the use of context clues to clarify meaning during reading</p>
<p>Collaborate with their teacher / parent/older sibling to use image capturing device to record them as they read one paragraph of a grade level text and use think aloud to demonstrate how they use context clues to clarify understanding of the text. View video in class or in groups and critique each other’s use of the context clues strategy.</p>	<ul style="list-style-type: none"> <li>• Use think aloud strategy</li> <li>• Use context clues</li> </ul>	<p>Video captured demonstrates students’ use ink aloud strategy to exemplify the use of context clues to clarify meaning during reading.</p> <p>Oral critiques speak to students’ and teacher analysis of the use of context clues to clarify meaning as outlined in the video.</p>

**Focus Question:** “How do we communicate information about our Jamaican landscape?”

**Reading for Information ( Research & Study Skills)**

ATTAINMENT TARGETS	OBJECTIVES
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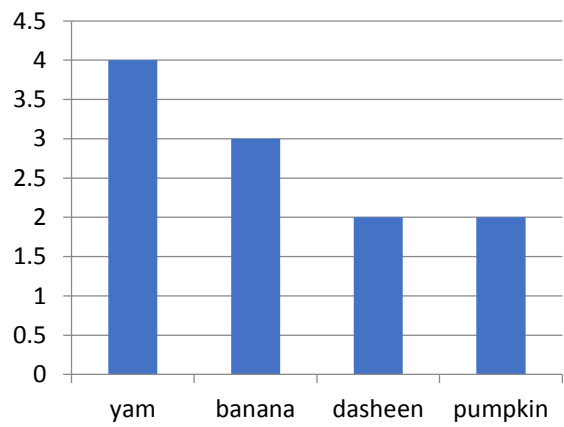
<ul style="list-style-type: none"> <li>• Research activities on issues and interests by generating ideas and exploring texts using a range of strategies</li> <li>• Identify and use text features to support navigation of texts, retrieving and synthesize information gained from a range of sources</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• extract information from graphs and tables</li> <li>• Begin to use on-line sources to locate information</li> <li>• Analyze the effects of text features in locating information</li> </ul>
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SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT
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<p>View samples of graph/tables (picture, bar, etc). Work in groups to discuss the graphs/tables assigned using questions previously prepared. <i>E.g. what do you notice about the layout of the graph? From what direction is the graph read? How are the tables presented?</i> Present their responses from discussion.</p>	<ul style="list-style-type: none"> <li>• View graphs</li> <li>• View tables</li> <li>• Engage in discussion</li> </ul>	<p>Discussions focused on the various types of graphs and their features.</p>
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<p>Work in groups to create a graph/table to reflect the graph/tables assigned previously. Collaborate with teacher to establish the information to be communicated in the graph/tables.</p>	<ul style="list-style-type: none"> <li>• Create graph</li> </ul>	<p>Graphs/tables accurately completed with all the features</p>
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<p>Work in groups to examine graph focused on Jamaican Landscape. Summarize information extracted from graph in at least <b>one</b> paragraph and present in a creative format.</p>	<ul style="list-style-type: none"> <li>• Examine graph</li> <li>• Extract information from graph</li> <li>• Summarize information</li> </ul>	<p>Presentations highlight credible and accurate information extracted from graph</p>
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Read information on Jamaican landscape. Summarize and extract the information read and present it in the form of a table.

Present their tables on cartridge paper ensuring it has a headings, subheadings etc.

Physical Features of Jamaican Landscape			
Rivers	Mountain	Valley	Plains
Rio Grande	Blue Mountain	Lluidas Vale	Georges Plain
Rio Minho	Bull Head Mountain	Queen of Spain	Liguanea Plain

- Summarize information
- Extract information
- Create table

Tables present accurate and succinct information extracted from text

Research the various search engines (Google, Yahoo, YouTube) used in locating information and their purposes. Present findings in class.

- Research information

Presentations demonstrate knowledge of the various search engines and their purposes

View presentation focusing on how to access/locate information. Take turn in utilizing the search engine in locating information about the physical features of the Jamaican Landscape.

- View presentation
- Use search engine

Information located is accurate and shows knowledge on how to utilize various search engines

Visit computer room/homework centre to use the search engine of choice to locate information based on agreed


- Use search engine
- Locate information

Presentations evidence good research technique and excellent manipulation of online sources

<p>topic. Present their findings in class.</p> <p>Be randomly selected to explain the steps taken in retrieving the information using online sources.</p>												
<p>Peruse text before reading to observe the photographs/illustrations, charts, or maps and discuss in their groups what they observed.</p> <p>Read edited text with text features removed. Engage in a discussion on how difficult it was in comprehending the text without the text features.</p> <p>Read original text and note the differences in understanding the text with and without the text features. Note points in their notebooks and share with class.</p>	<ul style="list-style-type: none"> <li>• Take notes</li> <li>• Note differences</li> </ul>	<p>Discussions and notes highlight differences in comprehending text with and without text features</p>										
<p>Work in groups to read and discuss hand-out (<i>see below</i>) on some common text features and their purposes. Note the importance of the text features in locating information. e.g.</p> <table border="1"> <thead> <tr> <th>Text Features</th> <th>Functions</th> </tr> </thead> <tbody> <tr> <td>Captions</td> <td>Help to better understand a picture or photograph</td> </tr> <tr> <td>Glossary</td> <td>Help to define words that are in the book.</td> </tr> <tr> <td>Graphics</td> <td>Charts, graphs, or cutaways that help the reader to understand what the author is trying to convey.</td> </tr> <tr> <td>Index</td> <td>Alphabetical list of ideas that are in the book. It tells the reader which page the idea is on.</td> </tr> </tbody> </table>	Text Features	Functions	Captions	Help to better understand a picture or photograph	Glossary	Help to define words that are in the book.	Graphics	Charts, graphs, or cutaways that help the reader to understand what the author is trying to convey.	Index	Alphabetical list of ideas that are in the book. It tells the reader which page the idea is on.	<ul style="list-style-type: none"> <li>• Note importance of text features</li> <li>• Engage in discussion</li> </ul>	<p>Discussions focus on helping students to develop understanding of text features and their functions</p>
Text Features	Functions											
Captions	Help to better understand a picture or photograph											
Glossary	Help to define words that are in the book.											
Graphics	Charts, graphs, or cutaways that help the reader to understand what the author is trying to convey.											
Index	Alphabetical list of ideas that are in the book. It tells the reader which page the idea is on.											

**Focus Question:** “How do we communicate information about our Jamaican landscape?”

**Language Structure (Grammar & Conventions)**

ATTAINMENT TARGETS	OBJECTIVES	
<ul style="list-style-type: none"> <li>• Write sentences, paragraphs and extended pieces which are grammatically accurate and correctly punctuated, using SJE and JC appropriately</li> <li>• Use and adapt a range of sentence structures according to context, distinguishing between SJE and JC</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Recognise and use collective nouns</li> <li>• Identify and use prepositions of time</li> <li>• Identify and use adverbs of time</li> <li>• Use commas to separate phrases within sentences</li> </ul>	
SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT
<p>View video/pictures on YouTube or multimedia projector of things related to landscape. Talk about the items they saw and say how they are related to landscape. Assign words that may be used to classify groups of things viewed.</p>  <p>In the picture we see a <b>row</b> of cottages near a <b>clump</b> of trees. Out on the lake there is a small <b>group</b> of islands.</p> <p>Engage in discussion highlighting the use of the collective nouns.</p>	<ul style="list-style-type: none"> <li>• Recognise collective nouns by use of diagrams</li> <li>• Discuss the use of collective nouns</li> </ul>	<p>Discussion reflects the ability to recognise collective nouns.</p>
<p>Work in small groups to read passage about Jamaican landscape. Identify other collective nouns in passage and record them. Use the collective nouns identified to create</p>	<ul style="list-style-type: none"> <li>• Identify collective nouns</li> <li>• Use collective</li> </ul>	<p>Collective nouns correctly identified in passage</p>



sentences of their own.	nouns																	
Use online sources to find poems and narratives that refer to landscape. Identify prepositions of time in these poems and narratives which describe the effect of time on the landscape. Discuss how the part of speech functions in the poem.	<ul style="list-style-type: none"> <li>• Identify prepositions of time</li> <li>• Discuss the function of prepositions</li> </ul>	<p>Identify prepositions of time in a range of texts and comment on their effect in the writing</p> <p>Select appropriate prepositions of time to complete sentences and paragraphs.</p>																
Compose short paragraphs about specific rivers in their communities or other communities they may have visited, being sure to include different prepositions of time. Use text editing software to type and then print and place in corner where students' work is displayed.	<ul style="list-style-type: none"> <li>• Enter text</li> <li>• Format text</li> <li>• Use prepositions of time</li> </ul>	Use prepositions of time in narrative compositions to demonstrate understanding of their use																
<p>View a list of words mounted on the board on flash cards. Sort adverbs into the four columns (where, when, how and to what extent) on flip chart on the board.</p> <p>E.g. tomorrow, there, lazily, too, outside, secretly, yesterday, extremely, soon, close, much, slowly.</p> <table border="1"> <thead> <tr> <th>when</th> <th>Where</th> <th>How</th> <th>To What Extent</th> </tr> </thead> <tbody> <tr> <td>tomorrow</td> <td>There</td> <td>Lazily</td> <td>Too</td> </tr> <tr> <td>Yesterday</td> <td>Outside</td> <td>Secretly</td> <td>extremely</td> </tr> <tr> <td>soon</td> <td>close</td> <td>slowly</td> <td>much</td> </tr> </tbody> </table> <p>Collaborate with teacher in a discussion that adverb of time can be classified under 4 heading [<b>when, where, how and to what extent</b>]. Identify additional words which may fall under these columns.</p>	when	Where	How	To What Extent	tomorrow	There	Lazily	Too	Yesterday	Outside	Secretly	extremely	soon	close	slowly	much	<ul style="list-style-type: none"> <li>• Sort adverbs in correct categories</li> </ul>	Discussion reflects an understanding of the categorizing of adverbs.
when	Where	How	To What Extent															
tomorrow	There	Lazily	Too															
Yesterday	Outside	Secretly	extremely															
soon	close	slowly	much															
<p>Identify adverb in sentences and tell what category it is from.</p> <p>Example:  <i>He swam quickly and won the meet. (quickly-how)</i>  <i>I will be there soon. (soon-when)</i></p>	<ul style="list-style-type: none"> <li>• Identify adverbs in sentences</li> <li>• Categorize adverbs</li> </ul>	Adverbs accurately identified and categorized appropriately.																

<p><i>Come inside for dinner. (inside-where)</i>  <i>She is somewhat annoyed. (somewhat-to what extent)</i></p>		
<p>Complete pre-prepared worksheet. Add one appropriate adverb to each sentence from the adverb list created that satisfies the condition listed.  E.g.  The room was decorated for the party. (HOW?)  These are short sentences. (TO WHAT EXTENT?)</p>	<ul style="list-style-type: none"> <li>• Supply adverbs</li> </ul>	<p>Adverbs appropriately supplied and reflect an understanding of adverb of time.</p>
<p>Listen to comma song on YouTube. Identify from song, the rules for using comma. Engage in discussion about the different uses of the comma with exemplary sentences.  <i>[Focus on the four uses that cause the most trouble: <b>joining two independent clauses; separating introductory material in a sentence; separating unnecessary information in a sentence; and separating items in a series</b>]</i></p>	<ul style="list-style-type: none"> <li>• Discuss the uses of comma</li> </ul>	<p>Discussion mirrors knowledge of uses commas.</p>
<p>Work in groups to edit paragraph about Jamaican mountains. Insert commas in the appropriate places in sentence. Share work with class</p>	<ul style="list-style-type: none"> <li>• Use commas to separate phrases within sentences</li> </ul>	<p>Paragraph demonstrates the accurate use of the comma.</p>
<p>Write an essay about “Jamaica’s beautiful landscape”. Collaborate with teacher to ensure at least two uses of comma is incorporated</p>	<ul style="list-style-type: none"> <li>• Write essays</li> </ul>	<p>Essay reflects an ability to use commas appropriately</p>

**Focus Question:** “How do we communicate information about our Jamaican landscape?”

**Communication (Writing)**

<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>
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<ul style="list-style-type: none"> <li>• Develop approaches to the writing process to enable them to organise their ideas into a coherent structure including, layout, sections and paragraphs</li> <li>• Write well-constructed paragraphs which have linking sentences within and between them</li> <li>• Write to narrate, to persuade and for a range of transactional purposes, using SJE and JC appropriately and incorporating multi -media approaches to their writing</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• Use picture prompts to compose simple narratives</li> <li>• Apply the writing process to compose letters for a variety of purposes</li> <li>• Write information pieces and reports to include relevant features/elements</li> </ul>
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<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b> <b>STUDENTS WILL:</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
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Watch video/listen to audio clip to review basic story elements and engage in whole class discussion.	<ul style="list-style-type: none"> <li>• Review story elements</li> </ul>	Discussion focused on clarifying understanding of the basic story elements.
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In groups cut pictures fro magazines or take photos with a digital camera (field trip to the river, mountain, plain etc.) Arrange the picture in order and write captions, much the same as with a storyboard. Decide on a final order for the story then compose simple narratives to reflect the pictures/photos arranged on the story board.	<ul style="list-style-type: none"> <li>• Compose narratives</li> </ul>	<p>Story boards showcase logical organization of pictures/photos.</p> <p>Narratives capture ideas and events in pictures/photos as outlined on storyboard and include basic story elements.</p>
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<p>Write letters to friends sharing details about aspects of the Jamaican landscape which might be particularly appealing to tourist. Give special attention to the following:</p> <ul style="list-style-type: none"> <li>• Use of the writing process to ensure high quality pieces</li> <li>• Use of appropriate format</li> <li>• Inclusion of content relevant to the task given</li> </ul>	<ul style="list-style-type: none"> <li>• Use the writing process</li> <li>• Compose friendly letters</li> </ul>	<p>Letters accurately detail features of the Jamaican landscape and include all the elements of a friendly letter.</p>
<p>Review sample informational texts, including reports, to identify common elements/features. Then engage in whole class discussion. Collaborate with teacher to design chart with these features/elements. Mount completed chart for further reference.</p>	<ul style="list-style-type: none"> <li>• Identify elements of informational text</li> </ul>	<p>Charts outline major features/elements of informational texts</p>
<p>Use the writing process to compose informational texts and reports on topics related to the Jamaican landscape. Engage in peer review to check for inclusion or absence of related elements/ features.</p>	<ul style="list-style-type: none"> <li>• Compose informational text</li> </ul>	<p>Informational texts exemplify good use of the features/elements studied and is related to the theme/topic of focus.</p>

### Learning Outcomes

#### Students will be able to:

- ✓ Demonstrate active listening and appropriate speaking techniques when communicating with their peers and others
- ✓ Build word recognition skills by reading grade appropriate sight words and using word structure to aid decoding
- ✓ Extend vocabulary by using different structural elements – compound words, affixes
- ✓ Improve the quality of their writing by applying stages of the writing process
- ✓ Apply techniques of summarizing and inference to determine meaning from texts
- ✓ Demonstrate competence in the use of the structures and conventions of Standard Jamaican English

#### Points to Note

- The use of the Communication Protocol should become part of the daily drill for students and may be applied in a range of communication contexts.

#### Extended Learning

- Students should practise the Communication Protocol at home and in the wider community.
- They also practise the use of grammatical structures learnt -

<ul style="list-style-type: none"> <li>• Students should be carefully supervised as they use the Internet.</li> <li>• The unit includes link to other subjects including Drama (role-play), Social Studies (Jamaica physical landscape) Science (pollution, soil erosion, deforestation, land mining) Visual Arts (digital stories) ICT (emailing)</li> </ul>	<p>interrogatives, negatives, etc. - in these contexts.</p>
<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Social Studies text(s)</li> <li>• Class reader(s) with stories, poems, expository pieces related to the physical landscape</li> <li>• Supplementary reading materials – books related to the physical landscape, advertisements, pamphlets, posters</li> <li>• Communication Protocol Chart</li> <li>• Observation Checklist</li> <li>• Multimedia projector and laptop or overhead projector</li> <li>• Grade 4 Word List</li> <li>• Digital/analogue recording device</li> <li>• Internet</li> </ul>	<p><b>Key vocabulary</b></p> <ul style="list-style-type: none"> <li>• Communication Protocol</li> <li>• Skim</li> <li>• Scan</li> <li>• Landscape</li> <li>• Environmental</li> <li>• Compound subjects</li> <li>• Compound predicates</li> <li>• Writing process</li> </ul>

## LANGUAGE ARTS UNIT – Term 2 - Unit 2

### INTRODUCTION TO THE UNIT

In this unit students will be exposed to activities which will further enhance the skills developed in previous units. The theme for this unit is 'Exploring Science and the Environment' with the sub-theme being 'Water'. The unit provides an opportunity for students to use language in an inhibited way through the Speak Easy Mode and role play but also provides an avenue for language selection based on context and audience. Students are also provided with the opportunity to use language effectively and confidently in more formal contexts such as for a debate or reporting and are challenged to listen to provide structured feedback using set rubrics. The unit explores a range of word recognition and word building activities by extending structural analysis skills such as the use compound words, affixes and syllabication. The use of context clues and the validation of word meaning through the use of the dictionary are also addressed. Comprehension activities promote the use of meaningful strategies such as Think Aloud and Question and Answer Relationship (QAR) to help students in effectively using their skills of visualising, summarizing and analysing, among others, to access meaning. Students are provided with activities to build the grammatical skills and conventions of using different sentence types together with their relevant punctuation marks; identifying and using reflexive pronouns; determining the parts of speech of words based on their functions in different contexts and reinforcing the use of the tenses and linking/transitional words and phrases. The writing tasks, which address a range of text forms including descriptive, persuasive and information pieces, give students the opportunity to integrate the skills learnt in research and language structure strands. The use of the writing process to refine the quality of pieces is also promoted in this unit.

Most of the activities give students an opportunity to practise specific language skills. The teacher may need, however, in some cases, to explicitly teach rules, structures and strategies prior to these activities. The content outline for grade 4 must therefore be consulted for details on the scope of content/skills to be delivered.



**Prior Learning**

Check that students:

- Are able to apply basic listening and speaking techniques
- Know sight words appropriate to the grade level
- Are able to identify and use structural analysis skills to aid word recognition
- Know basic skills of comprehension – recalling and recognizing ideas, , identifying main ideas and supporting details, inferring details
- Know how to use major parts of a book and text features to aid research or the location of information
- Understand the basic steps in the writing process
- Know simple debating tips

**Focus Question:** “How do I read, find and share information about water?”

**SPEAKING & LISTENING**

**ATTAINMENT TARGETS**

- Listen to, recall, understand and respond to speakers’ messages, whether implicit or explicit
- Recognise, value and make distinctions between home language and SJE to improve/acquire language and literacy competencies
- Communicate with confidence and competence for different purposes and audiences, using SJE and JC appropriately and creatively

**OBJECTIVES**

Students will:

- Listen to and assess the speech of others
- Use language to express different feelings e.g. humour, empathy, fear
- Use language forms – SJE/JC - appropriately
- Demonstrate confidence and conviction while communicating

**ICT ATTAINMENT TARGETS:**

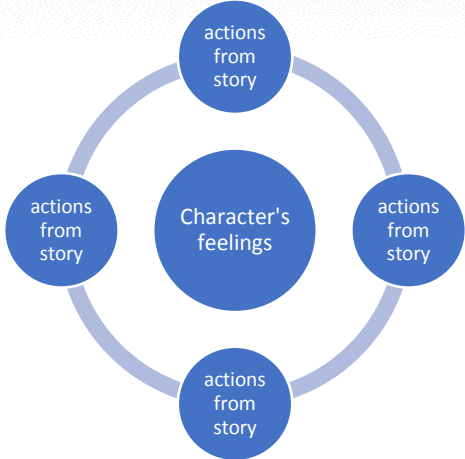
- **ICT ATT 1 COMMUNICATION AND COLLABORATION**-use technology to communicate ideas , information and understanding for a variety of purposes
- **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING**- students will use technology to develop a logical process for decision making and problem solving
- **DIGITAL CITIZENSHIP**- students recognize the ethical, social and legal issues and implications surrounding the use of technology


<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
Engage in discussion /peruse PowerPoint presentation regarding factors that contribute to good presentation and listening behaviours. Work in groups to capture these elements in a list format on chart or other graphic organisers.	<ul style="list-style-type: none"> <li>• Use language appropriately</li> <li>• Listen actively</li> <li>• Speak clearly</li> </ul>	<p>Discussion focused on developing understanding of good listening behaviours and presentation styles.</p> <p>Graphic organiser captures tips/elements of good listening behaviours and presentation styles in list/bullet format.</p>
Listen to previously captured recordings of their class/school mates and judge the appropriateness of the language used. Engage in discussion about their assessment of the speeches heard.	<ul style="list-style-type: none"> <li>• Assess speech</li> </ul>	Discussions focused on assessing the speech of their class/schoolmates.
Use role play (in SJE/JC) to express varying emotions (fear, despair, complacency) related to real or imagined water woes in their communities. Respond to the presentation of peers using SJE.	<ul style="list-style-type: none"> <li>• communicate emotions</li> <li>• Listen to respond</li> <li>• Use SJE/JC</li> </ul>	Presentation and responses focused on highlighting the varying uses of language to communicate emotions and speak to the topic under study.
Using team approach, debate given topics E.g. “Water is life”. Research topic and prepare relevant ideas to support position. Present convincing position using SJE/JC appropriately and demonstrate confidence and conviction while speaking. Receive and respond to feedback based on the use of rubric (to check on number of relevant points made, language use, language to express feeling and confidence/conviction ) from class panel	<ul style="list-style-type: none"> <li>• Use SJE/JC appropriately</li> <li>• Listen with a purpose</li> <li>• Display confidence</li> </ul>	Debate results in good use of the language forms to present accurate and convincing arguments
Imagine that their school is putting on a special project relating to the theme ‘Water’ and a news reporter will be coming to the school to report on the activity in a live outside broadcast. Assume the role of reporter and students. In role, supply relevant details and select and use appropriate language form – SJE/JC or a mix – which satisfies the more formal role of the reporter and a less formal but at least an	<ul style="list-style-type: none"> <li>• Use SJE/JC appropriately</li> </ul>	Recordings exemplifies appropriate use of both SJE and JC based on context and audience

approximation of formality on the part of students. Record the proceedings; observe; critique		
<b>Focus Question:</b> "How do I read, find and share information about water?"		
<b>Reading With Fluency and Recognition (Word Recognition &amp; Vocabulary Development)</b>		
<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>	
<ul style="list-style-type: none"> <li>Use a range of word recognition clues to identify new words</li> <li>Spell words accurately by using knowledge of letter-sound correspondences, morphological knowledge and etymological information</li> <li><b>Build</b> vocabulary through various strategies</li> </ul>	Students will: <ul style="list-style-type: none"> <li>Identify and correct common miscues in reading (self-correction, insertion, omission, repetition and substitution)</li> <li>clarify meaning of words through the use of a dictionary</li> <li>Identify and use sight words appropriate to grade level</li> <li>Defend their use of particular strategies to decode/encode unfamiliar words and meaning</li> </ul>	
<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
<b>STUDENTS WILL:</b>		
Engage in a discussion focused on highlighting and explaining common miscues that students' make during reading. Talk about and cite examples of miscues that are good (don't affect meaning) and miscues that are bad (affect the meaning of the text)	<ul style="list-style-type: none"> <li>Engage in discussion</li> <li>Cite examples of miscues</li> </ul>	Discussion focused on helping students to develop understanding of the common errors made during reading and identify those that changes the meaning of the text (bad miscues) and those that do not (good miscues).
Read a grade level text and be recorded by the teacher. Listen to the tape to identify errors of self-correction, insertion, omissions, repetitions and substitutions. Discuss with their teacher whether or not the errors can be considered good miscues or bad miscues.	<ul style="list-style-type: none"> <li>Identify miscues</li> <li>Engage in discussion</li> </ul>	Miscues accurately identified. Discussion focused on whether or not the errors are good or bad miscues.
Use word clues in sentences read to determine the meanings of targeted words. E.g. <i>The farmers were suffering from a <b>scarcity</b> of water so they had to buy some from the water truck.</i> Students will then say what clue words assisted them in	<ul style="list-style-type: none"> <li>Use context clues to decipher meaning of words</li> <li>Use dictionary</li> </ul>	Dictionary accurately used to confirm word meanings and clues accurately identified

figuring out the meanings and use dictionary/internet to validate/clarify meanings.	<ul style="list-style-type: none"> <li>• Use internet</li> </ul>	
Participate in a Dictionary Quiz game that will require them to utilize the dictionary to identify and clarify multiple meanings of grade level words relating to the theme.	<ul style="list-style-type: none"> <li>• Use dictionary</li> <li>• Clarify word meaning</li> </ul>	Dictionary accurately used to identify and clarify word meanings during quiz competition
Participate in a 'spellathon' and gain team points by spelling words related to water pollution, using syllabication strategy, e.g. contaminate, pollute, bacteria, diseases, and immunity.	<ul style="list-style-type: none"> <li>• Spell sight words</li> </ul>	Sight words correctly spelt and evidence the use of syllabication to aid pronunciation and spelling.
Work in groups to write sight words relating to different aspects of the theme. Collate all the sight words and create a class word wall. Engage in identifying and using grade level sight words from word wall using a variety of word wall chants.	<ul style="list-style-type: none"> <li>• Identify sight words</li> <li>• Use sight words</li> </ul>	Sight words relating to the theme are accurately identified, spelt and used during word wall chant activities.

<b>Focus Question:</b> “How do I read, find and share information about water?”		
<b>Reading for Meaning and Enjoyment (Comprehension)</b>		
<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>	
<ul style="list-style-type: none"> <li>• Read for meaning, fluency and enjoyment of texts, using a variety of clues to gain information and identify ideas and events</li> <li>• Use deduction and inference to interpret information and ideas and to predict outcomes</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Deduce character feelings and traits from a description of their actions</li> <li>• Interpret and clarify information in text by visualizing and creating mental pictures</li> <li>• Analyse cause and effect relationship in texts</li> <li>• Determine the relationships between questions and answers when responding to texts</li> <li>• Willingly participate in group discussion and activities during reading activities</li> </ul>	
<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
<b>STUDENTS WILL:</b>		
Be randomly selected by the teacher to demonstrate various actions to depict a particular feeling. Deduce the information garnered from the demonstration to guess at the characters feelings. Engage in a teacher led discussion focused on developing an understanding of the process of deduction.	<ul style="list-style-type: none"> <li>• Deduce information</li> <li>• Engage in discussion</li> </ul>	Demonstration provides actions that would help others to deduce feelings of the particular character  Discussion focused on helping students to understand how to deduce characters feelings based on actions
Read grade level narrative text about water safety, diseases, sources etc. Highlight (circle, underline etc.) the actions of the major and minor characters and deduce their feelings based on the actions outlined. Utilise a graphic organiser to present the information deduced as well as the direct actions of the characters from the story. E.g.	<ul style="list-style-type: none"> <li>• Deduce character feelings</li> </ul>	Highlighted portions of the text captures characters actions  Graphic organisers accurately deduces characters’ feelings and outlines the actions highlighted in text

		
<p>Be placed in group by the teacher and assigned a specific character. Work in their teams to search in the classroom for picture clues that depicts actions of their assigned characters. Meet as a group to examine the pictures found and deduce the feelings of the character based on the actions seen in the pictures. Create a collage with the pictures found and the characters' feelings deduced.</p>	<ul style="list-style-type: none"> <li>• Deduce character's feelings</li> <li>• Create picture collage</li> </ul>	<p>Character feelings deduced are accurate and based on the actions outlined in the pictures</p> <p>Picture collage depicts pictures found and the character feelings deduced.</p>
<p>Work with a partner and use text provided by the teacher to describe pictures that they would create in their minds. Share with the class. Engage in a teacher led discussion focused on formally introducing the visualising strategy.</p>	<ul style="list-style-type: none"> <li>• Create mind pictures</li> <li>• Engage in discussion</li> </ul>	<p>Mind pictures created are aligned with the information presented in the text</p>
<p>View and discuss teacher prepared/sourced Visualising Strategy poster. Discuss the processes involved in creating mental images/pictures during reading, the importance of visualising as well as how it aids comprehension. Articulate personal experiences with creating mental images during reading.</p>	<ul style="list-style-type: none"> <li>• Engage in discussion</li> <li>• Articulate experiences</li> <li>• Discuss importance of visualising</li> </ul>	<p>Discussion evidences students understanding of the visualising strategy, the processes involved, and its importance as well as how it aids comprehension.</p> <p>Experiences articulated speak to students' use of the visualising strategy during reading.</p>
<p>Work in groups to select and read grade level text focused on any topic related to water. Take turns to demonstrate their understanding and use of the visualising strategy. Use teacher prepared checklist to</p>	<ul style="list-style-type: none"> <li>• Use visualising strategy</li> <li>• Critique use of</li> </ul>	<p>Demonstrations reflect accuracy in students' understanding and use of the visualising strategy.</p>

guide their peers' use of the strategy during reading.	visualising strategy	Completed checklists reflect peers' use of the visualising strategy.
Collaborate with teacher to analyse the cause and effect relationships in grade level texts relating to water safety and water borne diseases. Discuss and evaluate the use of cause and effect relationship structure in the text selected	<ul style="list-style-type: none"> <li>Analyse cause and effect relationship</li> </ul>	Analysis accurately speaks to the use of the cause and effect text structure in the text selected.
Read and discuss grade level material related to water, then determine cause or effect related to given phrases by playing Cause and Effect Game. Read given card with cause or effect then find partner with matching portion. Stand in pairs and share their full cause & effect statements with the class	<ul style="list-style-type: none"> <li>Link cause and effect</li> </ul>	Cause and effect statements accurately matched and shared with class.
Respond to given scenarios by supplying a suitable cause or effect for scenarios relating to water (E.g. <i>The animals died...there was a drought.</i> ).	<ul style="list-style-type: none"> <li>Determine cause and effect relationships</li> </ul>	Causes and or effects supplied are accurately aligned to the scenarios given
Collaborate with teacher to peruse and discuss Question and Answer Relationship (QAR) poster. Work in groups to use the poster to establish relationship between questions asked by the teacher and the responses provided by their classmates.	<ul style="list-style-type: none"> <li>Peruse strategy poster</li> <li>Engage in discussion</li> <li>Establish question and answer relationship</li> </ul>	<p>Discussion focused on explaining and developing understanding of the relationship between questions and the answers required.</p> <p>Responses provided demonstrates understanding of the use of the QAR strategy to respond to questions at different levels</p>
<p>Listen to and/or read expository or narrative passage about water and use Question and Answer Relationship (QAR) strategy to answer questions at the various levels. Create their own symbols to indicate where they found their answers to the questions; talk about what words in the question assisted them in finding their answers</p> <p>E.g.  for 'in my head' answers</p>	<ul style="list-style-type: none"> <li>Answer questions at various comprehension levels (literal, inferential, critical)</li> <li>Determine the relationship between questions and answers</li> </ul>	Question and Answer relationship strategy used to establish relationship between questions asked and answers provided.



**Focus Question:** “How do I read, find and share information about water?”

**Reading for Information ( Research and Study Skills)**

**ATTAINMENT TARGETS**

**OBJECTIVES**

Identify and use text features to support navigation of texts, retrieving and synthesize information gained from a range of sources

- Students will:
- Interpret information presented using maps
  - Begin to organize information located from various sources
  - Analyze the effects of text features in locating information
  - Evaluate the effectiveness of text features used by peers to develop own fiction and non-fiction texts
  - Continue to develop ability to navigate different library sources

**SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:**

**KEY SKILLS**

**ASSESSMENT**

View and discuss teacher prepared presentation/hand-out focusing on how to utilize the key when extracting from or locating information on a map.

- View presentation/hand-outs
- Engage in discussion

Discussions focused on how to use *Keys* to locate and extract information from maps

Pay attention to symbols used to represent physical land features relating to water (*blue line – rivers*).

Work in groups to peruse and discuss a variety of map keys supplied by the teacher. Share the differences and similarities identified with class.

- Identify elements on map key
- Engage in discussion

Discussions focused on the elements identified on various map keys

Use teacher prepared/sourced map to locate different information on the sources of water in Jamaica and to respond to teacher prepared questions.

- Locate and Interpret information

Information located and responses provided demonstrates knowledge/understanding of map reading skills

Observe as teacher models how to summarize and organize information from at least three (3) different

- Engage in discussion
- Observe teacher

Brainstorming session focused identifying and discussing the processes/steps taken by

<p>sources.</p> <p>Engage in a brain storming session focused on discussing the demonstration observed.</p>	<p>demonstration</p>	<p>the teacher in summarizing and organizing information from different sources</p>
<p>Work in groups to visit a parish/school/classroom library and have each group member locate and extract information on rivers from a different source (magazine, flyer, encyclopaedia, text book, etc.)</p> <p>Collaborate with group members to summarize and organize the information located and extracted from the different sources. Present the information using a pamphlet, booklet, chart, etc.</p> <p>Make journal entries to reflect new information learnt about using various library sources</p>	<ul style="list-style-type: none"> <li>• Use library sources</li> <li>• Summarize information</li> </ul>	<p>Pamphlets, booklets, charts, etc. evidences information extracted and summarized</p> <p>Journal entries reflect students learning as they explore various library sources.</p>
<p>Review how information is presented using maps, tables and graphs. Peruse samples sourced by the teacher or found in Grade level text. Discuss their effectiveness in helping the reader to understand information.</p>	<ul style="list-style-type: none"> <li>• Review information</li> <li>• Analyse text features</li> </ul>	<p>Revision highlights features of maps, tables and graphs and the type of information each is used to present.</p>
<p>Read information on water, its uses, importance, sources, and diseases from at least three (3) different sources</p> <p>Work in groups to use either a map, table, or graph to present a summary of the information located from the different sources.</p> <p>Exchange completed work and examine how the text features are used and state whether they agree or disagree and why.</p>	<ul style="list-style-type: none"> <li>• Use text features</li> <li>• Evaluate text features</li> </ul>	<p>Maps, tables and graphs depicts summary of information gathered from consulting various sources.</p>

**Focus Question:** “How do I read, find and share information about water?”

**Language Structure ( Grammar & Conventions)**

<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>	
<ul style="list-style-type: none"> <li>• Use and adapt a range of sentence structures according to context, distinguishing between SJE and JC</li> <li>• Write sentences, paragraphs and extended pieces which are grammatically accurate and correctly punctuated, using SJE and JC appropriately</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• Use object pronouns correctly</li> <li>• Learn and use basic sentence types – interrogative imperative and declarative</li> <li>• Practise the use of punctuation marks (full stop, quotation marks, question mark) in context of composing different sentence types</li> <li>• Learn and use linking/transitional words appropriately</li> <li>• Determine parts of speech based on word functions</li> <li>• Practice the use of present, past and continuous tense</li> </ul>	
<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b> <b>STUDENTS WILL:</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
<p>Observe the use of object pronouns in sentences. State where in a sentence an object pronoun would be used. In collaboration with teacher, discuss the rules which govern the use of object pronouns.</p>	<ul style="list-style-type: none"> <li>• Discuss rules for object pronouns.</li> </ul>	<p>Discussion focused on the use of object pronouns and rules that govern same.</p>
<p>Compose sentences about theirs, as well as other person’s experiences with water using object pronouns (me, us, them, you, him, it, her). Share with class</p>	<ul style="list-style-type: none"> <li>• Use object pronouns</li> </ul>	<p>Completed sentences reflect the use of appropriate reflexive pronouns</p>
<p>Play pronoun games with reflexive and object pronouns. Work in two teams with a stack of cards containing pronouns, turned face down. Pick up a card, look at the pronoun and has 10 seconds to think of a sentence with that pronoun. [Depending on the level of the students, teacher may want to allow more time]. Select a scorekeeper and time keeper from</p>	<ul style="list-style-type: none"> <li>• Play pronoun games</li> </ul>	<p>Sentences reflect correct use of reflexive and object pronouns</p>

among themselves		
Review hand-out/presentation relating to the three basic sentence types (interrogative imperative, declarative) and the different punctuations employed in writing each type. Work in small groups to use the information learnt to complete a table outlining the names of the type of sentence, punctuation used and examples of sentences.	<ul style="list-style-type: none"> <li>Identify types of sentences</li> <li>Use punctuation marks</li> </ul>	Completed tables outline the correct alignment of information for each sentence type, punctuation used and examples cited.
Listen as teacher reads or requires that they compose different types of sentences. Then move to the corner of the classroom that represents those types of sentence (corners would have been labelled previously by the teacher). Be eliminated from the game if they move to the incorrect corner. Get a sticker if they move to the correct corner and be awarded a badge for having the most stickers.	<ul style="list-style-type: none"> <li>Identify types of sentence</li> <li>Compose types of sentences</li> </ul>	Game played with a focus on getting students to identify and compose various types of sentences
Complete worksheet that requires that they rewrite sentences about water to reflect different sentence types and insert appropriate punctuation marks.	<ul style="list-style-type: none"> <li>Convert sentences</li> <li>Use punctuation marks</li> </ul>	Worksheet completed with sentences correctly converted and correct punctuation marks utilised.
Convert statements about water to commands; e.g. statement – <b><i>I would love to see the waterfall</i></b> becomes the command/imperative – <b><i>Show me the waterfall.</i></b>	<ul style="list-style-type: none"> <li>Rewrite statements as commands</li> </ul>	Sentences demonstrate the ability to convert statements to command sentences.
Engage in teacher collaborated discussion about transitional words and the different kinds. Eg Transitional of time which helps the reader know the order of events in a story. [Different transitional words change the meaning of sentences.  E.g. Dad and I went fishing. Mom made lunch. <ul style="list-style-type: none"> <li>Dad and I went fishing/<b><i>Meanwhile</i></b>/Mom made lunch</li> <li><b><i>After</i></b>/Dad and I went fishing,/Mom made lunch</li> </ul>	<ul style="list-style-type: none"> <li>Discuss the functions of transitional words in sentences</li> </ul>	Discussion fosters an understanding of the function of transition words in sentences.

<ul style="list-style-type: none"> <li>▪ <b>Before</b>/Dad and I went fishing,/Mom made lunch</li> <li>▪ Dad and I went fishing/<b>after</b>/Mom made lunch</li> <li>▪ <b>While</b> /Dad and I went fishing/Mom made lunch</li> </ul> <p>Discuss how the transitional words change the meaning of the sentences by changing the sequence (order) of events</p>		
<p>Combine sentences using signal words e.g. signal words in <i>comparing</i> water with other liquids (like, in the same way, similarly, just as); signal/linking words <i>for giving reasons</i> (for, because, since); transitional words <i>for sequence</i> (first, next, in addition, another) to give more cohesive information</p>	<ul style="list-style-type: none"> <li>• Use linking/transitional words to meaningfully combine sentences</li> </ul>	<p>Sentences demonstrate their ability to combine sentences using linking/transitional words appropriately</p>
<p>Indicate at the end of given sentences, whether the word 'water' is being used as a noun, verb, or adjective. E.g. I like to drink <i>water</i> every morning before I eat. It is my duty to <i>water</i> the plants. The <i>water</i> jug is broken Compose sentences to show use of words related to aspects of the theme 'water' as different parts of speech</p>	<ul style="list-style-type: none"> <li>• Identify and use parts of speech</li> <li>• Use words as different parts of speech</li> </ul>	<p>Parts of speech accurately identified</p> <p>Sentences correctly communicate the meaning of the target word based on part of speech selected</p>
<p>Reinforce understanding of basic identification of verbs. View pictures from a multimedia projector, construct their own sentences about the picture, share with class and identify the verbs.</p> <div> </div> <p>E.g. The children <b>are playing</b> with the ball.</p>	<ul style="list-style-type: none"> <li>• Construct sentences</li> <li>• Identify verbs</li> </ul>	<p>Sentences properly constructed based on pictures viewed and verbs identified.</p>
<p>Observe sentences on sentence strips written in various tenses [<b>present, past and continuous</b>]. Identify what tense</p>	<ul style="list-style-type: none"> <li>• Identify verb tense</li> <li>• Discuss rules for verbs</li> </ul>	<p>Sentences labelled with correct verb tense</p>

<p>each sentence is written in and tell how they arrive at their answer. Discuss the rules/tips that will assist them in identifying the tense of verbs.</p> <p>E.g. The sun <b>rises</b> in the east  I am <b>writing</b> a letter to my aunt.  Mom <b>cooked</b> pasta yesterday.</p> <p>NB. Tense of a word shows the time of an action</p>		<p>Discussion focuses on rules and tips that indicate verb tenses</p>
<p>Write a paragraph entitled "A day without water". Use appropriate tenses in their writing. Proof read classmate work for correct tense. Share script and mount in writing corner.</p>	<ul style="list-style-type: none"> <li>• Write paragraph</li> </ul>	<p>Paragraph created reflects the accurate use of tenses</p>

**Focus Question:** “How do I read, find and share information about water?”

**Communication (Writing)**

<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>
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- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Develop approaches to the writing process to enable them to organise their ideas into a coherent structure including, layout, sections and paragraphs</li> <li>• Write to narrate, to persuade and for a range of transactional purposes, using SJE and JC appropriately and incorporating multi -media approaches to their writing</li> <li>• Write well-constructed paragraphs which have linking sentences within and between them</li> </ul> | <p>Students will:</p> <ul style="list-style-type: none"> <li>• Write descriptive pieces, using adjectives and adverbs appropriately and with appeal to the senses</li> <li>• Formulate relevant questions to guide simple interview</li> <li>• Review their writing and make adjustments where necessary</li> </ul> |
|---|---|

<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
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<p><b>STUDENTS WILL:</b></p> <p>Use a web to record words that could be used to describe a scene at a water fall, beach, river etc. write descriptions using adjectives and adverbs appropriately to suit the scene selected. Compose descriptive pieces based on prompt given by the teacher.</p> <div style="text-align: center;"> </div>	<ul style="list-style-type: none"> <li>• Use adjectives and adverbs appropriately</li> <li>• compose descriptive texts</li> </ul>	<p>Web completed with appropriate descriptive words to match the scene targeted.</p> <p>Descriptive texts are vibrant, engaging, appealing to the senses, and employs appropriate use of adjectives and adverbs to create vivid imagery in the readers mind.</p>
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- |   |   |   |
|---|---|---|
| <p>Peruse given headings (objectives, actual functions, challenges and achievements) related to a local organisation responsible for an aspect of water management, such as the</p> | <ul style="list-style-type: none"> <li>• Formulate questions</li> <li>• Conduct simple</li> </ul> | <p>Interview schedule template populated with questions formulated using given headings/sub-headings.</p> |
|---|---|---|



<p>National Water Commission or National Irrigation Commission Water storage/treatment facility. Work in groups to turn headings into questions and capture on interview schedule template provided by teacher.</p> <p>Participate in a field trip to the organisation/facility and conduct a simple interview. With the assistance of teacher, capture the visit on a recording device and playback in class for discussion.</p> <p>Compose simple report on return, using responses to questions. Reports should utilise an acceptable format, should reflect accurate use of the tenses and utilise transitional/linking words and phrases to effectively communicate ideas.</p>	<p>interview</p> <ul style="list-style-type: none"> <li>• Compile ideas for reporting</li> <li>• Prepare simple reports using acceptable format(s)</li> </ul>	<p>Discussion focused on information relevant in composing reports</p> <p>Reports utilise acceptable format and reflect accuracy and completeness in information garnered</p>
<p>Peruse sample revising checklist and select items relevant to reviewing reports and descriptive texts. Use selected items to develop a revising checklist for the class.</p> <p>Use completed checklist to revise own work or that of their peers as they employ the use of the writing process.</p>	<ul style="list-style-type: none"> <li>• Develop checklist</li> <li>• Revise written work</li> </ul>	<p>Checklist includes item relevant to writing reports and descriptive texts.</p>
<p><b>Learning Outcomes</b>  <b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>✓ Demonstrate the ability to listen to assess the speech of others, to use SJE/JC appropriately and to communicate effectively and confidently using language for creative and other purposes</li> <li>✓ Apply structural analysis clues and strategies (compound words , syllabication, affixes ) to recognise words and to spell/build vocabulary and apply correction of miscues while reading</li> <li>✓ Use the dictionary to check on word meaning determined by context</li> <li>✓ Use skills of visualising, inferring, previewing, summarizing, making and checking predictions, linking cause and effect and analysing information to make meaning of texts</li> <li>✓ Determine the relationship between questions and answers as a means of efficiently locating /determining the responses to different levels/types of questions</li> <li>✓ Use text features, as well as online and other sources to efficiently locate needed information</li> <li>✓ Identify and generate different sentence types – declarative, interrogative, and imperative – including the use of punctuation marks (full</li> </ul>		

stop, quotation marks, question marks)

- ✓ Use reflexive pronouns appropriately in sentences and other written pieces
- ✓ Determine parts of speech based on the function of words in context
- ✓ Review and continue to accurately use the different tenses accurately
- ✓ Develop guiding questions for simple interviews
- ✓ Compose a range of extended written pieces including informative paragraphs, descriptions, story frames, letters, reports, and persuasive pieces to demonstrate their ability in appropriately constructing paragraphs, using adjectives and adverbs effectively and in using linking/transitional words and phrases appropriately to ensure proper sequencing and seamless flow of ideas
- ✓ Use the writing process to build writing competencies

#### Points to Note

- The unit provides links to other subjects, e.g.
  - Social Studies/Science (Water)
  - Drama –(Speak easy Mode, role-play)
  - Information technology – (Use of online sources, software)
- Some skills outlined in previous units may need to be reinforced.
- Students should be carefully supervised as they use the Internet.
- Comprehension skills are to be taught explicitly
- Ensure that students are engaged in before, during, and after reading activities
- Use a variety of methods to share text with students- shared reading, guided reading, read aloud etc.
- The different modes of writing should be accommodated (write aloud, shared writing, guided writing, collaborative writing, independent writing)

#### Extended Learning

- Practice public speaking in other situations outside the classroom
- Write and display instructions in the home on for example how to conserve water
- Use context clues to decipher meaning of words they come across in other situation outside the classroom

#### Resources

- Social Studies text(s)
- Class reader(s) with stories, poems, expository pieces related to water
- Supplementary reading materials – books related to the theme
- Multimedia projector and laptop or overhead projector
- Grade 4 Word List
- Blank story frame

#### Key vocabulary

- Water pollution – contaminate, pollute bacteria, diseases, immunity, etc.
- Water treatment – purify, bleach storage, filter, boil, etc.
- General vocabulary – necessary, important, vital, essential, health, existence, scarcity, water woes, community, etc.
- Standard Jamaican English (SJE)
- Jamaican Creole (JC)

- Interactive word chart
- Word list Word wheel
- Models of good writing – descriptions, letters, etc.
- Editing checklist
- Graphic organizers
- Story frame
- internet

- Speak Easy Mode
- Visualize
- Main ideas
- Summarize
- Think Clouds
- Reflexive pronouns
- Question and Answer Relationship (QAR)
- Linking/transitional words and phrases
- Text features
- Writing process
- Story frame

## LANGUAGE ARTS UNIT – Term 3

### INTRODUCTION TO THE UNIT

This unit seeks to build on the skills taught in Terms 1 and 2 via the theme of 'The Physical Environment' and the sub-theme 'The Weather.' It reinforces the development of active listening and appropriate listening skills introduced in earlier units through the discussion of national issues and the sharing of responses to creative performances. It also attempts at developing reading fluency through the application of the grade appropriate word recognition strategies of sight words, and structural elements such as inflectional endings and affixes. Students are given the opportunity to learn and apply the skills of previewing, summarizing and analysing information. They are also able to locate information through the use of text features. In this unit, they also continue to practise the use of stages of the writing process in an attempt to produce well-written pieces

Most of the activities give students an opportunity to practise specific language skills. The teacher may need, however, in some cases to explicitly teach rules, structures and strategies prior to these activities. The content outline for grade 4 must therefore be consulted for details on the scope of content/skills to be delivered.

### Prior Learning

Check that students:

- Know basic communication skills subsumed under the Communication Protocol
- Understand the concepts of skimming and scanning
- Know how to identify main ideas and supporting details
- Can form and use the present, past and future tenses
- Have working knowledge of the writing process

### **UNIT OF WORK GRADE 4 - TERM 3 ( 9 weeks )**

**Focus Question:** “How do we respond to different aspects of weather using oral and written language?”

#### **SPEAKING & LISTENING**

##### **ATTAINMENT TARGETS**

- *Listen to, recall, understand and respond to speakers' messages, whether implicit or explicit*
- *Communicate with confidence and competence for different purposes and audiences, using SJE and JC appropriately and creatively*
- *Explain and comment on speakers' use of language, including use of SJE and JC, and their use of vocabulary, grammar and other features*

##### **OBJECTIVES**

Students will:

Practise the following skills introduced in terms 1 and 2:

- Respond to enjoyable features of different creative pieces, using SJE
- Respond to the effectiveness of language choices
- Generate and answer questions from stories heard
- Select and use language forms appropriately
- Monitor their own listening and that of their peers by applying specific strategies

##### **ICT Attainment Targets**

- **DESIGN & PRODUCING**-students use technology to design and produce multimedia products to demonstrate their creative thinking.
- **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING**-students will use technology to develop a logical process for decision making and problem solving.
- **COMMUNICATION AND COLLABORATION**-use technology to communicate ideas , information and understanding for a variety of purposes
- **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING**- students will use technology to develop a logical process for decision making and problem solving
- **DIGITAL CITIZENSHIP**- students recognize the ethical, social and legal issues and implications surrounding the use of technology

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT
<p>Select and read grade level texts related to weather. Compose creative pieces (poems, short stories, role play etc.) to summarize the text read.</p> <p>Present pieces in class. Use SJE to comment on features they did/did not enjoy and say why (e.g. The poem-rhythm) and comment on whether or not the choice of language aided understanding.</p>	<ul style="list-style-type: none"> <li>• Comment on language choices</li> </ul>	<p>Creative pieces present summary of text read and carries entertainment value.</p> <p>Responses to presentation capture student's appreciation of language choices and features of creative pieces or the lack thereof.</p>
<p>View interactive online presentation/and or listen to pre-recorded role play of different scenarios relating to both formal and informal situations e.g. a live broadcast about an upcoming hurricane, a conversation in the market about the drought and its effect on prices of produce, then respond to the following:</p> <ul style="list-style-type: none"> <li>• The context – formal, informal</li> <li>• Language choice</li> <li>• Effectiveness of language chosen</li> <li>• The appeal of the role-play</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate language choice</li> <li>• Respond to impact of creative piece</li> </ul>	<p>Responses outline critique of the presentation based on the following:</p> <ul style="list-style-type: none"> <li>• The context – formal, informal</li> <li>• Language choice</li> <li>• Effectiveness of language chosen</li> <li>• The appeal of the role-play</li> </ul>
<p>Listen to stories online/offline from different genres and formulate questions to ask peers in small groups. Peers take turns in asking and answering questions.</p>	<ul style="list-style-type: none"> <li>• Listen to stories</li> <li>• Formulate and ask questions</li> <li>• Answer questions</li> <li>• Wait turns in conversation</li> </ul>	<p>Questions accurately generated using information from story.</p> <p>Responses aligned to questions asked and story heard</p>
<p>Engage in discussion focused on identifying strategies/techniques they have been employing to monitor their own listening and that of their peers; citing relevant examples.</p>	<ul style="list-style-type: none"> <li>• Engage in discussion</li> <li>• Monitor own listening</li> </ul>	<p>Discussion bring into focus strategies and techniques relevant to monitoring listening.</p>

<b>Focus Question:</b> “How do we respond to different aspects of weather using oral and written language?”		
<b>Reading With Fluency &amp; Recognition (Word Recognition &amp; Vocabulary Development)</b>		
<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>	
<ul style="list-style-type: none"> <li>• Use a range of word recognition clues to identify new words</li> <li>• Automatically recognise words (including basic sight word lists) through repeated exposure and mnemonic devices</li> <li>• Spell words accurately by using knowledge of letter-sound correspondences, morphological knowledge and etymological information</li> <li>• Use a range of approaches to learn and spell irregular words</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Identify and use blends and clusters in words</li> <li>• Identify and use sight words appropriate to grade level</li> <li>• Create mnemonics to recall the spelling of sight words</li> <li>• Generate games and activities to enhance vocabulary development</li> <li>• clarify meaning of words through the use of a dictionary</li> <li>• Reflect on and share their use of particular strategies to decode/encode unfamiliar words and meaning</li> </ul>	
<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
<b>STUDENTS WILL:</b>		
Use puzzle generating software to create and print Find -a - word puzzle to search for weather-related words with blends and clusters from; e.g. <b>p</b> recipitation, <b>d</b> rought, <b>t</b> ropical. <b>t</b> rough, <b>s</b> tationary, <b>s</b> tratosphere, <b>i</b> nstrument, <b>g</b> reenhouse, <b>p</b> revaling, <b>s</b> preading	<ul style="list-style-type: none"> <li>• Identify words with blends and clusters</li> <li>• Design and produce puzzles</li> </ul>	Word search puzzle completed with weather related words with blends and clusters identified.
Read a range of texts, applying the following word recognition/oral reading strategies- re-reading, self-correction), using compound words, inflectional endings, and affixes	<ul style="list-style-type: none"> <li>• Use word recognition strategies</li> </ul>	Oral reading activities showcases students’ use of a variety of word recognition strategies
Develop and use personal word bank of sight words related to weather – e.g. Lightning, meteorologist, meteorology, downpour, satellite, condensation, atmosphere, drizzle, humidity, cycle, evaporation	<ul style="list-style-type: none"> <li>• Use strategies to aid accuracy in word recognition</li> </ul>	Word bank includes grade level sight word related to weather



<p>Record a list of mnemonics in journal that will help them remember the spelling of particular 'problem' words; e.g.</p> <ul style="list-style-type: none"> <li>• <b>hurricane</b> as in 'hurry', - to remember start of word (in particular double 'r')</li> </ul> <p><b>receive</b> – 'i' before 'e', except after 'c', - to remember positions of vowels</p>	<ul style="list-style-type: none"> <li>• Use mnemonics to aid spelling</li> </ul>	<p>Journals includes list of appropriate mnemonics based on targeted words</p>
<p>Research list of at least ten (10) spelling rules and or with the assistance of the teacher create a podcast on those rules. Record and playback for class, try to apply them in recalling the spelling of particular words. E.g.</p> <ul style="list-style-type: none"> <li>• Drop a silent <i>e</i> before adding a suffix that begins with a vowel /vowel sound– <b>shining, rising, breezy</b></li> <li>• The suffix <i>-ful</i> never has two <i>l</i>s – powerful, harmful</li> </ul>	<ul style="list-style-type: none"> <li>• Use spelling rules</li> </ul>	<p>Podcast created includes at least ten spelling rules with examples</p>

**Focus Question:** “How do we respond to different aspects of weather using oral and written language?”

**Reading for Meaning and Enjoyment (Comprehension)**

**ATTAINMENT TARGETS**

- Identify and comment on the structure of texts and on the language choices, grammar and techniques writers use to create an impact
- Use deduction and inference to interpret information and ideas and to predict outcomes
- Reflect on and critically respond to literature and other texts, on paper and on screen

**OBJECTIVES**

- Students will:
- Compare and contrast ideas, events and experiences in texts read
  - Distinguish statements of facts and opinions in expository materials
  - Recognise authors purpose when reading grade level texts
  - Reflect and comment on their progress as readers

**SUGGESTED TEACHING AND LEARNING ACTIVITIES**  
**STUDENTS WILL:**

View teacher prepared / sourced PowerPoint presentation focused on reviewing the terms compare and contrast. Cite examples in their immediate surroundings to demonstrate understanding of the terminologies.

**KEY SKILLS**

- View presentation
- Cite examples
- Compare and contrast ideas

**ASSESSMENT**

Discussion evidences students’ understanding of the terms compare and contrast.  
  
Examples cited demonstrates accuracy in students’ understanding of the terms compare and contrast

Use teacher prepared graphic organiser to compare and contrast ideas /events communicated in pictures found in grade level text relating to weather.

- Use graphic organiser
- Compare and contrast ideas

Graphic organiser accurately compares and contrast the ideas/events outlined in the pictures perused.

Compare and contrast myths and legends related to weather with information in Social Studies and other content texts. Determine what fantasy is and what reality is.

- Compare and contrast ideas
- Distinguish fantasy from reality

Comparison of myths and legends and fantasy noted separately from reality

Read and discuss teacher prepared hand-out about statements of facts and opinions and how each may be identified.

- Engage in discussion
- Explain facts and

Discussion focused on helping students to develop understanding of statements of facts and opinions

	opinions	
Listen to various statements read by the teacher and or their classmates. Use post it notes to record statements of fact and opinions. Give reasons for their answers.	<ul style="list-style-type: none"> <li>• Listen with a purpose</li> <li>• Identify facts and opinions</li> </ul>	Post it notes accurately captures statements of facts and opinions. Reasons given are accurate and valid in distinguishing facts and opinions
Read adapted newspaper article or online story/article or teacher-made article on an aspect of weather and distinguish the facts from the opinions	<ul style="list-style-type: none"> <li>• Distinguish facts from opinions</li> </ul>	Examine list of statements /sentences about the weather and differentiate the facts from the opinions
View and discuss teacher prepared/sourced PowerPoint presentation or hand-out about the modes of writing and identifying author's purpose.	<ul style="list-style-type: none"> <li>• Engage in discussion</li> </ul>	Discussion focused on guiding students' understanding of the different modes of writing and identifying the author's purpose
Work in pairs to peruse a list of descriptions of different pieces of writing prepared by the teacher (E.g. A National Geography article about the changes in weather over the past three months). Use the description provided to identify the author's purpose. Share and discuss answers as a class.	<ul style="list-style-type: none"> <li>• Identify author's purpose</li> </ul>	Author's purpose accurately recognised using descriptions provided.
Read articles and news reports or watch videos online or offline about features, issues, and events related to aspects of the weather and identify the following: ➤ Author's viewpoint Statements/information which represent facts and those which are opinions	<ul style="list-style-type: none"> <li>• Determine author's viewpoint</li> <li>• Distinguish fact from opinion</li> </ul>	Author's viewpoint and statements/information which represent facts and opinions are accurately identified and articulated
Engage in <i>Peer Talk Sessions</i> to reflect on and discuss with their peers their growth and development as readers. Speak specifically to their abilities and the strategies they are now using compared to the beginning of the school year or term.	<ul style="list-style-type: none"> <li>• Engage in reflection</li> </ul>	Peer Talk sessions focused on reflecting on their abilities and strategies employed as a reader

**Focus Question:** How do we respond to different aspects of weather using oral and written language “?”

**Reading for Information ( Research & Study Skills)**

<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>
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|--|--|
| <ul style="list-style-type: none"> <li>• Research activities on issues and interests by generating ideas and exploring texts using a range of strategies</li> <li>• Identify and use text features to support navigation of texts, retrieving and synthesise information gained from a range of sources</li> </ul> | <p>Students will:</p> <ul style="list-style-type: none"> <li>• Utilise text features in presenting research information</li> <li>• Investigate a problem through the use of a mini-research</li> <li>• Develop simple maps to present information researched</li> <li>• Conduct basic research, using the library with greater degree of independence</li> </ul> |
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<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
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<p><b>STUDENTS WILL:</b></p> <p>Work in groups to review and discuss sample research papers sourced by the teacher.</p> <p>Pay attention to how the text features are used to present different kinds of information.</p>	<ul style="list-style-type: none"> <li>• Review research papers</li> <li>• Examine text features</li> </ul>	<p>Discussions focused on how text features are used to present different types of information</p>
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<p>Participate in an oral quiz that requires them to respond to teacher prepared questions regarding how different text features are used to present different kinds of information.</p>	<ul style="list-style-type: none"> <li>• Respond to questions</li> </ul>	<p>Responses to questions reflect understanding of text features and their uses.</p>
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<p>Work in groups to identify a problem in their school, community or parish relating to weather conditions being experienced or experienced in the past. Discuss how data will be gathered, organised, and presented. Share ideas with class for feedback.</p> <p style="text-align: center;"><b>OR</b></p> <p>Select topic from teacher prepared sentence strips (elements of weather – rain, temperature, wind, sunshine). Collaborate with teacher to collect and collate the information from the various groups, then present in class or community forum.</p>	<ul style="list-style-type: none"> <li>• Engage in discussion</li> <li>• Collect information</li> <li>• Collate information</li> <li>• Make presentation</li> </ul>	<p>Discussions evidence good collaborative skills and knowledge of the data collection process</p> <p>Information collected and collated is accurate and reflects the various elements of weather</p>
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Conduct a mini-research to gather information about the problem identified. Present research information in the form of a project. Utilize knowledge of text features.	<ul style="list-style-type: none"> <li>• Conduct research</li> <li>• Compile information</li> <li>• Use text features</li> </ul>	Research project includes accurate information regarding the problem/topic identified and effectively utilizes text features to present different kinds of information.
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<b>Focus Question: “How do we respond to different aspects of weather using oral and written language?”</b>																
<b>Language Structure (Grammar &amp; Conventions)</b>																
<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>															
<ul style="list-style-type: none"> <li>• Write sentences which are grammatically accurate and correctly punctuated, using SJE and JC appropriately</li> <li>• Use and adapt a range of sentence structures according to context, distinguishing between SJE and</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Use reflexive pronouns</li> <li>• Use adverbs of time in alignment with the tenses being used</li> <li>• Use contractions - words with ‘will’ and ‘shall’</li> <li>• Demonstrate the correct use of present, past and continuous tense</li> <li>• Form and use the Past Perfect Tense</li> <li>• Use modal auxiliaries to convey various conditions.</li> </ul>															
<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>														
<b>STUDENTS WILL:</b> In pairs, review pronouns by substituting nouns with suitable pronouns in sentences. Categorize pronouns used in sentences as subject or object pronouns. <table border="1"> <thead> <tr> <th>Subject Pronouns</th> <th>Object Pronouns</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>me</td> </tr> <tr> <td>we</td> <td>us</td> </tr> <tr> <td>they</td> <td>them</td> </tr> <tr> <td>he</td> <td>him</td> </tr> <tr> <td>she</td> <td>her</td> </tr> <tr> <td>it</td> <td>it</td> </tr> </tbody> </table>	Subject Pronouns	Object Pronouns	I	me	we	us	they	them	he	him	she	her	it	it	<ul style="list-style-type: none"> <li>• Review pronouns</li> <li>• Identify object and subject pronouns</li> </ul>	Pronouns accurately categorized as subject and object pronoun
Subject Pronouns	Object Pronouns															
I	me															
we	us															
they	them															
he	him															
she	her															
it	it															
Formulate different types of sentences, using reflexive pronouns to communicate information about what people do	<ul style="list-style-type: none"> <li>• Formulate different sentence</li> </ul>	Sentences formulated reflect good use of reflexive pronouns.														

<p>in response to the weather</p> <p>E.g.</p> <ul style="list-style-type: none"> <li>• Tourists love our weather; they warm <u>themselves</u> in our tropical sunshine.</li> <li>• Why do you dress <u>yourself</u> so warmly in this lovely weather?</li> </ul>	<p>types</p> <ul style="list-style-type: none"> <li>• Use pronouns</li> </ul>																					
<p>Use text editing software to create a table as a Personal Weather Guide. Use contractions with 'will' and 'shall' to record what they intend to do on particular weather days:</p> <table border="1"> <tr> <td>Cold Front</td> <td>Hot and Sunny</td> <td>Heavy Rainfall</td> <td>Hurricane</td> </tr> <tr> <td>I'll wear my warm leather jacket.</td> <td></td> <td></td> <td>I shan't go out; it is dangerous.</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Cold Front	Hot and Sunny	Heavy Rainfall	Hurricane	I'll wear my warm leather jacket.			I shan't go out; it is dangerous.													<ul style="list-style-type: none"> <li>• Use contractions</li> </ul>	<p>Contractions correctly used to state intended activities for particular weather days</p>
Cold Front	Hot and Sunny	Heavy Rainfall	Hurricane																			
I'll wear my warm leather jacket.			I shan't go out; it is dangerous.																			
<p>In groups, create a one stanza poem about a selected topic in weather. Present poem to class placing emphasis on contractions used in script. Comment on classmates work.</p>	<ul style="list-style-type: none"> <li>• Create poem with the use of contractions.</li> </ul>	<p>Poem demonstrates the ability to effectively use contractions.</p>																				
<p>Search a range of materials containing information on the weather, using online or other media such as newspapers, magazines, Social Studies text, and class reader, to find examples of the following tenses – Present, Continuous, Past, Future, Present and Past Perfect tenses. List examples of each tense type in a tabular format.</p>	<ul style="list-style-type: none"> <li>• Identify and classify tenses</li> </ul>	<p>Tables completed with correct examples of the different types of verb tenses</p>																				
<p>In pairs, write a weather report. Collaborate with teacher to ensure the sentences are written in the correct tense. Share piece with class and critique report and make comments.</p>	<ul style="list-style-type: none"> <li>• Use verb tense.</li> </ul>	<p>Weather report written using the correct verb tense</p>																				
<p>Rewrite in one or more of the different tenses, underlined verbs/verb phrases in paragraphs about different aspects of weather.</p>	<ul style="list-style-type: none"> <li>• Change verb tenses</li> </ul>	<p>Paragraph accurately re-written in specified tenses</p>																				

<p>Listen to songs, e.g. 'I can See Clearly Now the Rain is Gone', 'I'm Walking on Sunshine', and read the lyrics as they listen or read poems e.g. 'Weatherman Blues' and 'I Wonder', and change the tense used as specified to demonstrate understanding of skill. In some cases, adverbs of time should also reflect change in time.</p>	<ul style="list-style-type: none"> <li>• Change tenses</li> <li>• Use adverb of time</li> </ul>	<p>Lyrics in songs/poem accurately reflects students' ability to change verb tenses</p>
<p>Discuss the uses of modal verbs [modal verbs express ability, necessity, request, permission advise etc. View sentences and identify modal verbs and they type used in each sentence. E.g. She <b>can</b> drive (ability) I <b>must</b> go (necessity) You <b>may</b> stay here (permission)</p>	<ul style="list-style-type: none"> <li>• Discuss use of modal verbs</li> <li>• Identify modal verbs in sentences.</li> </ul>	<p>Modal verbs accurately identified in given sentences</p>
<p>Be given Create sentences with modal verbs expressing different attitude. Share sentences and critique each other's sentences.</p>	<ul style="list-style-type: none"> <li>• Create sentences</li> <li>• Critiques sentences</li> </ul>	<p>Sentences accurately reflect an understanding of the use of modal auxiliaries.</p>
<p>Use modal auxiliaries( e.g. can, must, may, should) in their formulation of a list of safety guidelines to be observed during one of the following situations resulting from the impact of the weather</p> <ul style="list-style-type: none"> <li>• Hurricane</li> <li>• Flooding</li> </ul> <p>Observe the rule modal + unchanged verb –e.g. can <u>go</u>, must <u>take</u></p>	<ul style="list-style-type: none"> <li>• Use modal auxiliary</li> </ul>	<p>Sentences written correctly using modal auxiliaries to demonstrate grasp of their use.</p>



**Focus Question:** “How do we respond to different aspects of weather using oral and written language?”

**Communication (Writing)**

<b>ATTAINMENT TARGETS</b>	<b>OBJECTIVES</b>	
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<ul style="list-style-type: none"> <li>• Develop approaches to the writing process to enable them to organise their ideas into a coherent structure including, layout, sections and paragraphs</li> <li>• Write well-constructed paragraphs which have linking sentences within and between them</li> <li>• Write to narrate, to persuade and for a range of transactional purposes, using SJE and JC appropriately and incorporating multi -media approaches to their writing</li> <li>• Use language and text forms appropriately and with imagination to create vibrant and engaging texts</li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• Organize paragraphs to reflect text structure; e.g. compare and contrast, problem and solution</li> <li>• Begin to use figurative language to impact writing</li> <li>• Formulate and deliver clear information, directions and explanations</li> <li>• Use persuasive language to compose pieces for presentation</li> </ul>	
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<b>SUGGESTED TEACHING AND LEARNING ACTIVITIES</b>	<b>KEY SKILLS</b>	<b>ASSESSMENT</b>
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<p><b>STUDENTS WILL:</b></p> <p>Identify a problem in their community, such as flooding or land slippage, which may be made worse by poor weather conditions. Write two paragraphs which address this situation. The paragraphs should reflect one of the text structure patterns</p> <ul style="list-style-type: none"> <li>• compare and contrast</li> <li>• problem and solution</li> <li>• cause and effect</li> </ul>	<ul style="list-style-type: none"> <li>• Use text structure to organize paragraphs</li> </ul>	<p>Paragraphs evidence the use of targeted text structure</p>
<p>Watch video tutorial on: compare and contrast, problem and solution, cause and effect in order to write effective</p>	<ul style="list-style-type: none"> <li>• Use text structure related signal/transitional words</li> </ul>	<p>Paragraph employs the correct use of text structure related signal words</p>

<p>paragraphs.</p> <ul style="list-style-type: none"> <li>➤ Paragraphs should also employ the use of signal words/phrases to indicate a transition in the ideas being presented.</li> </ul> <p>Use stages of the writing process – brainstorming, drafting, revising, editing, publishing to ensure that pieces are well-written</p>	<ul style="list-style-type: none"> <li>• Use stages of writing process</li> </ul>	
<p>Write a story in which the lives of the characters are seriously affected by an element of weather. Pay careful attention to the following:</p> <ul style="list-style-type: none"> <li>➤ Development of story elements – problem, setting, characters, resolution</li> <li>➤ Use of figurative language for impact</li> <li>➤ Use of adjectives, adverbs and descriptive phrases to appeal to the different senses</li> <li>➤ Use of transitional words/phrases (indicating time, as well as the introduction of similar and contrasting ideas) to link paragraphs</li> </ul>	<ul style="list-style-type: none"> <li>• Use story elements</li> <li>• Use figurative language</li> <li>• Use adjectives/descriptive phrases and adverbs</li> <li>• Use transitional words and phrases</li> </ul>	<p>Story exemplifies good use of story elements, descriptions, and the use of transitional phrases.</p>
<p>Write a rhyming poem about the weather patterns in Jamaica. Include adjectives, adverbs and figurative language to make the language come alive.</p>	<ul style="list-style-type: none"> <li>• Use adjectives and adverbs</li> <li>• Use figurative language</li> </ul>	<p>Poem showcases the effective use of adjectives, adverbs and figurative language</p>
<p>Write the directions and guide notes you would give to a tourist to help him/her locate a place of interest of Jamaica. The starting point should be a Jamaican hotel or guest house. Use road maps/atlas to assist in formulating directions. Include, along with other details, information about the weather patterns of the country and the precautions that should be taken because of the weather possibilities.</p>	<ul style="list-style-type: none"> <li>• Write directions and guide notes</li> <li>• Use road maps/atlas</li> </ul>	<p>Written directions or guide notes composed outlining path to be taken to reach designated location, include information captured on road maps and atlases and speaks to weather patterns and precautions.</p>
<p>Develop a pamphlet using desktop publishing software for tourists in which they clearly explain the meaning of some weather-related Jamaican proverbs/sayings e.g.</p>	<ul style="list-style-type: none"> <li>• Give explanations</li> <li>• Design and produce pamphlet</li> </ul>	<p>Pamphlet gives clear explanations to aid understanding of weather related Jamaican proverbs:</p>

<ul style="list-style-type: none"> <li>➤ Rain a fall but dutty tuff</li> <li>➤ Dog a sweat but long air a cuva it</li> <li>➤ The devil an im wife a fight fi fish bone</li> <li>➤ God a draw im chair</li> <li>➤ Raining cats and dogs</li> <li>➤ On cloud nine</li> <li>➤ Come rain or shine</li> <li>➤ Explanations should be given in SJE.</li> </ul>		
<p>Write a letter to their principal persuading him/her to install ceiling fans in their classroom. Give reasons, including the weather, for their request and use persuasive techniques including repetition, comparisons, examples of incident(s), etc. to convince the principal to grant the request.</p>	<ul style="list-style-type: none"> <li>• Compose letters</li> <li>• Use acceptable letter format</li> <li>• Use persuasive techniques</li> </ul>	<p>Letters showcase competence in the use of persuasive techniques and satisfy the conventions of letters of request.</p>
<p>Use word processing software to write a letter to the Forestry Department requesting trees for the school compound. Use class email to send the letter.</p>	<ul style="list-style-type: none"> <li>• Compose letters</li> <li>• Use acceptable letter format</li> <li>• Use persuasive techniques</li> <li>• Enter text</li> </ul>	<p>Letters showcase competence in the use of persuasive techniques and satisfy the conventions of letters of request.</p>
<p><b>Learning Outcomes</b>  <b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>✓ Demonstrate active listening and appropriate speaking techniques when communicating with their peers and others</li> <li>✓ Apply more advanced word recognition skills such as the use of structural analysis and extend vocabulary by learning and using homophones, synonyms, antonyms, word roots and word structure skills.</li> <li>✓ Extend comprehension skills by learning and applying more advanced skills of previewing, summarizing, analysing and distinguishing facts from opinions</li> <li>✓ Develop competence in the application of the writing process</li> <li>✓ Begin to comfortably include critical elements in written pieces , including text features, and transitional words and phrases</li> <li>✓ Give clarity and impact to language through the use of adjectives, adverbs and figurative language</li> <li>✓ Demonstrate competence in the use of the structures and conventions of Standard Jamaican English</li> <li>✓ Make language choices appropriate to context</li> </ul>		
<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• Samples/models of the texts that students should write (e.g. pamphlets, directions, stories, pieces reflecting different text</li> </ul>	<p><b>Extended Learning</b></p> <ul style="list-style-type: none"> <li>• Students should maintain a vocabulary of the roots of words, meanings and examples that extends beyond the sub-theme of weather, as this activity</li> </ul>	

<p>structure patterns) should be made available to guide the writing process.</p> <ul style="list-style-type: none"> <li>• Students should be carefully supervised as they use the Internet.</li> <li>• The use of the Communication Protocol should become part of the daily drill for students and may be applied in a range of communication contexts.</li> <li>• The unit provides link to other subject areas such as: Social Studies and Science (weather patterns, hurricanes, temperature)</li> </ul>	<p>has the potential of rapidly extending their vocabulary development and spelling skills</p> <ul style="list-style-type: none"> <li>• They also practise the use of grammatical structures learnt – modal auxiliaries, etc. - in these contexts</li> <li>• Students should continue to apply spelling rules outside of the language class</li> <li>• The use of text structure, as well as transitional words /phrases should be applied in all learning environments , especially those requiring extended writing</li> </ul>
<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Social Studies text(s)</li> <li>• Class reader(s) with stories, poems, expository pieces related to aspects of the weather</li> <li>• Supplementary reading materials – books related to the weather, advertisements, pamphlets, posters</li> <li>• Communication Protocol Chart</li> <li>• Observation Checklist for Listening 5 Speaking</li> <li>• Road maps/atlases</li> <li>• Grade 4 Word List</li> <li>• Computer and any other available technologies</li> <li>• Internet</li> </ul>	<p><b>Key vocabulary</b></p> <ul style="list-style-type: none"> <li>• Weather patterns</li> <li>• Language context</li> <li>• Previewing</li> <li>• Summarizing</li> <li>• analysing</li> <li>• Author’s viewpoint</li> <li>• Fact</li> <li>• Opinion</li> <li>• Contrast</li> <li>• Homophones</li> <li>• Text features</li> <li>• Text structure</li> <li>• Reflexive pronouns</li> </ul>

**NATIONAL STANDARDS CURRICULUM**  
**GRADE 4 SCIENCE**

## PHILOSOPHICAL STATEMENT

### **The Philosophy of the Science Curriculum**

The Grades 1-9 Science Curriculum is predicated upon the constructivist approach to learning in that it creates 'hands on' experiential opportunities for exploring, catering to multiple intelligences and, in the early years (Grades 1-3), makes the most of the pedagogy of play. Learning is promoted through the integration and application of scientific concepts, principles and innovation which leads to the acquisition of the science process skills that will enable students to engage in scientific enquiry. By allowing learners to use the scientific principles from the early years, the foundation is set for further application at advanced levels. The curriculum has also taken into consideration the twenty- first century desired outcomes of education for our students as well as the national strategic objectives in education.

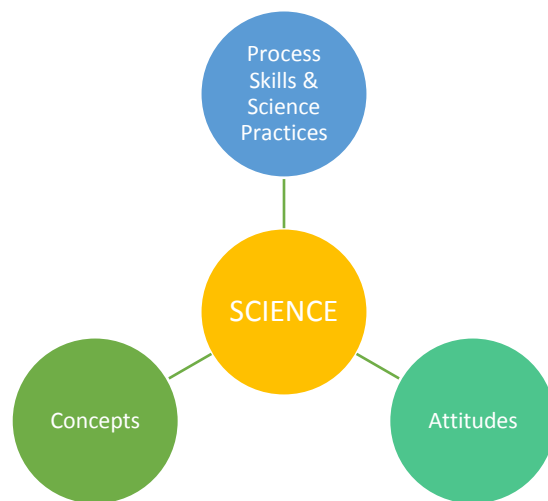
Based on the National Standards Curriculum (NSC) Framework, the curriculum emphasizes the need for balance between the acquisition of scientific knowledge, as against the learning process and attitudes. In addition, where applicable, the technological applications, social implications and the value aspects of science are also considered. It emphasizes the broad coverage of fundamental concepts in the natural and physical worlds. Students should understand and communicate about the physical, biological and technological worlds and understand and value the processes that sustain life on our planet. Science in the curriculum also adequately equips students to choose careers by making them knowledgeable about the diverse branches of science and technology.

### **The Role of a Science Education**

Science education should expose students to methodical approaches to investigation and problem solving, as the basis for evidence- based conclusions. Students will encounter the need for fair test and veracity in data derived through experimentation. They will build personal integrity and develop personal qualities such as perseverance, ingenuity, respect for the opinions of others and tolerance for diversity of opinions even when they contradict their personal beliefs. Acquisition of these qualities, along with the understanding of scientific principles and applications, when transferred to life beyond school, will not only produce astute scientists but will also impact the social, economic and political lives of graduates.

## Introduction to the Science Curriculum

The New Standards Curriculum (NSC) is predicated on the science process skills and science practices. It is designed so that students develop these skills while learning the prescribed content. The process skills and science practices are addressed each year, with a particular focus at each grade level. Students use the process skills and practices of science to develop an understanding of the scientific concepts (see figure 1). The scientific attitudes and practices enable students to work like scientists.



**Figure 1: Elements of Science**

The NSC design is based on education of the whole child and provides a well-rounded and enriching experience. Since science is about asking questions and finding answers to questions, the **Process skills** are actually the same skills that we all use in our daily lives as we try to figure out everyday questions. These skills include:

- Observing
- Communicating
- Measuring
- Classifying
- Predicting
- Inferring
- Identifying and controlling variables
- Define operationally
- Formulating hypotheses
- Interpreting data
- Experimenting
- Creating models

When we teach students to use these skills in science, we are also teaching them skills that they will use in the future in every area of their lives.

***Content is easy to forget but the process skills remain forever/for longer periods.***



Scientific competences do not develop incidentally - they must be deliberately and systematically included in students' educational experiences. Laboratory/practical activities positively influence the development of process skills.

The NSC emphasizes the teaching of science using process/inquiry skills in order that students:

- acquire content
- develop the ability to recognise problems
- think critically about how to solve problems
- follow logical, sequential and analytical steps in arriving at solutions

These are achieved in the NSC through the use of student-centred approaches such as inquiry-based, project-based, and problem-based learning, which are utilised in the integrative STEM/STEAM approach. From these, the science and engineering practices are fostered. The science and engineering practices, as identified by the Next Generation Science Standards (NGSS), are:

- Asking Questions or Defining Problems
- Developing and Using Models
- Planning and Carrying Out Investigations
- Analysing and Interpreting Data
- Using Mathematics and Computational Thinking
- Constructing Explanations or Designing Solutions
- Engaging in Argument From Evidence
- Obtaining, Evaluating, and Communicating Information

Activities in the NSC are investigative in nature and encourage the exploration of the natural environment. Emphases on real-world applications foster the development of the key 21<sup>st</sup> century skills commonly called the 4Cs (critical thinking, creativity, collaboration and communication) as well as scientific attitudes such as curiosity, objectivity, critical mindedness, open mindedness, inventiveness, intellectual honesty, humility and perseverance.

### **Assessment in the Science Curriculum**

In the science learner-centred classroom, assessment is done by the teachers and students. The key aim of science at this stage, in addition to garnering knowledge and understanding about certain science phenomena considered crucial for students at this level, is to enable children to

develop twenty-first century competencies through active and real life experiences which train them to ‘work scientifically’ and solve problems through inquiry and the engineering design process. Such an aim cannot be effectively achieved by the administration of external written tests.

Explicit links between what is intended to be learned and what is assessed have been created in the science teaching and learning units. Each science unit within a grade level outlines the assessment criteria to be used in determining the skills, knowledge and understanding students are expected to achieve, after their learning encounters within that unit. However, the teacher has the liberty to select the learner-centred assessment strategies and tools that will be most effective in measuring the targeted learning outcomes. Scientific vocabulary and factual knowledge can be assessed by using well-structured short open-ended and multiple choice tests or quizzes given at appropriate times.

Assessment of students’ achievements gathered within the school is used for two main purposes.

1. Formative assessment (assessment for learning - to assist learning). These assessment activities are:
  - aligned with the learning objectives of the science curriculum;
  - realistic and manageable for pupils and teachers, with cited time demands;
  - for ascertaining and reporting the achievement of individual pupils, information is gathered by use of a variety of learner-centred strategies and tools; and
  - promote the active engagement of pupils in their learning and its assessment.
2. Summative assessment (assessment of learning - to summarize and report on what has been learned, at the end of each unit or at the end of each term).

Assessment should not be an after-thought, but is an integral part of the delivery of instruction.

SCOPE AND SEQUENCE			
	TERM 1	TERM 2	TERM 3
<b>GRADE 4</b>	<ul style="list-style-type: none"> <li>• <b>Introduction to Science</b> Science &amp; How scientists work</li> <li>• <b>Living Things</b> Characteristics of living things Classifying things as living and non-living Identifying plants and animals Survival needs of plants and animals Investigating needs of plants Designing fair tests Constructing green/ shade houses</li> <li>• <b>Plants and Animals</b> Identifying and naming common plants Drawing main parts of the plant Functions of main parts of the plant Investigating functions of plant parts Comparing types of flowering plants Drawing main parts of the flower Functions of the flower Types and features of root systems Classifying plants based on root systems Functions of root system Basic structure of animals Functions of external features of animals Vertebrates and invertebrates Characteristics of vertebrates</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Sense Organs</b> Relating sense organs to senses Functions and differences in sense organs in humans and other animals Investigating the senses Basic structure and drawing of sense organs Functions of selected parts and detection of stimuli by sense organs Limitations of the senses Instruments used to extend senses Caring and protecting sense organs Adapting to loss/ limitation of sense organs Sensitivity to sensory disabilities</li> <li>• <b>Materials: Introduction</b> Simple properties of materials Investigating material properties Classification of materials based on properties and uses Grouping solids, liquids and gases using observable characteristics Investigating properties of solids, liquids and gases Constructing toys from everyday Materials</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Water and Air</b> Investigating properties and forms of water Importance of water to life Sources of water Modelling the water cycle Sources and ways of reducing water pollution Simple methods of purifying water Constructing water filters Ways of conserving water Identifying common water-borne diseases Investigating properties of air Components of air and their uses Sources and ways of reducing air pollution Constructing air filters Identifying common air-borne diseases</li> </ul>

<p><b>GRADE 5</b></p>	<ul style="list-style-type: none"> <li>• <b>Forces and Work</b> Investigating effects of forces Relating amount of force needed to mass of object Classifying forces as push, pull and turn Determining when work is done Identifying types of forces Constructing devices that apply force Investigating effects of friction Ways of reducing friction</li> <li>• <b>Energy Forms</b> Sun as main energy source Importance of energy Defining energy Sources of energy and the corresponding energy forms Changing energy forms from one form to the next Use of energy resources Simple ways of conserving energy Methods of heat transfer Investigations of heat transfer Comparing conductors and insulators Application of conductors and insulators in everyday life</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Nutrition</b> Basic food groups Types of food nutrients Importance of each nutrient Relating foods to particular nutrient Performing food tests to identify fats and starch Defining a balanced diet Formulating meal plans to reflect a balanced diet Assessing nutritional information on food products Importance of plants in food chains Importance of light energy (Sun) to plants Constructing food chains Interdependence of plants and animals in food chains Ways of preserving and protecting plants</li> <li>• <b>Ways Food are Grown</b> Issue of food scarcity Varied food production methods Nature of organic and non-organic methods Advantages and disadvantages of food production methods Effects on health and the environment Design and implementation of selected food production methods</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Simple and Complex Machines</b> Definitions of machines and simple machines Classification of simple machines Every day examples of simple machines How simple machines work Defining load, fulcrum and effort Types of levers Technological advances in machinery Differentiating simple and complex machines Human Body as a complex machine Impacts of machines on society and the environment Designing a machine for a specific need</li> <li>• <b>Weather Instruments</b> Relate weather instruments to the elements of weather Functions of selected weather instruments Design and construct functional models of weather instruments Collect information on observable elements of weather for a specified period Analyse samples of weather data for patterns and trends Make predictions (weather forecasts) based on trends Compare predictions to national weather forecasts</li> </ul>
<p><b>GRADE 6</b></p>	<ul style="list-style-type: none"> <li>• <b>Environment</b> Defining the environment Investigating features/ soils of different environments Conserving the natural environment Effects of human activities on the environment Adaptations of organisms to their environment</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Materials: Properties and Uses</b> Properties and uses of selected materials Relate properties to uses Classifying materials based on properties Storage, handling and disposal of materials Environmental impact of improper disposal Designing materials for specific functions based on properties Reversible and Irreversible changes</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Diet and Drugs</b> Consequences of unbalanced diets Causes of obesity, diabetes and malnutrition Measures to prevent life style diseases Importance of eating healthy Examples of nutritional diseases Defining 'drugs' Classifying drugs Distinguishing 'over the counter' and</li> </ul>

	<p>Defining climate change  Evidence of climate change  Causes and effects of climate change  Ways of reducing factors causing climate change  Solid waste disposal practices  Defining and reducing solid waste pollution  Effects of improper solid waste disposal  Causes and ways of preventing soil degradation  Effects of environmental problems on humans</p> <ul style="list-style-type: none"> <li>• <b>Energy: Light and Sound</b>  Distinguishing luminous and non-luminous objects  Investigating properties of light  Interactions of light with different materials, lenses, mirrors  Reflection/ refraction in daily life  Investigating properties of sound  Relating sound to type of material used  Effects of loud sounds  Sources and ways of reducing noise pollution  Conducting fair tests</li> </ul>	<p>Investigating processes that lead to reversible and irreversible changes  Investigating changes of state through heating and cooling  Every day examples of reversible and irreversible changes</p> <ul style="list-style-type: none"> <li>• <b>Human Body Systems</b>  Defining 'systems'  Identification and functions of organ systems  Importance of systems working together  Identifying selected organs in each system  Path travelled by food in digestive system  Investigating movement  Modelling human body systems</li> <li>• <b>Mixtures</b>  Investigating mixtures  Defining mixtures  Classifying mixtures as solutions, suspensions and colloids  Properties of materials used in separating mixtures  Simple separation techniques</li> </ul>	<p>'prescription' drugs  Examining information provided on medicinal drugs  Beneficial and harmful drugs  Effects of drugs on the body</p>
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## **SCIENCE UNITS OF WORK GRADE 4 TERM 1 UNIT 1: EXPLORING OUR WORLD**

### **About the Unit**

In this Unit, students will be introduced to the skills and attitudes scientists use to obtain information about the world. Students will also be given opportunities to use these skills in simple investigations designed to solve an identified problem.

### **Range of Content**

- Science is a way of finding out about the world. A scientist is a person who carries out scientific investigations.
- Scientists use the following skills: observing, measuring, classifying, drawing conclusions and communicating.
  - ✓ Observing - using the five senses to learn about objects in the environment.
  - ✓ Measuring - finding out the size, volume, mass, weight, temperature, etc. of an object.
  - ✓ Classifying - Putting objects into groups.
  - ✓ Drawing conclusions - using what you observe to explain what has happened.
  - ✓ Communicating - telling what you know by speaking, writing, drawing pictures, or graphs.
- Scientists carry out investigations to gain knowledge and find solutions to problems. They carry out the following steps:
  1. Ask questions
  2. Brainstorm ideas or gather information
  3. Plan fair tests
  4. Carry out their plan, making changes if necessary
  5. Communicate their findings
- In conducting their work scientists display attitudes such as curiosity, honesty and persistence.
- A fair test is an investigation carried out under the same conditions

**Prior Learning**

Check that students can:  
Communicate their ideas

**Focus Question 1: How do we find out about our world?**

**THEME:** Science Exploration, Application and Design Practice

**Attainment Target:**




- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method

**Benchmarks:**

- Devise and carry out fair tests in familiar contexts
- Describe a simple design that addresses a specific challenge and indicate what defines success and what limitations exist
- Display curiosity, objectivity and perseverance in their approach to activities

**Duration:** 2 weeks/4 hours

**Attainment Targets:**

-  **COMMUNICATION AND COLLABORATION** - use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others
-  **DESIGNING AND PRODUCING** – use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions
-  **DIGITAL CITIZENSHIP**- recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour

**Objectives:**

- State what is science and who are scientists
- Identify some skills and attitudes of scientists
- Explore the methods used to gain scientific knowledge
- Plan simple scientific investigations to answer questions and solve problems
- Carry out a fair test
- Work cooperatively in groups
- Show respect for the ideas of others



Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Be provided with different objects and, be asked questions such as “what is this?”, “how does this work?” As a class discuss how do humans find out about things?” [From class discussions teacher should introduce the term ‘science’ as a way of finding out about things.] View pictures/videos of scientists at work. In groups, identify and list various activities that are carried out by the scientists. Identify and list some of the behaviours/attitudes shown by the scientists. Share and discuss their lists with the class.</li> <li>• Carry out a series of activities that require the use of basic process skills:             <ol style="list-style-type: none"> <li>1. Watch and record a lit candle burning for a set amount of time, and record their observations (including the time)</li> <li>2. Be given objects of different shapes, sizes and colour, and asked to put them into groups. Record the reasons for their choice of groups</li> <li>3. Mix sugar/salt in hot, and then cold water. Record their observations. State which type of water is better for dissolving sugar/salt, giving reasons for their choice</li> </ol> <p>Report their findings from the activities to the rest of the class. In a teacher-led class discussion, identify the skills used in the activities (observing, measuring, classifying, drawing conclusions, and communicating).</p> </li> <li>• Carry out two investigations to determine which object (example a small stone and a sheet of paper) falls to the ground fastest.             <ol style="list-style-type: none"> <li>1. Drop the objects from the same height, and record the time each takes to fall to the ground.</li> <li>2. Drop each object from a different height, and record the time each</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Observe, communicate, think critically (analyse, draw conclusions), collaborate</li> <li>• Observe, record, investigate, communicate, manipulate, measure, think critically (classify, justify, analyse, draw conclusions)</li> <li>• Investigate, observe, measure, manipulate, record, communicate, think critically (analyse, justify, draw conclusions), collaborate</li> </ul>	<ul style="list-style-type: none"> <li>• Lists highlight scientific skills and attitudes</li> <li>• Accurate observations given</li> <li>• Logical reasons provide</li> <li>• Accurate data collected.</li> <li>• Fair test correctly identified</li> </ul>

<p>takes to fall to the ground.</p> <p>As a class, discuss what was done in each investigation to determine if both were fair. (<i>Teacher should bring out the idea that fair tests are investigations carried out under the same conditions.</i>)</p> <ul style="list-style-type: none"> <li>• Be given a problem or question to solve (e.g. How can I keep my lunch warm for a longer period of time?). Discuss different approaches or solutions to the problem (e.g. using containers made from different materials, foil etc.). As a class, develop criteria to assess solutions to the problem (e.g. the investigation is a fair test). In groups, plan a simple investigation to test which of these materials/ containers store heat longest. Share and discuss their plans with the class, using the criteria developed. As a class, select and carry out the best plan. Display the plan, results and conclusions in the science corner.</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate, collaborate, manipulate, measure, plan and design, observe, think critically (evaluate, generate solutions), create</li> </ul>	<ul style="list-style-type: none"> <li>• Plan reflect fair testing</li> <li>• Plans address given problem</li> </ul>
<p><b>Learning Outcomes</b> Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ Use basic scientific skills in carrying out investigations</li> <li>✓ Determine if an investigation is a fair test</li> <li>✓ Develop a plan to solve a problem or gain information</li> </ul>		
<p><b>Points to Note</b></p> <p>Use every opportunity while carrying out activities, to highlight and reinforce the skills and attitudes of scientists</p>	<p><b>Extended Learning</b></p> <p>Research the names of some Jamaican and international scientists</p>	
<p><b>Resources</b></p> <p>Pictures/videos of scientists at work, candle, heat source, salt, sugar, water, various insulating material, wood, block, stone, sheets of paper, timers (e.g. stopwatches), objects to examine how they work e.g. a clock, a radio etc.</p>	<p><b>Key vocabulary</b></p> <p>Science, scientists, fair test, observe, measure, classify, conclude, communicate</p>	

## **SCIENCE UNITS OF WORK GRADE 4 TERM 1 UNIT 2: LIVING THINGS**

### **About the Unit**

In this Unit, students will learn about the characteristics of living things. By examining a variety of living and non-living things, they will distinguish between those that are living and those that are not and classify them accordingly. Working in groups, they will plan and design simple investigations to identify the common needs of all living organisms: water, nutrients and air. They will then use the scientific process to carry out these activities. The students start developing basic design solutions in which constraints and success are considered.

### **Range of Content**

- All matter can be classified as living and non-living. Living things are further divided into plants and animals. These organisms need water, air and nutrients to survive
- Living things are organisms that display the basic seven characteristics; they feed, grow, move, reproduce, respond, get rid of waste, and respire. Non-living things do not show all seven characteristics. Living things become non-living when they die
- Scientists use the scientific method to carry out their investigations. The main steps involved include an identification of the problem, formulating a hypothesis, identifying the variables, carrying out the experiment, collecting results and drawing conclusions
- Fair tests are used to plan and design scientific investigations
- The engineering design process describes another method which is used to solve problems by generating solutions and testing them until the problem is solved

**Prior Learning**

Check that students can:

Identify external parts of the human body

Identify living and non-living things

**Focus Question 1: What are living things?**

**THEME:** Living things, Life Processes and the Environment

**Attainment Target:**

- Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans
- Recognise the variety of living things, their interdependence and their inter-relationship with the environment
- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships




**Benchmarks:**

- Know the characteristics of living things and recognise that all living things have similar basic requirements (air, water, nutrients)
- Devise and carry out a fair test in a familiar context
- Predict the outcomes of events based on their knowledge (e.g. steeper inclines increase the speed of toy cars rolling down them)
- Display curiosity, objectivity and perseverance in their approach to activities.
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**Duration:** 2 weeks/ 4 hours

**Objectives:**

- Deduce some characteristics of living things
- Justify why something is living or non-living
- Classify things as living and non-living
- Identify a variety of familiar animals and plants in Jamaica
- Collect data from field activities involving living and non-living things
- Construct graphs and analyse data collected from field activities
- Communicate scientific information about living and non-living things
- Show curiosity in exploring living and non-living things in their immediate environment
- Work cooperatively in groups in finding out about living things

<p><b>Attainment Targets:</b></p> <ul style="list-style-type: none"> <li> <b>COMMUNICATION AND COLLABORATION</b> - use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others</li> <li> <b>DESIGNING AND PRODUCING</b> – use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions</li> <li> <b>DIGITAL CITIZENSHIP</b>- recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour</li> </ul>		
<p><b>Suggested Teaching and Learning Activities – Focus Question 1</b></p>	<p><b>Key Skills</b></p>	<p><b>Assessment Criteria</b></p>
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Observe live or view video of living things in their natural environment Record on teacher-prepared checklist all behaviours/actions they observe. In groups, collate results and create a graph (bar/pictograph) manually/electronically. In group discussions, compare the behaviours observed with those of humans and record (manually/electronically) similarities and differences. As a class use their findings to draw conclusions about the observable behaviours of living things.</li> <li>• Observe an aquarium/terrarium or watch a video and record in a variety of ways the items that have never been alive. Compare and contrast the actions of living and non-living things. In groups create a presentation on some characteristics of living things and share with the class. (<i>Teacher should focus the class discussions on the following characteristics: feed, grow, move, reproduce, respond, get rid of waste and breathe</i>). Categorise items in the aquarium/terrarium as living or non-living. <b>(Note: the treatment of excretion and respiration is not required.)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Observe, communicate, record, collaborate, think critically - deduce, analyse, construct graphs, organize data</li> <li>• Observe, think critically -analyse, classify, communicate, , collaborate</li> </ul>	<ul style="list-style-type: none"> <li>• Characteristics of living things correctly identified</li> <li>• Conclusion supported by facts</li> <li>• Bar graph correctly constructed with information accurately represented</li> <li>• Information on Bar graph correctly interpreted, explained and communicated</li> <li>• Plausible reasons given to distinguish living and non-living things</li> <li>• Evidence of groups working collaboratively</li> <li>• Non-living objects identified</li> <li>• Presentation identifies all seven characteristics of living things</li> </ul>

<ul style="list-style-type: none"> <li>• Take photographs or make video recordings of the living and non-living things in the school environment, and create a digital story/picture collage for presentation. Make sure special attention is paid to the naming of animals and plants. <b>OR</b></li> <li>• Visit Hope Botanical Gardens and Zoo, Cranbrook Flower Forest, Shaw Park Gardens or other parks and zoos to observe plants and animals. Identify the plants and animals that are found in Jamaica especially those that are protected. Take pictures and compile a report on the living organisms found. Discuss why living organisms must remain in their natural habitats.</li> <li>• Investigate non-living things and identify why they are non-living. Be given pictures or objects and asked to list all the characteristics that the non-living object shows (e.g. a car) in a table. Discuss whether it shows all the characteristics. Determine whether it is living or non-living based on how many characteristics are shown (<i>Note: Students are guided to see that once all the characteristics are not shown the object is non-living</i>).</li> </ul>	<ul style="list-style-type: none"> <li>• Create, communicate</li> <li>• Observe, record, communicate, think critically – analyse, draw conclusions</li> <li>• Observe, classify, communicate, record, think critically – analyse, draw conclusions, justify</li> </ul>	<ul style="list-style-type: none"> <li>• Items correctly classified as living and non-living</li> <li>• Plants and animals correctly named</li> <li>• Evidence of private research/reading, exploring the environment</li> <li>• Living organisms correctly identified</li> <li>• Report is creative and contains accurate information</li> <li>• Justifiable reasons for living organisms to remain in their natural habitat</li> <li>• Characteristics correctly identified</li> <li>• Objects correctly classified</li> <li>• Justifiable conclusions drawn</li> </ul>
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**Learning Outcomes**

Students who demonstrate understanding can:

- ✓ Differentiate between living and non-living things
- ✓ List a variety of common plants and animals
- ✓ Communicate findings from investigations
- ✓ Analyse data/information
- ✓ Use ICT tools effectively to produce multimedia presentations and to communicate information to multiple audiences.

<p><b>Points to Note</b></p> <p>Living things possess seven characteristics however, the focus should be on the first five: feed, grow, move, reproduce, respond, get rid of waste and breathe. <b>DO NOT treat excretion and respiration. Note that breathing is the mechanical action of inhaling and exhaling.</b></p> <p>Non-living things have never been alive.</p> <p>Students should be reminded to follow guidelines to promote healthy use of ICT tools</p>	<p><b>Extended Learning</b></p> <p>In groups, plan and design a terrarium/aquarium. Design should include dimensions, materials and cost. Identify design constraints and criteria for success. Compare and select the best design solution. As a class, construct the terrarium/aquarium</p>
<p><b>Resources</b></p> <p>Video/pictures, materials for building aquarium/terrarium, teacher-prepared checklist on behaviours/actions of living things, computer, multimedia projector. image capturing device (e.g., camera) and any other available technologies</p>	<p><b>Key vocabulary</b></p> <p>Living, non-living, characteristics, feed, grow, move, reproduce, respond, get rid of waste, breathe</p>



## Focus Question 2: What are the needs common to plants and animals?

**THEME:** Living things, Life Processes and the Environment

### Attainment Target:



- Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans
- Recognise the variety of living things, their interdependence and their inter-relationship with the environment
- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships.
- Display curiosity, objectivity and perseverance in their approach to activities

### Benchmarks:

- Know the characteristics of living things and recognise that all living things have similar basic requirements (air, water, nutrients)
- Devise and carry out a fair test in a familiar context
- Predict the outcomes of events based on their knowledge (e.g. steeper inclines increase the speed of toy cars rolling down them)



**Duration:** 3 weeks/ 6 hours

### ICT Attainment Targets:

-  **COMMUNICATION AND COLLABORATION** - Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others
-  **DESIGNING AND PRODUCING** – Students use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations

### Objectives:

- Determine, through investigation, the basic survival needs common to all living things (air, water and nutrients)
- Carry out fair tests through investigations involving plants
- Predict outcomes of investigations exploring the basic survival needs of plants
- Make and record observations while carrying out investigations on the survival needs of living things
- Collect and display data from investigations on the needs of living things
- Analyse and compare data from investigations on the needs of living things
- Use data from investigations to draw conclusions about the basic survival needs of plants and animals
- Compare predictions with conclusions made from investigations conducted
- Plan and design a greenhouse/shade-house
- Apply concepts related to the needs of living things to construct a miniature greenhouse/shade-house
- Carry out investigations with due regard to safety
- Work cooperatively in groups
- Show objectivity by seeking and using data and information to validate observations and explanations

<p> <b>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING</b> - Students use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions</p> <p> <b>DIGITAL CITIZENSHIP</b> - Students recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour</p>	
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Suggested Teaching and Learning Activities – Focus Question 2 : What are the needs common to plants and animals?	Key Skills	Assessment Criteria
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>Recap the characteristics of living things. View videos/pictures of animals (including humans) in their natural environment seeking/eating food, drinking water etc. Discuss the needs of animals observed and compare to the needs of plants. Use the <b>KWL</b> approach to discuss the basic needs of all living things. Students will state what they <b>Know</b> and what they <b>Want</b> to know. After carrying out investigations, they will state what they have <b>Learned</b>.</li> <li>In groups, students conduct investigations to determine if plants need: (a) nutrients (b) air (c) water. Before conducting each investigation students should be engaged in a class discussion on the factors that may affect the outcome of the investigations. Furthermore, with the aid of the teacher, discuss what makes the investigations <b>fair tests</b>. The groups will be asked to make predictions on the outcome of the investigations. Students will draw simple conclusions from the data collected. They will compare their predictions with the conclusion(s).</li> </ul>	<ul style="list-style-type: none"> <li>Observe, communicate, think critically - analyse, investigate, collaborate</li> <li>Communicate, identify variables, collaborate, think critically - predict, analyse</li> </ul>	<ul style="list-style-type: none"> <li>Needs of animals correctly identified</li> <li>Relationships/logical comparisons of the survival needs made between animals and plants</li> <li>Evidence of groups working collaboratively</li> <li>Factors, that can affect the investigation, identified and suitable measures taken to control these factors</li> <li>Suitable predictions made</li> <li>Conclusions based on findings</li> <li>Predictions weighed against conclusions drawn</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 2 : What are the needs common to plants and animals?	Key Skills	Assessment Criteria
<p>1. Nutrients Investigation – Problem: do plants need nutrients? Students make predictions informed by previous knowledge about nutrients and characteristics of living things. Apparatus – fertilizer, two similar transparent containers (jam jar, plastic cup etc.), two similar plants, water, sand/gravel, teaspoon, 350 ml (12 oz.) container. Procedure – Place a plant in each container. Place the same amount of sand/gravel into each container. Make the fertilizer solution by adding one teaspoon of fertilizer to 350 ml of water and stir. Pour the fertilizer solution into one of the jars to cover the level of the sand/gravel. Pour 350 ml of water into the other container. Label the containers appropriately. Place both containers in the same location for one week, each day making observations and recording results in a variety of ways. Compare and discuss the results and draw conclusions. Share findings (analysis and conclusions) with the class in a variety of ways.</p> <p>2. Air Investigation – Problem: do plants need air? Students make predictions informed by previous knowledge about air and characteristics of living things. Apparatus – transparent plastic bag, petroleum jelly, two similar transparent containers (jam jar, plastic cup etc.), two similar plants, water, soil. Procedure – Place a plant in each container. Place the same type and amount of soil into each container. Label the containers appropriately. Water each plant with equal amount of water. Place a transparent plastic bag over one plant/container and seal it air-tight by covering the bag with petroleum jelly. Place both containers in the same location for one week, each day recording results. Compare and discuss the results and draw conclusions. Share findings</p>	<ul style="list-style-type: none"> <li>• Communicate, collect and interpret data, collaborate, think critically – predict, problem solving, analyse, Investigate, control variables, draw conclusions</li>   <li>• Communicate, collect and interpret data, collaborate, think critically - predict, problem-solving, analyse, Investigate, control variables, draw conclusions</li> </ul>	<ul style="list-style-type: none"> <li>• Variables in investigation correctly identified</li> <li>• Correct explanation of how variables were controlled</li> <li>• Findings communicated appropriately</li> <li>• Investigation conducted according to established procedures</li> <li>• Conclusions supported by data</li> <li>• Predictions weighed against conclusions drawn</li> <li>• Data appropriately recorded</li> <li>• Conclusions supported by data</li>   <li>• Variables in investigation correctly identified</li> <li>• Correct explanation of how variables were controlled</li> <li>• Findings communicated appropriately</li> <li>• Investigation conducted according to established procedures</li> <li>• Conclusions supported by data</li> <li>• Predictions weighed against conclusions drawn</li> <li>• Data appropriately recorded</li> <li>• Conclusions supported by data</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 2 : What are the needs common to plants and animals?	Key Skills	Assessment Criteria
<p>(analysis and conclusions) with the class variety of ways.</p> <p>3. Water Investigation – Problem: do plants need water? Students make predictions informed by previous knowledge about nutrients and characteristics of living things. Apparatus - two similar transparent containers (jam jar, plastic cup etc.), two similar plants, water, soil. Procedure – Place a plant in each container. Place the same type and amount of soil into each container. Label the containers A and B. Water plant A only each day, at a specified time, for one week. Place both containers in the same location for one week, each day recording results. Compare and discuss the results and draw conclusions. Share findings (analysis and conclusions) with the class variety of ways.</p> <p><b>ICT Integration</b></p> <ul style="list-style-type: none"> <li>• An image capturing device may be used to take pictures of the plants each day.</li> <li>• A multimedia presentation may be created to aid in communicating the results.</li> <li>• Navigate and manipulate online tutorials/simulations on the importance of nutrients, air and water on plant growth.</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate, collect and interpret data, collaborate, think critically - predict, problem-solving, analyse, Investigate, control variables, draw conclusions</li> <li>• Capture image with image capturing device</li> <li>• Create multimedia presentation</li> <li>• Communicate information</li> <li>• Create multimedia presentation</li> <li>• Navigate and manipulate online tutorials</li> </ul>	<ul style="list-style-type: none"> <li>• Variables in investigation correctly identified</li> <li>• Correct explanation of how variables were controlled</li> <li>• Findings communicated appropriately</li> <li>• Investigation conducted according to established procedures</li> <li>• Conclusions supported by data</li> <li>• Predictions weighed against conclusions drawn</li> <li>• Data appropriately recorded</li> <li>• Conclusions supported by data</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 2 : What are the needs common to plants and animals?	Key Skills	Assessment Criteria
<ul style="list-style-type: none"> <li>• In groups, research the purpose and design features of greenhouses/shade-houses. As a class discuss the information relating design to function. In groups, design a greenhouse made of available materials that can best propagate the growth of a specific plant or crop. Pay special attention to the regulation of air, heat, light, and water.</li> <li>• As a class, compare group designs in order to arrive at the best design solution (i.e. solution that will be most successful in addressing the problem). Design solutions should outline and address time, cost and material constraints. Construct a working model/prototype of the greenhouses/shade-house as specified by the best design solution.</li> <li>• Review the basic needs of animals. Investigate the need of animals for shelter, food, air and water by observing a pet (dog or bird). Record observations of how the animal behaves when fed, visited, given light etc. In groups, design a dog house or bird cage from available materials that can provide shelter. Show how the needs of the specific animal will be met in the design of the house/ shelter. Compare designs with class and arrive at the best design solution. Construct the model/prototype and test how it works. Present findings and details on how the design works to the class</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborate, communicate, think critically - research, apply concepts, problem-solve, plan and design</li> <li>• Think critically - problem solve, create, analyse, manipulate</li> <li>• Create, collaborate, communicate, record, plan and design, manipulate, think critically – analyse, solve problems, justify</li> </ul>	<ul style="list-style-type: none"> <li>• Design reflects consideration for the regulation of air, heat, light and water</li> <li>• Evidence of collaboration</li> <li>• Evidence of problem solving strategy applied in creation of design</li> <li>• Design features correctly related to purpose</li> <li>• Design solution identifies criteria for success and states constraints</li> <li>• Prototype/model performs as intended</li> <li>• Accurate observations recorded</li> <li>• Design shows how needs of animals will be met</li> <li>• Use and application of knowledge evident</li> <li>• Model/ prototype works as intended</li> </ul>
<p><b>Learning Outcomes</b> Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ Conduct a fair test</li> <li>✓ State the needs common to all living things</li> <li>✓ Create design solutions to address specific problems</li> <li>✓ Critique design solutions</li> <li>✓ Contribute and evaluate the contribution of others to the discussion</li> <li>✓ Use selected ICT tools effectively to browse and search for information on the need common to plants and animals; and produce</li> </ul>		

Suggested Teaching and Learning Activities – Focus Question 2 : What are the needs common to plants and animals?	Key Skills	Assessment Criteria
multimedia presentations		
<p><b>Points to Note</b></p> <p>Investigations should be done concurrently.</p> <p>Stress the importance of sunlight being the main source of energy for green plants to make food</p> <p>KWL approach: The K-W-L strategy stands for what I <b>K</b>now, what I <b>W</b>ant to learn, and what I did <b>L</b>earn.</p> <p>Use the teaching moments to identify science process skills in the Scientific Method and the Engineering Design Process</p> <p>Cross-curricular links: Language Arts (AT1, AT1 strand 2, AT3 strand 1); Mathematics (AT1 strand 3, 6)</p>	<p><b>Extended Learning</b></p> <p>Research how plants and animals survive in harsh environments lacking water and air (e.g. mangroves, cacti, intestinal parasites, mud worms)</p>	
<p><b>Resources</b></p> <p>Pairs of similar plants, sand, gravel, teaspoon, measuring cup, transparent plastic bags, petroleum jelly, jam jars/plastic cups, soil, video/pictures of animals seeking/having food, water and air, image capturing device, printing device, multimedia projector and computer</p> <p>Websites: <a href="http://www.thunderboltkids.co.za">www.thunderboltkids.co.za</a> <a href="http://www.teachitprimary.co.uk">www.teachitprimary.co.uk</a> <a href="http://www.bbc.co.uk/schools/teachers/ks2_lessonplans/science">www.bbc.co.uk/schools/teachers/ks2_lessonplans/science</a></p>	<p><b>Key vocabulary</b></p> <p>fertilizer, transparent, nutrients, fair test, constraints, design solution</p>	







## **SCIENCE UNITS OF WORK GRADE 4 TERM 1 UNIT 3: PLANTS AND ANIMALS**

### **About the Unit**

In this unit, students will learn about flowering plants and animals. Through investigative activities they will study the main structures and their functions in the plant. Students will explore the basic structures of animals and how these function to help animals survive in their natural habitats. They will also be able to compare and classify animals based on where they live, what covers their body and whether they have skeletons and where it is located. They will learn drawing skills and work cooperatively in groups as they explore the scientific process.

### **Range of Content**

- Plants can be divided into two groups; those that produce flowers (flowering plants) and those that do not
- The main parts of the flowering plant are the root, shoot and the flower
- The root, which is usually below the ground, anchors the plant, transports water and nutrients from the soil, and in some cases stores food e.g. carrot. There are two main types of roots: taproot and fibrous root. A taproot forms one long, large/thick root, and may have smaller sprout roots grow off the main root. A fibrous root has many smaller roots that branch out in different directions.
- The shoot system is above the ground and consists of the leaves, buds, flowers and stems. The stem holds the leaves and transports and stores food, while the leaves are needed for the plants to make food.
- The flower contains both the male (stamen) and female (pistil) parts. During pollination, pollen from the male part is transferred to the female part.
- The other parts of the flower include the petals (usually bright, to attract insects) and the sepals (which protect the flower bud when it is developing)
- How to make scientific drawings:
  - ✓ Scientific drawings are line drawings done in pencil with no shading
  - ✓ Use a ruler for label lines (no arrowheads) and label on the right side only using script
  - ✓ Drawings should be centred on the page and large enough
  - ✓ Each drawing should have a title above it
- A habitat describes a place where an animal or plant lives. All the needs of the animals are provided by the habitat
- Animals have a basic structure which includes a head, body, limbs, tail and sense organs (eg. eyes and ears)
- Animals can be differentiated based on where they live, what covers their body and whether they have bones on the inside or outside.
- Animals that live in water (aquatic), or land (deserts or forests) have special features to enable this
- The covering on an animal's body helps to protect it, keep it warm and helps it to blend into the environment
- The sense organs of animals help them to respond to their environment, feed, and be aware of danger
- Animals with bones inside their bodies (backbone) are called vertebrates while those without are called invertebrates (e.g. insects)

Vertebrates are divided into five groups; mammals (covered in hair or fur, use lungs and produce milk), fish (covered in scales and breathe with gills), birds (covered in feathers and have beaks), amphibians (have moist skin, live on land and water) and reptiles (have dry scaly skin and use lungs).

**Prior Learning**

Check that students can:

Describe the basic requirements of living things

Classify animals as living things

Describe the basic requirements of living things

**Focus Question 1: What are the functions of some external features of plants and animals?**

**THEME:** Living things, Life Processes and the Environment

**Attainment Target:**

- Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans
- Recognise the variety of living things, their interdependence and their inter-relationship with the environment.
- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships





**Benchmarks:**

- Know the basic functions of the sense organs in humans and other animals.
- Describe a simple design that addresses a specific challenge and indicate what defines success and what limitations exist
- Devise and carry out a fair test in a familiar context
- Predict the outcomes of events based on their knowledge (e.g. steeper inclines increase the speed of toy cars rolling down them)
- Display curiosity, objectivity and perseverance in their approach to activities

**Duration:** 7 weeks/ 14 hours

**Objectives:**

- Identify and name a variety of common plants and animals including wild and cultivated/ domesticated types
- Identify, draw and label the basic structure common to flowering plants and animals
- Compare the external features of two groups of flowering plants (a grass plant and a shrub) and animals in different habitats
- Classify plants based on their root systems
- Investigate the functions of different structures of plants (root and shoot systems) and animals
- Classify animals as vertebrates or invertebrates
- Construct graphs and analyse data collected from investigations on plants and animals
- Explain the functions of parts of the flower
- Make labelled drawings of the external parts of plants
- Handle plants and animals with care
- Show concern by being responsible towards plants and animals
- Show curiosity in exploring plants and animals in the surroundings

<p>ICT Attainment Target(s)</p> <ul style="list-style-type: none"> <li> <b>COMMUNICATION AND COLLABORATION</b> - Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others</li> <li> <b>DESIGNING AND PRODUCING</b> - Students use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations</li> <li> <b>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING</b> - Students use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions</li> <li> <b>DIGITAL CITIZENSHIP</b> - Students recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour</li> </ul>	
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Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• In groups, observe and record the different types of plants and animals in their community. Collect samples/take pictures/make video recordings of the organisms. With the aid of the teacher or using appropriate resource materials (online/offline), find out the names of the plants and animals they observed. Prepare a presentation (digital/non-digital) on the organisms in their community and share with the class.</li> <li>• Make a simple drawing of the external features of a flowering plant (a small shrub with flowers) which has its root and leaves intact. With guidance from the teacher, identify and label the main parts of the plant (shoot, root, leaf, stem, flowers). Place the plant between two sheets of paper, then place between two heavy books and leave for about a week, in a safe place.</li> <li>• Observe and make simple drawings of the external features of a grass plant with its root and leaves intact. Compare the grass plant with the pressed</li> </ul>	<ul style="list-style-type: none"> <li>• Observe, record, compare, communicate, draw, think critically - research</li> <li>• Observe, make labelled drawings</li> <li>• Observe, make labelled drawings, communicate,</li> </ul>	<ul style="list-style-type: none"> <li>• A variety of plants and animals correctly identified</li> <li>• Accurate observations noted</li> <li>• Creative presentations with correct information</li> <li>• Drawings and labels completed to acceptable standard</li> <li>• Drawings and labels completed to</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p>sample from the previous activity and record their observations (<i>Teacher should ensure the students focus on the similarities and differences between the root, stem, leaf and flower</i>). Share findings with class.</p> <ul style="list-style-type: none"> <li>View videos or pictures of different animals in different habitats/ environments [e.g. aquatic (water), land (desert, forest etc.)] In groups, identify the animals present. Discuss why the animal is suited for that particular habitat or environment. Compare the external features of the animals (e.g. fins, feathers, fur, limbs etc.). Construct a chart using the information on the number of animals found in the different environments.</li> <li>Research an animal not common to them and make a presentation on the features of the animal, where it lives, what it eats etc. Use creative ways to make presentation (role play, draw, make project, scrap book or multi-media presentation)</li> <li>Examine pictures of selected animals. Suggest what structures are similar to all the animals. (<i>Basic structures of head, body, limbs, tail and sense organs should be brought out</i>) Be given outlines of different animals and asked to label the basic structures on the drawings. Discuss the functions of the different structures. Complete a table/ worksheet identifying the functions of the structures in different animals.</li> <li>In groups, observe a grass plant and another type of plant (shrub) with roots and leaves intact. Soak the roots of the plants in water to wash away soil. Examine both plants carefully and make line drawings of them guided by the teacher. Discuss with teacher the different parts of the plant that</li> </ul>	<p>think critically - compare</p> <ul style="list-style-type: none"> <li>Observe, communicate, collaborate, gather information, think critically (analyse, draw conclusions, compare, create)</li> <li>Research, communicate, create</li> <li>Observe, communicate, think critically (analyse, compare, draw conclusions, interpret)</li> <li>Make observations, collaborate, draw, think critically (compare to organise knowledge),</li> </ul>	<p>acceptable standard</p> <ul style="list-style-type: none"> <li>Acceptable comparisons made</li> <li>Animals correctly identified</li> <li>Charts contain accurate information</li> <li>Logical conclusions drawn about why animals are suited for their environments</li> <li>Animals correctly classified based on external features</li> <li>Creative presentation contains accurate information</li> <li>Basic structures accurately labelled on animals</li> <li>Accurate comparisons made</li> <li>Logical explanations given for functions of structures</li> <li>Worksheet completed</li> <li>Instructions carefully followed</li> <li>Acceptable labelled</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p>they identified. Label these on their drawings. Teacher assists class in labelling the plant fully (shoot system, root system, main root (tap root), branch roots, fibrous roots, leaf, stem flowers, fruits etc. ) Examine the root systems carefully, compare them and record observations.</p> <ul style="list-style-type: none"> <li>In groups, uproot weeds of different sizes located on the school compound. Discuss the difficulty they encounter in uprooting each weed and suggest possible reasons. Suggest why they think some trees become uprooted during a hurricane while others do not. Select a small plant, carefully remove it from the soil, wash off the roots and place it in a transparent container with water. Take an initial measurement of the water level, and then continue to measure and record the water level at the same time each day, over a one-week period (<i>The container should be covered with only the shoot of the plant exposed</i>). Use their results to plot a graph showing the variation of water level during the week. Discuss the activities carried out then draw and record conclusions about the functions of the root. Write a report on the investigations outlining their observations and conclusions. Share their reports with the class.</li> </ul> <p>ICT Integration Where possible, use ICT tools to capture and record observations, and prepare and present reports.</p> <ul style="list-style-type: none"> <li>Examine and compare a selection of storage roots, for example, carrot, sweet potato, cassava and turnip. In groups, be assigned one of the storage roots to research what it stores. Share findings with the class. As a class, discuss the storage of food as another function of roots.</li> </ul> <p>Explore other ways in which the root serves the plant. (E.g. absorbing substances and reproduction). Produce a class display to illustrate their findings, giving appropriate examples.</p>	<p>communicate, manipulate, investigate</p> <ul style="list-style-type: none"> <li>Collaborate, observe, record, measure, think critically - analyse communicate, plot graphs</li> <li>Collaborate, communicate, research, think critically - analyse</li> </ul>	<p>drawings of plant structures</p> <ul style="list-style-type: none"> <li>Accurate comparisons of root systems (tap and fibrous)</li> <li>Conclusions supported by evidence</li> <li>Sound reasons given on importance of roots</li> <li>Correct measurements recorded</li> <li>Graph accurately constructed</li> <li>Report contains accurate observations and investigations</li> <li>Substances stored in roots correctly identified</li> <li>Creative class display with accurate information</li> </ul>



Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<ul style="list-style-type: none"> <li>• In groups place the shoot of a soft stemmed plant (such as <i>Impatiens</i> or Celery) in coloured water (red food colouring recommended). Observe after about 40 minutes and record findings in a variety of ways. Suggest what they think is the function of the stem. Share observations and ideas with the class.</li> <li>• In groups, predict what they think will happen if the leaves are removed from a plant. Be given similar plants of the same species (e.g. Balsam, <i>Impatiens</i>) and asked to plan how these could be used to investigate their predictions. Present their plans to the teacher. <i>(Teacher should ensure that plans reflect fair testing, e.g. keeping both plants in the same place, watering equally etc., and what observations and measurements will be made e.g. height from soil level to the tip of the shoot, colour and number of leaves etc.)</i> Carry out investigations based on the approved plans over a period of several weeks. <i>(Teacher should help the students to make and record careful measurements.)</i> Record and display the results of their investigations in a variety of ways <i>(Teachers should encourage the use of digital technology to record and display observations)</i>. As a class discuss the findings of the investigations and make conclusions about the role/importance of leaves to plants.</li> <li>• In groups, observe and record the variety of flowers in their community. Collect samples and make observations re: colour, smell, shape, size, and number of petals and sepals. Where possible, use image capturing devices to take photos of the flowers. Record the observations in a table; this can be done in notebook and/or suitable software. With the assistance of the teacher, find out the names of the flowers observed. Organise their work in a portfolio, and share with the class.</li> <li>• With the aid of the teacher, label a diagram of a flower showing the following parts: (a) stamen (b) pistil (c) petals and (d) sepals. Examine a flower and identify the parts labelled on the diagram. Dissect the flower</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborate, observe communicate, record, think critically - investigate</li> <li>• Make predictions, investigate, communicate, observe, record, draw conclusions, manipulate, think critically -, create, apply, analyse</li> <li>• Investigate, think critically, record, research, observe, communicate, collaborate</li> <li>• Capture image</li> <li>• Design and produce a multimedia presentation:</li> <li>• Communicate, label diagrams, record, manipulate</li> </ul>	<ul style="list-style-type: none"> <li>• Suggested function of stem supported by observations</li> <li>• Investigation plans reflect a fair test</li> <li>• Results appropriately represented</li> <li>• Adherence to guiding procedures during Investigation</li> <li>• Portfolio contains accurate information</li> <li>• Floral structures accurately identified and dissected</li> </ul>



Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p><i>(separate the parts)</i> then paste and label the parts on a teacher-made worksheet. Place the diagram and the dissected specimen in their portfolios. As a class discuss the function of the flower (reproduction) and how the parts of the flower contribute to its role.</p> <ul style="list-style-type: none"> <li>• As a class, visit a zoo or view animals in their natural habitats. Investigate how the animal moves, eats, behaves and blends in the environment. For example, examine how the lizard, grasshopper blends in the environment by changing colour when a predator or prey is near. Suggest reasons for changing colours. In groups, investigate the movements and behaviour of fish in an aquarium and compare this to monkeys in a cage. Compare the use of the tail in other animals. Present findings to the class in a variety of ways.</li> <li>• In groups, investigate the use of the body covering in animals, using humans as an example. Expose the skin to different temperatures and different types of clothing. Observe how the body reacts and adjusts to the changes in temperature and weather. Explain observations. Discuss how humans and other animals survive in extremely hot or cold environments. Given pictures of different animals, identify the coverings as hair, fur, scales, feathers etc. Suggest why body covering is important for animals. Present findings to the class in a variety of ways.</li> </ul>	<ul style="list-style-type: none"> <li>• Observe, collaborate, communicate, investigate, gather evidence, record, think critically (analyse, compare, justify)</li> <li>• Collaborate, investigate, communicate, think critically (analyse, interpret, draw conclusions)</li> </ul>	<ul style="list-style-type: none"> <li>• Accurate observations noted</li> <li>• Accurate records of animal behaviour kept</li> <li>• Logical reasons given</li> <li>• Accurate comparisons made</li> <li>• Presentations contain correct information</li> <li>• Accurate observations recorded</li> <li>• Logical explanations given</li> <li>• Body coverings of animals correctly identified</li> <li>• Logical reasons given for the importance of body coverings</li> <li>• Presentations contain accurate information</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<ul style="list-style-type: none"> <li>In groups, compare the differences between an insect and a fish. Look inside the two animals to see if bones are present. Discuss what they have observed. Compare other animals and determine if bones are present inside. Group animals using this characteristic. (<i>Teacher should introduce the two main groups as vertebrates and invertebrates</i>) Be given other examples of animals and asked to find other ways of grouping them; based on their body covering, limbs (e.g. wings, scales, legs). Provide reasons and justifications for their observations and groupings. (<i>Mammals, birds, fish, amphibians and reptiles should be introduced as the main groups of vertebrates</i>)</li> </ul>	<ul style="list-style-type: none"> <li>Collaborate, investigate, observe, manipulate, communicate, think critically (classify, analyse, draw conclusions, justify)</li> </ul>	<ul style="list-style-type: none"> <li>Differences correctly identified</li> <li>Accurate observations given</li> <li>Accurate comparisons made</li> <li>Animals correctly grouped as vertebrates and invertebrates</li> <li>Justifiable reasons given on groupings of vertebrates</li> </ul>
<p><b>Learning Outcomes</b></p> <p>Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ Identify some plants and animals in their community</li> <li>✓ Explain the functions of the basic structures of plants and animals</li> <li>✓ Explain the basic functions of a flower</li> <li>✓ Differentiate between the main groups of plants and animals</li> <li>✓ Classify plants based on their root systems</li> <li>✓ Make labelled drawings of the external parts of flowering plants</li> <li>✓ Appreciate the need to care for plants and animals</li> <li>✓ Use selected ICT tools to capture images and videos, to record observations and to develop multimedia presentation</li> </ul>		
<b>Points to Note</b>	<b>Extended Learning</b>	
<p>Teacher should soak the roots of the plants in water to wash away the soil before using in activities</p> <p>Ensure the safety of the students at all times e.g. some students may be allergic to certain plants and animals</p> <p>Scientific drawings are line drawings done in pencil with <b>no shading</b>. Use a ruler to draw label lines (no arrowheads) and write labels on the right side only using script. Each drawing should have a title.</p>	<ul style="list-style-type: none"> <li>Field trip to a botanical garden/ zoo to learn more about plants and animals.</li> <li>In groups, research ways in which humans have impacted the natural habitats of animals and plants. Discuss how human developments have affected animals and plants. Suggest how humans can protect endangered/ endemic plants and animals. Use slogans, jingles, cartoons and other means to create an educational campaign.</li> </ul>	

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p>Care should be exercised in the handling of animals. Do not expose students to extreme temperature changes especially NO NAKED FLAME.</p> <p>Cross-curricular links: Social studies (Grade 4, AT 2); Mathematics (AT 1, strands 1, 2)</p>		
<p><b>Resources</b> Grass plant, shrub, water, a small plant, flower, videos of animals in different habitats (fresh water, ocean, desert, grassland, forest), pictures of different animals in different environments, live animals (fish, lizards, insects, grasshoppers etc.). Protected parks and zoos, teacher-made worksheet and tables Website: <a href="http://www.thunderboltkids.co.za">www.thunderboltkids.co.za</a> Digital camera, Internet, computer with word processor, spreadsheet, presentation or suitable software for multimedia presentation and any other available technologies</p>	<p><b>Key vocabulary</b> Root, shoot, flower, petal, sepal, tap root, fibrous root, stamen, pistil, head, limb, body, fur, scales, skin, feathers, wings, legs, aquatic, land, desert, forest, vertebrate, invertebrate, protected, endangered, birds, mammals, fish, amphibians, reptiles</p>	

## **SCIENCE UNITS OF WORK GRADE 4 TERM 2 UNIT 1: SENSE ORGANS**

### **About the Unit**

In this unit, students will learn about the various sense organs, their specific functions and how they detect stimuli. Through observation of animals in their natural environments, students compare and contrast the structure and function of sense organs in humans and other animals. They will analyse situations in which the senses may mislead and describe ways in which technology is used to extend the senses and correct/restore sensory malfunctions. They will also explore ways in which humans cope with loss of sensory functions.

### **Range of Content**

- Humans respond to changes in their environment through the five senses; sight, taste, smell, touch and hearing
- The sense organs (eyes, ears, tongue, nose and skin) contain receptors which respond to stimuli such as light, sound, touch, pressure, pain, temperature and chemicals in the air and food
- The sense organs work using the basic flow chart:
  - ✓ Stimuli from the environment → detected by sensors in sense organs → transmitted to the brain for interpretation and action
- Some animals have more developed senses than humans, others use different organs. These include large eyes for seeing in the dark, antennae to detect movement and chemicals in the air, use of sound reflecting off objects and high sensitivity to smell
- Sense organs can become damaged and lose their sensitivity, hence they need to be properly cared for
- Technology can be used to extend the senses through instruments such as eye glasses, hand lens, microscopes, telescope, binoculars, hearing aids, amplifiers and head phones

### **GUIDANCE FOR THE TEACHER**

The focus of the unit is on investigative activities using the senses and sense organs. The differences and similarities in the senses and sense organs of animals and humans provide an excellent opportunity for students to research and relate to organisms in their environment

**Details of the structures of the sense organs are not required; stick to the simple treatment in the units.**

**Prior Learning**

Check that students can:

Identify parts of the body that relate to their senses

**Focus Question 1: Why are sense organs important?**

**THEME:** Living things, Life Processes and the Environment

**Attainment Target:**



- Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans
- Recognise the variety of living things, their interdependence and their inter-relationship with the environment
- Gain an understanding of and apply the engineering design process.
- Gain an understanding of and apply aspects of the scientific method
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships

**Benchmarks:**

- Know the basic functions of the sense organs in humans and other animals
- Describe a simple design that addresses a specific challenge and indicate what defines success and what limitations exist
- Devise and carry out a fair test in a familiar context
- Predict the outcomes of events based on their knowledge (e.g. steeper inclines increase the speed of toy cars rolling down them)
- Display curiosity, objectivity and perseverance in their approach to activities

**Duration:** 2 weeks/ 4 hours


**ICT Attainment Targets**


-  **COMMUNICATION AND COLLABORATION - Use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others**
-  **DESIGNING AND PRODUCING –Use digital tools to design and develop**

**Objectives:**

- Describe the functions of the sense organs
- Infer that our sense organs work together at all times
- Assess how animals use their sense organs in particular situations
- Analyse how the sense organs of humans and other animals differ
- Demonstrate curiosity in exploring the use of the five senses
- Value their sense organs

creative products to demonstrate their learning and understanding of basic technology operations

 **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING** - Use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions

 **DIGITAL CITIZENSHIP** - Recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour

**Suggested Teaching and Learning Activities – Focus Question 1**

**Key Skills**

**Assessment Criteria**

**Students will:**

- Recap information on the senses and related sense organs
- In groups, take turns being blind-folded and given materials to identify using their sense of smell, touch and taste (nutritious foods only and with teacher’s guidance). Be provided a mystery object in a box, the box is shaken and a guess is made about what object is inside. Listen to sound clips and identify the sound source. Look at an object, such as a leaf or peanut in shell, and describe it based on what they observe. Discuss and tabulate findings to show the objects identified/described and the related sense organ(s) used (see sample table below).

Description of Object	Sense Organ Used for Identification				
	Ear	Eye	Nose	Skin	Tongue
leaf		✓	✓	✓	

As a class, discuss the use of the sense organs in making observations.

- In groups, discuss then role-play situations where the senses are used in a variety of ways, for example to protect the body, find food etc. Record some of their experiences. Individually, compose a short story/poem/song/letter about the function(s) and importance of each sense organ, then present their composition to the class,

- Observe, record, communicate, collaborate, manipulate, think critically - investigate

- Communicate, , collaborate, think critically - create

- Completed table containing correctly matched objects with sense organs used for identification
- Sense organs and their function identified
- Evidence of groups working collaboratively

- Role play contains correct information on how the sense organs are used
- Product (short

<p>electronically/non-electronically.</p> <ul style="list-style-type: none"> <li>• Observe pets, school yard animals, animals in their community (birds, lizards, flies, cats, dogs, etc.), or view videos of animals in their natural environment, and then summarise how the observed organisms use their senses (e.g. find food, protect self, etc.).</li> <li>• In groups, use a variety of sources (offline/online) to obtain information on the sense organs of particular animals and report on how these are similar to/different from those of humans. Suggest possible effects of the differences in physical features and share information with the class in creative ways (electronic/non-electronic).</li> </ul>	<ul style="list-style-type: none"> <li>• Observe, record, communicate, think critically - infer</li> <li>• Collaborate, research, communicate, think critically - create</li> </ul>	<p>story/poem/song/letter) contains accurate information about the function and importance of the sense organs</p> <ul style="list-style-type: none"> <li>• Appropriate inferences made about the functioning of all the sense organs in the survival of an organism</li> <li>• Summary contains correct information</li> <li>• Comparisons are accurate and relevant</li> <li>• Suggestions are acceptable</li> <li>• Presentation shows creativity</li> </ul>
<p><b>Learning Outcomes</b></p> <p>Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ Link sense organs to their functions</li> <li>✓ Recognise that animals use their sense organs for various purposes</li> <li>✓ Cite evidence of sense organs working together</li> <li>✓ Evaluate the functions of the sense organs of various animals</li> <li>✓ Appreciate the differences in the features of the sense organs of different animals</li> <li>✓ Use selected ICT tools effectively and safely to browse and search for information</li> <li>✓ Create multimedia presentations</li> </ul>		



<p><b>Points to Note</b></p> <p>Ensure that correct experimental procedures are followed in carrying out the activities. Teacher should ensure that due care is taken for animals. Animals taken from their habitats should be kept alive and returned to their environment.</p> <p>Before and during online activities, remind students to:</p> <ul style="list-style-type: none"> <li>• use search engines safely</li> <li>• acknowledge the owners or creators of the materials used</li> <li>• use the equipment in a healthy way</li> </ul> <p>Cross-curricular links: Drama standards – Grade 4, Exploring and Creating ATs 1-3; Language Arts – Grade 4, ATs 1-3.</p>	<p><b>Extended Learning</b></p> <p>Visit to the zoo/animal farm, or study a particular animal of their choice. Students should write reports on how the animal(s) they observed use their senses.</p>
<p><b>Resources</b></p> <p>Water</p> <p>Fruit samples, list of rules/instructions for each activity</p> <p>Multi-media resources on sensory perception and sound clips</p> <p>Organisms for the observations</p> <p>Internet, computer with word processor, presentation and or story creation software, image capturing device, multimedia projector and any other available technologies</p>	<p><b>Key vocabulary</b></p> <p>Sense organ, sense, stimuli, environment, organism, habitat, function</p>

## Focus Question 2: How does the structure of the sense organs relate to their functions?

**THEME:** Living things, Life Processes and the Environment

### Attainment Target:



- Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans
- Recognise the variety of living things, their interdependence and their inter-relationship with the environment
- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships

### Benchmarks:

- Know the basic functions of the sense organs in humans and other animals
- Describe a simple design that addresses a specific challenge and indicate what defines success and what limitations exist
- Devise and carry out a fair test in a familiar context
- Predict the outcomes of events based on their knowledge (e.g. steeper inclines increase the speed of toy cars rolling down them)
- Display curiosity, objectivity and perseverance in their approach to activities

**Duration:** 4 weeks/ 8 hours

### CT Attainment Targets:

-  **COMMUNICATION AND COLLABORATION - Use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others**
-  **DESIGNING AND PRODUCING –Use digital tools to design and**

### Objectives:

- Describe and label the basic structure of the sense organs
- Describe the functions of selected parts of the sense organs
- Explain how the sense organs detect stimuli from the environment
- Analyse situations in which the sense organs can mislead us
- Explore ways in which technology can extend the senses
- Ask questions and make suggestions about the sense organs
- Use scientific language related to sense organs
- Articulate scientific concepts about the structure and function of the sense organs clearly and precisely

<p>develop creative products to demonstrate their learning and understanding of basic technology operations</p> <ul style="list-style-type: none"> <li>📄 RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING - Use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions</li> <li>📄 DIGITAL CITIZENSHIP - Recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour</li> </ul>	
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Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Look in a mirror at their eyes and/or examine a model/picture (online/ offline), record their observations (colour, parts) and discuss what they see. Make an annotated drawing of one eye to show the external features and their related functions. Research and label diagram of the eye provided by the teacher (<b>cornea, iris, pupil, lens, retina and optic nerve ONLY</b>). Using the diagram, show the route that light travels through the eye, and the information then transmitted to the brain. Sequence this on a flow diagram (cornea → pupil → lens → retina → optic nerve → brain). Suggest possible responses of the body after the information is interpreted by the brain.</li> <li>• In groups, examine an eye from another animal e.g. slaughtered cattle/goat/pig and compare the external features with that of the human eye. Discuss and record their observations and share with the class.</li> </ul>	<ul style="list-style-type: none"> <li>• Observe, record, communicate, annotate drawings, label diagrams, think critically - research</li> <li>• Observe, think critically - compare and contrast, communicate</li> </ul>	<ul style="list-style-type: none"> <li>• Basic external and selected internal features of the eye identified, accurately recorded</li> <li>• Basic function of selected parts (cornea, iris, pupil, lens, retina and optic nerve ONLY) of the eye correctly described</li> <li>• Correctly annotated drawing</li> <li>• Correctly labelled diagram of the eye</li> <li>• Path of light from outside of eye to brain correctly sequenced</li> <li>• Relevant comparisons made between the eyes of humans and animals</li> <li>• Diagram of ear accurately labelled</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
<ul style="list-style-type: none"> <li>• Using a variety of media (electronic or non-electronic) provided by the teacher (e.g. charts, models, online resources), examine the structure of the human ear then label a given diagram of the major parts (<b>pinna, ear canal, eardrum, middle ear, inner ear and auditory nerves</b>) and state their functions, <b>excluding details of the middle and inner ear.</b> (<i>Students are ONLY required to identify the middle and inner ear; no further details are needed.</i>)</li> <li>• Make a simple flow chart showing the route sound travels through the ear, and the information then transmitted to the brain (pinna → ear canal → ear drum → middle ear → the inner ear → auditory nerve → brain). Take turns to be blindfolded while another student makes a sound from different points, inside or outside the classroom. Identify the type of sound, direction it is coming from, distance away, loudness of sound etc. As a class, discuss outcomes of the activity and suggest what they think the role of the brain was in identifying the different information about the sounds.  Use graphic organisers found in a word processor or presentation software to aid your construction of the flowchart.</li> <li>• Observe and interact with digital/non-digital resources on the human nose (chart, videotapes, model, educational CDs/DVDs/websites, etc.), label a diagram of the major parts (nostril, septum, hairs, nasal cavity).</li> <li>• Describe and record the scents they smell when the</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate, label diagrams</li> <li>• Observe, communicate, collaborate, think critically - analyse</li> <li>• Observe, communicate, label diagrams</li> <li>• Observe, record,</li> </ul>	<ul style="list-style-type: none"> <li>• Flow chart shows correct path along which sounds travel</li> <li>• Role of brain identified as interpreting sounds</li> <li>• Correctly labelled diagram</li> <li>• Acceptable suggestions for the identification of odours</li> <li>• Flow chart shows correct sequence</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
<p>teacher opens various containers. In groups, suggest how they were able to smell and differentiate the various scents. Share their ideas with the class. (<i>Teacher should emphasise that the brain interprets the information and makes us identify the odours.</i>)</p> <ul style="list-style-type: none"> <li>• Observe multimedia content on how the nose functions, (video clips, educational CDs/DVDs/websites, etc.), make a flow chart showing how the nose helps us to smell (odours in the air → nostril → nasal cavity → brain).</li> <li>• In groups, search a variety of sources (online/offline) for information on the human tongue. Construct a simple model of the human tongue showing the taste centres (salt, sour, sweet and bitter). Make a flow chart showing how the tongue helps us to taste (substances in food → taste buds → information sent to the brain). Share models and flow charts with the class. As a class, discuss how different tastes are identified (the brain interprets the information from the different taste buds and makes us identify the flavours).</li> <li>• In groups, use a magnifying glass to examine their skin at different points of their body, example: the back and palm of their hand; the upper and lower surfaces of the forearm etc. Then, describe and record their observations (skin tone, hairs, sweat pores, creases and folds etc.). Compare the appearance of the skin at the different points of the body examined. Suggest reasons for the differences and their ideas with the class.</li> </ul>	<p>communicate, collaborate</p> <ul style="list-style-type: none"> <li>• Communicate</li> <li>• Collaborate, think critically - research, create, interpret, organize, communicate</li> <li>• Observe, collaborate, communicate, record, think critically- analyse</li> </ul>	<ul style="list-style-type: none"> <li>• Flow chart shows correct sequence</li> <li>• Model of the human tongue correctly represents the location of taste centres</li> <li>• Acceptable observations of external features of skin recorded</li> <li>• Reasonable suggestions given for differences in parts of the skin</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
<ul style="list-style-type: none"> <li>• In groups, use a variety online/offline of sources (e.g. videotapes, model, computer software, charts, books) to gather <b>basic</b> information on the external structure and functions of the human skin. Identify and record the five stimuli to which the skin responds (pain, pressure, heat, cold and touch). Make a flow chart showing how the skin helps us to feel (stimuli → skin sensors → nerves → brain).</li> <li>• Predict what will happen if they insert one hand into a container of cold water, and at the same time the other hand in warm water, then place both hands simultaneously into another container of water at room temperature. Carry out the investigation and record their observations. Compare their predictions and observations. Suggest simple explanations for their observations. Share and discuss their findings and ideas.</li> <li>• Taste samples of fruits, e.g., sweet orange, then sugar, then sour orange/grapefruit, rinsing their mouths with water after each sampling. Record and suggest simple explanations for their observations. Share and discuss their ideas.</li> <li>• Carry out optical illusion activities (e.g. roll a sheet of letter size paper to form a tube with diameter of about 2 cm. Hold the tube with your left hand and look through the tube with the left eye. Place the right hand against the tube with the palm facing the right eye. Move the right hand slowly back and forth alongside the</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborate, communicate, record, think critically - research</li> <li>• Observe, record communicate, think critically - predict, investigate</li> <li>• Observe, investigate, record, think critically-analyse, communicate</li> <li>• Observe, investigate, communicate, record, think critically – analyse, draw conclusions</li> </ul>	<ul style="list-style-type: none"> <li>• The five stimuli correctly identified</li> <li>• Flow chart correctly sequenced</li> <li>• Acceptable explanations offered for observations</li> <li>• Reasonable explanations offered for observations</li> <li>• Reasonable explanations offered for observations</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
<p>tube while viewing simultaneously through both eyes). Discuss and give possible reasons for their observations.</p> <ul style="list-style-type: none"> <li>• Discuss and record ways in which their hearing can deceive them, e.g. reflected sound (echoes) may mislead our ears regarding the origin of a sound. Create a song/poem/drawing/dance etc. to convey how people’s hearing can deceive them.</li> <li>• Review the ways in which their senses can mislead them. Discuss the limitations of the senses. In groups, compose a story on how someone’s senses deceived them. Use story making or presentation software to design and produce the story which should include at least pictures, narration/sound and text. Share stories with class.</li> <li>• Do research using a variety of sources (online/offline) or interview a resource person, on how instruments are used to extend the senses, example: detect smoke and odours, view distant objects, view objects at night, detect subtle temperature changes, hear faint sounds, detect vibrations, etc. Make models of the instruments and use these in reporting to class on how the instruments work.</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate, record, think critically-analyse, create</li> <li>• Communicate, collaborate, think critically - create</li> <li>• Create multimedia presentation</li> <li>• Communicate, think critically - research, evaluate create</li> </ul>	<ul style="list-style-type: none"> <li>• Creative piece conveys correct information on how people’s hearing may deceive them</li> <li>• Story conveys correct information about how senses can deceive</li> <li>• Models accurately represent instrument.</li> <li>• Models used effectively in reporting</li> <li>• Correct information given in report</li> </ul>
<p><b>Learning Outcomes</b> Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ Describe how the sense organs work</li> <li>✓ Outline the role of the sense organs in responding to stimuli</li> <li>✓ Prove that the sense organs can mislead us</li> </ul>		



<b>Suggested Teaching and Learning Activities – Focus</b> <b>Question 2</b>	<b>Key Skills</b>	<b>Assessment Criteria</b>
<ul style="list-style-type: none"><li>✓ Create models of technologies that can extend the senses</li><li>✓ Explain scientific concepts using appropriate language</li><li>✓ Appreciate that responding to stimuli is important for survival</li><li>✓ Use selected ICT tools to search for information, and produce multimedia presentations</li></ul>		

<b>Points to Note</b>	<b>Extended Learning</b>
<p>Only a functional treatment should be given to the sense organs at this level            Labelling of the Internal parts of the nose is not required            Only a simple treatment of the major parts of the skin is required            Many simple optical illusion activities can be found on the Internet            Models of the instruments do not have to be functional.            Create or locate online a web quest on the parts and functions of the five sense organs for students to use.</p> <p>Cross-curricular links: Drama standards – Grade 4, Exploring and Creating ATs 1-3; Language Arts – Grade 4, ATs 1-3.</p>	<p>Research how plants respond to stimuli, and present findings to the class in a variety of ways</p> <p>Research how the sense organs of animals allow them to survive in their natural environment/ habitat</p>
<p><b>Resources</b>            Water, Fruit samples, list of rules/instructions for each activity            Multi-media resources on sensory perception            Materials for making models of instruments            Organisms for the observations, Models/charts of stimuli – response situations, Paper, Thermometer, Resource persons,            Computer with word processor, presentation software, and/or story creation software, Internet, photo capturing device            Multimedia projector and any other available resources</p>	<p><b>Key vocabulary</b>            stimuli, response, detect, sensor, brain, optic nerve, auditory nerve, taste buds, ear canal, nostril, pinna, iris, pupil, inner ear, ear drum, middle ear, lens, retina, eyelash, septum</p>

### Focus Question 3: How can I care for and protect my sense organs?

**THEME:** Living things, Life Processes and the Environment

**Attainment Target:**

- Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans
- Recognise the variety of living things, their interdependence and their inter-relationship with the environment
- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships

**Benchmarks:**



- Know the basic functions of the sense organs in humans and other animals
- Describe a simple design that addresses a specific challenge and indicate what defines success and what limitations exist
- Devise and carry out a fair test in a familiar context
- Predict the outcomes of events based on their knowledge (e.g. steeper inclines increase the speed of toy cars rolling down them)
- Display curiosity, objectivity and perseverance in their approach to activities



**Duration:** 2 weeks/ 4 hours

**Objectives:**

- Describe ways in which we take care of and protect our sense organs
- Explain how humans adapt to loss of a sense/limitation of a sense organ
- Demonstrate value of their sense organs
- Show care and respect for persons who have sensory disabilities

**ICT Attainment Targets:**

-  **COMMUNICATION AND COLLABORATION - Use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others**
-  **DESIGNING AND PRODUCING –Use digital tools to design and develop creative products to demonstrate their learning and understanding of**

<p><b>basic technology operations</b></p> <ul style="list-style-type: none"> <li> <b>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING</b> - Use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions</li> <li> <b>DIGITAL CITIZENSHIP</b> - Recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour</li> </ul>		
<p><b>Suggested Teaching and Learning Activities – Focus Question 3</b></p>	<p><b>Key Skills</b></p>	<p><b>Assessment Criteria</b></p>
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• In groups, discuss ways in which the sense organs can be cared for or protected. Make a list of ‘do’s’ and ‘don’ts’. Discuss ideas from each group and compile a class list as a display chart.</li> <li>• Record in their journals, how they care for their sense organs over an agreed period (e.g. one week). Share their journal entries with the class and discuss possible reasons for differences in the way they care for their sense organs.</li> <li>• In groups, design and make a poster (digital/non-digital) showing one example of a good hygiene practice related to a sense organ.</li> <li>• In groups, take turns to examine a sample of objects when blindfolded, and then record their observations. Repeat with one eye covered and then with both eyes open. Compare and report on the differences among the three sets of observations. Discuss how humans adapt to limited vision or loss of their eyesight, and record and share their ideas.</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborate, communicate, record</li> <li>• Communicate, think critically-evaluate</li> <li>• Collaborate, create, communicate</li> <li>• Investigate, collaborate, observe, communicate, think critically - analyse, record</li> </ul>	<ul style="list-style-type: none"> <li>• Acceptable do’s and don’ts listed</li> <li>• Journal entries in keeping with good hygiene practices and reflect care of the sense organs, sound judgements about differences in the care of the sense organs</li> <li>• Poster reflects good hygiene practice</li> <li>• Observations appropriately recorded, differences cited and compared</li> </ul>

<ul style="list-style-type: none"> <li>• In groups, brainstorm possible challenges someone who is deaf may experience. Discuss how humans adapt to limited, or no hearing, and then write a story about someone who lost their hearing and how they coped.</li> <li>• Interview someone who has limited vision/hearing and record the interview in a variety of ways. Browse and search teacher-selected sites to gather information about how one copes with blindness/ deafness/limited vision/ limited hearing and what needs to be done to help them interact with people safely. Produce a one minute multimedia presentation to advise an audience of coping strategies of persons with limited vision/hearing and what can be done to help them live safely and as productive citizens in various communities.</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• Write a story about someone who lost their vision and how they coped. Use a story making or presentation software to design and produce the story which should include at least pictures, narration/sound and text. Share their story with the class.</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborate, communicate</li> <li>• Communicate, think critically - analyse, draw conclusions, solve problems, research, create</li> </ul>	<ul style="list-style-type: none"> <li>• Story outlines relevant challenges and coping strategies for persons who are deaf</li> <li>• Presentation contains relevant information on ways of coping with loss of vision/hearing</li> <li>• Story reflects realistic ways of coping with loss of vision/hearing</li> </ul>
<p><b>Learning Outcomes</b></p> <p>Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ Care for and protect their sense organs</li> <li>✓ Describe how humans adapt to loss/limitation of vision and hearing</li> <li>✓ show appreciation for their sense organs</li> <li>✓ show tolerance for persons with visual and hearing impairments</li> <li>✓ Use selected ICT tools to search for information, and to produce multimedia presentations</li> </ul>		

<p><b>Points to Note</b></p> <p>Be sensitive to varied situations faced by students (e.g. students with limited hearing or vision). Avoid embarrassing students who face challenges. Use discussions as a means of promoting understanding, tolerance and appreciation for differences.</p> <p>Cross-curricular links: Drama standards – Grade 4, Exploring and Creating ATs 1-3; Language Arts – Grade 4, ATs 1-3.</p>	<p><b>Extended Learning</b></p> <p>Have a health care personnel address students on care of the sense organs, e.g. public health nurse, Ear Nose and Throat specialist, ophthalmologist etc.</p> <p>Research how persons who have sensory impairments are able to pursue their education.</p>
<p><b>Resources</b></p> <p>Materials for making class display chart, Materials for making poster</p> <p>Resource persons</p> <p>Computer with word processor, presentation or story making software to create digital products such as posters, presentations and stories</p> <p>Internet</p> <p>Recording device for audio or video</p> <p>Multimedia projector</p>	<p><b>Key vocabulary</b></p> <p>blind, deaf</p>

## **SCIENCE UNITS OF WORK GRADE 4 TERM 2 UNIT 2: MATERIALS - INTRODUCTION**

### **About the Unit**

In this unit students will explore simple properties of everyday materials. They will classify materials according to the properties that they exhibit. They will further classify materials as solids, liquids and gases, and investigate the observable properties of each state.

### **Range of Content**

- The properties of materials determine how they are used
- Simple properties of everyday materials include colour, hardness, roughness, smoothness, flexibility and strength
- Hard materials are strong such as metals and wood while soft materials can be shaped or bent
- Non-living materials exist as solids, liquids and gases which show different features or properties
- Solids keep their shape and take up a definite space. Liquids can flow and have no fixed shape; usually taking the shape of its container. Gases are constantly moving and have no fixed shape but fill any space.



**Prior Learning**

Check that students:

- Know that water exist in three forms
- Are familiar with some properties of materials

**Focus Question 1: In what forms do materials exist and what are some of their properties?**

**THEME:** Energy, Forces and Matter


**Attainment Target(s):**


- Recognise the importance of energy to life processes, everyday life, and the relationship between energy and matter
- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships.

**Benchmark(s):**

- Know that materials can exist as solid, liquid or gas, and explore selected properties and the composition of everyday materials
- Devise and carry out fair tests in familiar contexts
- Predict the outcomes of events based on their knowledge
- Describe a simple design that addresses a specific challenge and indicate what defines success and what limitations exist
- Display curiosity, objectivity and perseverance in their approach to activities


**Duration:** 3 weeks/ 6 hours

 **COMMUNICATION AND COLLABORATION** - use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others

 **DESIGNING AND PRODUCING** – use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions

**Objectives:**

- Explore specific properties of everyday materials (rough, smooth, hard, ductile, malleable, colour)
- Differentiate between natural and man-made materials
- Classify materials based on their properties and uses
- Recognise that objects may be made of one or more materials
- Create toys using everyday materials
- Classify materials as solid, liquid and gas
- Investigate some observable features of solids, liquids and gases
- Work cooperatively in groups
- Carry out investigations on the properties of materials with due regard to safety

 **DIGITAL CITIZENSHIP-** recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Be given a collection of everyday materials to write what they know about each and then share the information with the class. As a class, discuss the similarities and differences between the materials.</li> <li>• In groups, carry out a survey around the school of materials that have been used for particular purposes e.g. wood for furniture, plastic for pipes, metal for door handles, plastic for electric sockets, gold for jewellery. Be asked to say how they know or what helped them to decide that a particular object is made of a particular material. Sort the list materials from the survey as natural and man-made.</li> <li>• Be asked to describe a material so that others can identify it, using terms such as transparent, strong, hard, and flexible. With the aid of the teacher, draw up a table or create a simple database of properties of materials e.g. wood, glass, metal, rubber, plastic, wool, cotton, pottery.</li> <li>• Be presented with a series of objects or pictures e.g. a wooden chair, plastic bottle, paper towel, t-shirt or view a video illustrating different materials being used. Be asked why each material was used to make the object, and to suggest and evaluate an alternative material.</li> </ul> <p>In groups, with the assistance of the teacher, plan, design and carry out an experiment to find out which paper is best for mopping up spills. Discuss what is meant by ‘best’ and record the group consensus. Decide how they</p>	<ul style="list-style-type: none"> <li>• Communicate, record, critical thinking - compare, contrast</li> <li>• Communicate, collaborate, classify, think critically - analyse, research</li> <li>• Classify, communicate, collaborate, observe think critically – create</li> <li>• Collaborate, experiment, define operationally, communicate, record, think critically - plan and design, draw conclusions, carry out fair test</li> </ul>	<ul style="list-style-type: none"> <li>• Acceptable similarities and differences recorded</li> <li>• Materials correctly sorted as natural and man-made Evidence of groups working collaboratively</li> <li>• Table/database contains accurate information on properties of materials</li> <li>• Plausible reasons given for use of each material</li> <li>• Evidence of groups working collaboratively</li> <li>• Plan reflects a fair test</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p>are going to make this test fair e.g. by using the same sized piece of paper or towel or by using the same amount of water and seeing how much paper or towel is needed. Carry out the experiment, record their results in a variety of ways and draw a conclusion. <i>(Include examples of papers which are not paper towels, as paper towels are all of similar absorbency, e.g. newspaper, brown paper, grease paper, toilet paper, plain paper.)</i></p> <ul style="list-style-type: none"> <li>• Tear up a piece of paper into small pieces. Try to put the paper together again. Participate in teacher-led discussion in order to recognise that the large paper consists of smaller bits of paper. In groups, use dominoes to create a wall. As a class, discuss how the wall was constructed and relate this to the construction of buildings. In groups, give examples of larger objects made of smaller objects. Share examples with the class.</li> <li>• In groups, be given three balloons: one filled with water, one filled with marbles/stones, and one filled with air. Each member of the group will feel the balloons, find the mass and discuss their observations. Describe the materials in each balloon and compare their observations. Record whether the material inside is a solid, liquid or gas. <i>[Teacher should emphasize that most gases are invisible however they may be felt and their effects seen when trapped.]</i> Tabulate the properties of solids, liquids and gases.</li> <li>• In groups, or individually, complete the matter Webquest. Display the matter exhibits in the science corner. Use the criteria provided to judge your classmates displays. Provided hand-outs of various materials, classify them as solid, liquid or gas.</li> </ul> <p>AND/OR</p> <ul style="list-style-type: none"> <li>• Participate in a class discussion to recap the forms in which water exists. Through teacher led class discussion, identify ice, water and steam as solid, liquid and gas respectively. View pictures, videos of different materials and group materials under the following: solid, liquid, gas.</li> </ul>	<ul style="list-style-type: none"> <li>• Manipulate, communicate, collaborate, think critically – create</li> <li>• Collaborate, manipulate, measure, communicate, make observations</li> <li>• Communicate, Classify, observe</li> <li>• Communicate, Classify, observe</li> </ul>	<ul style="list-style-type: none"> <li>• Steps in plan are logically sequenced</li> <li>• Results appropriately presented</li> <li>• Conclusion supported by results</li> <li>• Correct examples of larger objects made of smaller objects</li> <li>• Materials correctly identified as solid, liquid and gas</li> <li>• Properties listed for each state are correct</li> <li>• Correct mass of objects found</li> <li>• Exhibits meet criteria rubric given in webQuest. Correct classification of materials as solid, liquid or gas</li> <li>• Materials correctly classified as solids, liquids and gases</li> <li>• Toys created satisfy</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<ul style="list-style-type: none"> <li>• Browse teacher-selected websites on forms of materials categorise them under the different headings: solid, liquid, gas. Use text editing software to create a table showing the information.</li> <li>• Observe samples/videos of ice, water and steam. Record observations and share information with the class using the videos to aid the presentation. Participate in teacher led discussion on the visible features/properties of solid, liquids and gas.</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate, observe, record, report</li> </ul>	<p>stipulated guidelines</p> <ul style="list-style-type: none"> <li>• Correct visible features of solids, liquids and gases identified</li> </ul>
<p><b>Learning Outcomes</b>  Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ Sort materials as solid, liquid and gas</li> <li>✓ Recognise that materials are suitable for making a particular objects because of their properties</li> <li>✓ Plan a fair test and explain why it was fair, pointing out any difficulties</li> <li>✓ Carry out their test safely</li> <li>✓ Decide whether the test was good enough to answer the question</li> <li>✓ Explain whether the test they carried out was fair and if not, say what they would have needed to do to make it fair</li> <li>✓ Distinguish between the three states of matter in terms of shape and volume</li> <li>✓ Show curiosity in exploring matter in the surroundings and question what they find</li> </ul>		

Points to Note	Extended Learning
<p>Students sometimes think that ‘solid’ means ‘hard’  The term ‘plastic’ includes a variety of materials e.g. polythene, nylon, PVC  Students often have difficulty in distinguishing the material from the object made from the material. It is helpful to have some pieces of material which are not made into particular objects  Some students may identify different metals e.g. gold, steel, aluminium. They should be encouraged to do so  Glass objects are best not handled by young students. However, they can touch glass windows, etc.  Include flow diagram to show that matter exists in three states  Remind students to follow safety guidelines when using ICT tools</p>	<p>Carry out an investigation to find out which materials are most stretchy/elastic, e.g. spandex, rubber, stocking</p>

<p><b>Resources</b> Computer, multimedia projector, pictures and videos showing: state changes; various solids, liquids and gases. Website: <a href="http://www.thunderboltkids.co.za">www.thunderboltkids.co.za</a> and <a href="http://www.teachitprimary.co.uk">www.teachitprimary.co.uk</a></p>	<p><b>Key vocabulary</b> Solid, liquid, gas, properties, strong, hard, flexible, absorbent, transparent, investigate, test, fair</p>

## **SCIENCE UNITS OF WORK GRADE 4 TERM 3 UNIT 1: WATER AND AIR**

### **About the Unit**

In this Unit, students will learn about the nature and importance of water and air as two of the earth's key resources. They will come to know the properties and the basic composition of water and air and understand the need for clean water and air, while developing the knowledge and skills to conduct scientific investigation and to design and conduct fair tests.

Various air- and water-borne pollutants will be examined in order to identify their sources and to mitigate their dangerous effects. A hands-on approach is taken as students will design and build pollution reduction devices. Students will become familiar with common air- and water-borne diseases, their treatment and simple preventative measures to reduce the risk of contracting and spreading them. Working in groups will reinforce the cooperative attitudes and ethics essential to scientific work.

### **Range of Content**

- Water is the most abundant liquid on Earth and is needed by all living things. Water is cycled through the atmosphere through the Water Cycle using the main processes of evaporation, condensation, precipitation and surface runoff.
- The improper disposal of waste (from homes and industries) in water can cause it to be polluted. This can result in diseases such as Typhoid, Gastroenteritis and Cholera. Boiling, filtering and chlorination are simple methods used to make water clean for use.
- Air is made up of gases; particularly nitrogen, oxygen, water vapour and carbon dioxide. All living organisms need air to survive.
- Air shows the following properties; it takes up space, has mass, and can be compressed.
- Oxygen is needed for burning and for breathing in animals. Carbon dioxide (in fire extinguishers) is used to put out fires.
- The burning of fuels by motor vehicles and industries is the main cause of air pollution. This can affect the health of humans and lead to lung illnesses such as asthma and cancer.

### **Guidance for the Teacher**

Details on water-borne and air-borne diseases are NOT required. Students are ONLY required to identify examples of these diseases.

**Prior Learning**

Check that students:

Know that water is important for the survival of living things.

**Focus Question 1: What is water and why is it important to life?**

**THEME:** Living things, Life Processes and the Environment

**Attainment Target:**

- Recognise the variety of living things, their interdependence and their inter-relationship with the environment
- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method.
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships

**Benchmarks:**





- Know some characteristics of water and understand its importance to life.
- Describe a simple design that addresses a specific challenge and indicate what defines success and what limitations exist
- Devise and carry out a fair test in a familiar context
- Predict the outcomes of events based on their knowledge (e.g. steeper inclines increase the speed of toy cars rolling down them)
- Display curiosity, objectivity and perseverance in their approach to activities

**Duration:** 2 week/ 4 hours

**Objectives:**

- Distinguish the properties of water through investigations
- Investigate the three forms in which water exists
- Explain why water is essential for continued existence of life on earth
- Carry out investigations into the properties of water with due regard to safety
- Communicate scientific information about water and its importance
- Analyse and compare data from investigations on the properties of water
- Make and record observations from investigations on the properties of water
- Make inferences from observations on the properties of water
- Use data from investigations to draw conclusions about the properties of water
- Carry out fair tests during investigations on the properties of water
- Work cooperatively in groups



<p><b>ICT Attainment Targets:</b></p> <ul style="list-style-type: none"> <li> <b>COMMUNICATION AND COLLABORATION</b> - Use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others</li> <li> <b>DESIGNING AND PRODUCING</b> –Use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations</li> <li> <b>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING</b> - Use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions</li> <li> <b>DIGITAL CITIZENSHIP</b> - Recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour</li> </ul>	
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Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• In groups, collect three transparent containers of different shapes, and label them A, B and C, and also a container with water (approximately 100 cm<sup>3</sup>), with the level marked. Pour all the water from the container into container A and mark the level and note its shape; then pour the water from container A into B mark the level and note its shape; pour the water from container B into C, and mark the water level and note its shape, then pour the water from C into the original container and check against previous mark. Discuss observations and say whether the volume of water has changed, and also if the shape of the container has changed the volume of water, giving reasons. Record findings in a variety of ways and draw simple conclusions. Suggest improvements for setting up further investigations.</li> </ul>	<ul style="list-style-type: none"> <li>• Manipulate, observe, record, communicate, collaborate, think critically - infer</li> </ul>	<ul style="list-style-type: none"> <li>• Correct findings accurately recorded</li> <li>• Correct procedure followed to derive accurate volume of water</li> <li>• Plausible conclusions drawn</li> <li>• Workable improvements for setting up further investigations into the properties of water</li> <li>• (water takes the shape of its container) suggested</li> <li>• Findings recorded</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<ul style="list-style-type: none"> <li>• In groups, make observations of water samples (including pure water) provided by teacher. Record information in a teacher prepared table. Compare the colour, odour and amount of residue in each sample (if any). Share and discuss findings with the class. Use the collective findings from the discussion to draw simple conclusions about the properties of pure water. Investigate if water contain air by gently heating the water and observe what happens (DO NOT boil). Record findings in a variety of ways and draw simple conclusions.</li>   <li>• Observe demonstration by teacher to investigate the temperature at which pure water boils. Teacher will bring to the boil several samples of water (including pure water), each measuring 50 ml. Record the temperature at which each sample boils and complete a pre-prepared worksheet provided by the teacher.</li>   <li>• In groups, pour about two teaspoons of water (10 ml) into a small transparent container (e.g. a pill container). Place the container into a mixture of salt and ice, record the temperature then allow it to stand for 10 minutes, then record the final temperature (after 10 minutes); note and record all other observations. Remove the container from the ice and salt mixture, allow it to stand for 10 minutes and record your observations,</li> </ul>	<ul style="list-style-type: none"> <li>• Observe, communicate, think critically - compare, collaborate, draw conclusion</li>   <li>• Record, observe</li>   <li>• Manipulate, record, observe, measure, communicate, collaborate, think critically - draw conclusion</li> </ul>	<p>comprehensively</p> <ul style="list-style-type: none"> <li>• Accurate observations of water samples made and recorded in a variety of ways including teacher prepared table</li> <li>• Accurate conclusions drawn</li> <li>• Observations recorded accurately</li> <li>• Accurate information presented on the colour and odour of pure water</li> <li>• Confirmation of the presence of air in water</li> <li>• Accurate conclusions drawn</li>   <li>• Teacher prepared worksheet accurately completed</li>   <li>• Instructions followed and accurate observations recorded</li> <li>• Group worked cooperatively</li> <li>• Conclusions supported by findings</li> <li>• Product (website/ blog/</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p>including the temperature after 10 minutes. Draw simple conclusions and present your findings to the class.</p> <p>ICT Integration Observations for each step may be recorded digitally and the images used to aid the reporting of findings to the class).</p> <ul style="list-style-type: none"> <li>In groups, be given samples of substances such as salt, sugar, syrup, coloured crystals and containers of water. Add the substances to the water and note observations (colour, odour, whether it dissolved etc.) on table provided. Answer questions, “What happened when substances were placed in the water?”, “What does this indicate about the property of water?” Discuss the property of water as a solvent and how this affects living and non-living things in the environment. Present findings/ explanations to the class.</li> <li>Research the importance of water to life using a variety of information sources, e.g., encyclopaedias, educational CDs/DVDs, websites. Present findings to class in a variety of ways.</li> </ul> <p>ICT Integration Digital media may be included to aid the presentations.</p> <ul style="list-style-type: none"> <li>As a class, create a website/blog/wiki to display all the information garnered from investigations, research and presentations done on the properties and importance of water. Share website/blog/wiki with family and friends and invite them to make comments. Alternatively, create posters and charts to display in class/school.</li> </ul>	<ul style="list-style-type: none"> <li>Capture images with an image capturing device</li> <li>Manipulate, observe, record, communicate, collaborate, investigate, think critically – analyse, draw conclusions</li> <li>Research, communicate</li> <li>Use search engines safely</li> <li>Navigate digital content on websites</li> <li>Record information accurately</li> <li>Collaborate, communicate, think critically - create</li> </ul>	<p>wiki/poster/chart) satisfies stipulated guidelines e.g. imaginative, innovative, original etc.</p> <ul style="list-style-type: none"> <li>Presentation contains accurate information</li> <li>Correct observations noted</li> <li>Plausible explanations given</li> <li>Accurate information in presentation</li> <li>ICT used effectively to demonstrate creativity</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p><b>Learning Outcomes</b>  Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ State the properties of water and explain why it is necessary for life.</li> <li>✓ Recognise that water exists in different forms.</li> <li>✓ Carry out fair and comparative tests</li> <li>✓ Suggest improvements to investigative procedures</li> <li>✓ Use selected ICT tools effectively to browse and search for information on the importance of water to living things; select relevant information and communicate main ideas in different media formats.</li> </ul>		
<b>Points to Note</b>	<b>Extended Learning</b>	
<ul style="list-style-type: none"> <li>○ <b><i>At all times encourage students to use simple scientific language. Results and conclusions may be communicated in writing or orally, and in a variety of ways such as tables, charts, drawings, labelled diagrams</i></b></li> <li>○ Properties of water should be restricted to: colour, odour, ability to dissolve, shape and volume</li> <li>○ Where pure water is required for activities boiled cooled tap water may be used</li> <li>○ Ice is mixed with salt in order to prevent the ice from melting too quickly. The ice is to be crushed and for every cup of ice add one quarter cup of salt</li> </ul> <p>Cross-curricular links: Mathematics (AT2, strand 3)</p>	<p>Research how persons living in deserts and/or arctic regions get their water</p>	
<p><b>Resources</b>  Textbooks, Newspaper clippings, Pamphlets, Magazines and any other written materials available, Multi-media materials on water, Containers, Water, Distilled water, Salt, ice, small transparent plastic containers, mirror/glass, marker Image capturing device (e.g. camera), Internet, educational science digital content on CD/DVD/online, computer with word processor or presentation software</p>	<p><b>Key vocabulary</b>  Colourless, odourless, shapeless, volume, solid, liquid, gas, melt, freeze, evaporate, condense, water vapour, boiling point, freezing point, dissolve</p>	

## Focus Question 2: Where does water come from and how can I make it safe for drinking?

**THEME:** Living things, Life Processes and the Environment

**Attainment Target:**

- Recognise the variety of living things, their interdependence and their inter-relationship with the environment
- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships

**Benchmarks:**

- Know some characteristics of water and understand its importance to life.
- Know the effects of water pollution, and ways of reducing it
- Describe a simple design that addresses a specific challenge and indicate what defines success and what limitations exist
- Devise and carry out a fair test in a familiar context
- Predict the outcomes of events based on their knowledge (e.g. steeper inclines increase the speed of toy cars rolling down them)
- Display curiosity, objectivity and perseverance in their approach to activities.

**Duration:** 4 weeks/ 8 hours

**Objectives:**

- Identify some sources of water
- Illustrate the water cycle, and explain the process at each stage (evaporation, condensation and precipitation)
- Identify sources of water pollution, and ways of reducing their detrimental/harmful effects
- Outline different methods of filtering and purifying water
- Participate in activities to reduce water pollution, with due regard to safety
- Identify common water-borne diseases and suggest ways of preventing them
- Explain ways to conserve water
- Carry out investigations into the sources of water pollution with due regard to safety
- Make and record observations from investigations conducted on water pollution and purification
- Collect and display data from investigations on water pollution
- Make inferences from observations from investigations conducted on water pollution and purification
- Analyse and compare data from investigations conducted on water pollution and purification
- Use data from investigations to draw conclusions about water pollution
- Communicate scientific information about water pollution and purification
- Plan, design and construct a simple water filter
- Work cooperatively in groups

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>In groups, research sources of water in Jamaica using online/offline resources. Share findings with class and discuss how the sources are replenished. Record the information in a variety of ways. Group sources as fresh or salt water. Use the information to create a class mural about the various sources of water in Jamaica.</li> <li>In groups, research aspects of the water cycle using a variety of information sources – digital and print. As a class create an illustration of the water cycle and display it. In class discussion with the teacher, explain the processes involved in the water cycle. In groups, plan and design a model of the water cycle taking into account criteria for a successful working model and constraints. (If resources are available, the design solution may be simulated using appropriate software.) As a class, in discussions with the teacher, create a checklist for evaluating the design solutions (i.e. plan of model). Use criteria to assess and select the best possible design solution. As a class, construct a working model of the water cycle, based on the design solution chosen. Evaluate how well the model works and suggest improvements.</li> <li>Be given samples of ‘clean’ and ‘dirty’ water and asked to answer questions on how ‘clean’ the water is. OR Be given ‘clean’ water to drink then asked to add substances such as dirt, oil etc. and questioned about drinking it. <i>(Teacher should lead students into using words pollution and pollutants)</i></li> <li>View pictures or videos on polluted waters from different sources. Identify the substances present in the water and where they come from (e.g. garbage, waste, oil etc). Record the information in a teacher-prepared</li> </ul>	<ul style="list-style-type: none"> <li>Communicate, create, classify, collaborate, research, record</li> <li>Manipulate, formulate model, communicate, collaborate, think critically - create, evaluate</li> <li>Navigate digital content on websites</li> <li>Design and produce multimedia presentation</li> <li>Observe, communicate, think critically – analyse, draw conclusions, justify</li> <li>Observe, record, communicate, create, think critically – analyse, formulate</li> </ul>	<ul style="list-style-type: none"> <li>Water sources correctly identified</li> <li>Model accurately depicts water cycle</li> <li>Accurate observations given</li> <li>Justifiable conclusions drawn</li> <li>Pollutants and sources correctly identified in Table</li> </ul>



Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
<p>table. Discuss how safe the water is for use, giving reasons. Formulate a working definition for pollution and pollutants. Make presentations on how the water could become clean in a variety of ways.</p> <ul style="list-style-type: none"> <li>• Visit website/take field trips to the National Environment and Planning agency (NEPA)/ The Water Resources Authority (WRA)/ the National Water Commission (NWC), to investigate local instances of water pollution and suggest ways of reducing/eliminating these, as well as different methods for water purification. In groups, write a report on the effects of water pollution; reports should include images/video, illustrative diagrams and statistical data.</li> <li>• In groups, collect samples of water from a variety of sources and for each examine and record the colour, odour, sediments, and presence of organisms. Make inferences from observations about the purity of water. Report findings of investigations in a variety of ways.</li> <li>• Develop an interview schedule (in discussion with teacher) to determine common water-borne diseases in Jamaica. Then in groups, interview local health official(s), and report the findings to class. Research any one of these diseases then design creative pieces such as charts, posters, poems, skits, infomercials, videos, giving people advice on how to reduce symptoms of, or eliminate, this disease.</li> </ul> <p><b>ICT Integration</b> If possible, make an audio or video recording of the interview, or aspects of</p>	<ul style="list-style-type: none"> <li>• Communicate, observe, research, record, collaborate, make comparisons</li> <li>• Collaborate, communicate, infer, observe</li> <li>• Collaborate, communicate, record, think critically, create, research</li> </ul>	<ul style="list-style-type: none"> <li>• Plausible reasons for water use given</li> <li>• Workable definition given</li> <li>• Creative presentations on methods of making water clean</li> <li>• Report reflects accurate information on the ways of reducing/eliminating water pollution</li> <li>• Inferences about the purity of water supported by evidence (i.e. recorded observations)</li> <li>• Creative pieces reflect accurate information on common water-borne diseases</li> </ul>



Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
<p>it, and share with the class.</p> <ul style="list-style-type: none"> <li>• In groups research different types of water filters and discuss various aspects of design. Using information gleaned from the research plan and design a simple water filter using familiar materials (designs must include criteria for success and constraints – cost, time, resources). Compare design solutions and select the best one that addresses the problem.</li> <li>• If resources are available, construct the water filter based on the selected design solution. Evaluate the filter and suggest improvements.</li> <li>• In groups, investigate common water purification methods. <ol style="list-style-type: none"> <li>1. Create a homemade still. Place muddy water into a large pot (about 1/3 water volume). Put an empty smaller pot inside the large pot. Cover the large pot with plastic cling wrap and place a small weight (e.g. clean stone) in the middle. Leave the pot outside. Note what happens to the water in the pots. Identify the processes taking place. (Link activity to the water cycle). Provide explanations for observations.</li> <li>2. Show videos or demonstrations of boiling and chlorination of water. Record the steps as shown on a worksheet. Students will discuss the importance of these methods (as it relates to health and water-borne diseases).</li> </ol> </li> <li>• In groups, discuss the issue of water availability. Identify the reasons why water is unavailable in some areas. Be given, data on water consumption and distribution in different regions/ countries. Suggest reasons for patterns, similarities/differences in the data. Formulate water conservation plans for individuals and households. Using written, oral or other means, present these plans to the class or school.</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborate, communicate, , record, think critically - create, analyse, research, make comparisons, plan and design</li> <li>• Construct, manipulate, collaborate, think critically</li> <li>• Manipulate, observe, communicate, create, collaborate, investigate, think critically – analyse, interpret, draw conclusions,</li> <li>• Observe, record, communicate, collaborate, think critically – analyse, draw conclusions</li> <li>• Collaborate, communicate, create, think critically – analyse, interpret, draw conclusions, formulate, justify</li> </ul>	<ul style="list-style-type: none"> <li>• Design solution meets the problem specification (i.e. success criteria)</li> <li>• Filter works as intended in purifying water</li> <li>• Homemade still works as intended</li> <li>• Water cycle processes correctly identified</li> <li>• Accurate observations noted</li> <li>• Sound explanations given</li> <li>• Correct water purification steps noted</li> <li>• Justifiable conclusions given</li> <li>• Justifiable reasons given</li> <li>• Patterns correctly identified and interpreted</li> <li>• Sound water conservation plans</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
		based on constraints <ul style="list-style-type: none"> <li>• Presentations are creative and contain accurate information</li> </ul>
<p><b>Learning Outcomes</b></p> <p>Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ Explain the water cycle and its processes.</li> <li>✓ Identify sources of water pollution and implement ways to reduce this.</li> <li>✓ Filter and purify water in various ways.</li> <li>✓ Use selected ICT tools effectively to browse and search for information on the water purification and water pollution; select relevant information and communicate main ideas in different media formats.</li> </ul>		

Points to Note	Extended Learning
<p>Teacher should guide students in research on water cycle.</p> <p>Cross-curricular links: Social Studies (Grade 5, AT1, sub-theme 2)</p> <p><i>Students should not be exposed to polluted water that may be harmful to them. Care should also be exercised in collecting and handling the water samples.</i></p>	<p>Plan and design a device to make seawater suitable for drinking.</p> <p>Include the design specifications: criteria for success and constraints.</p>
<p><b>Resources</b></p> <p>Multi-media materials on the water cycle, Materials for making the model or simulation, Water sources, Multi-media materials on water pollution/water purification/water-borne diseases, Health officials and other resource persons, Props for performance pieces, Magnifier Image capturing device (e.g. camera), Internet, educational science digital content on CD/DVD/online, computer with word processor or presentation software, Image capturing devices (e.g. camera), Internet, educational science digital content about the water cycle on CD/DVD/online, computer with word processor or presentation software</p>	<p><b>Key vocabulary</b></p> <p>Evaporation, condensation, precipitation, transpiration, water vapour, natural cycles, filtration, pollution, water-borne, purification, typhoid, cholera, gastroenteritis, pesticide, industrial waste, contamination, faeces</p>

**Prior Learning**

Check that students can:

Relate to the fact that air is all around them;

Know that air is needed by all living things;

Know that air consists of different gases.

**Focus Question 3: What are the properties of air and how do we make use of air?**

**THEME:** Living things, Life Processes and the Environment

**Attainment Target:**

- Recognise the variety of living things, their interdependence and their inter-relationship with the environment
- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships





**Benchmarks:**

- Know some characteristics of air and its importance to life.
- Describe a simple design that addresses a specific challenge and indicate what defines success and what limitations exist
- Devise and carry out a fair test in a familiar context
- Predict the outcomes of events based on their knowledge (e.g. steeper inclines increase the speed of toy cars rolling down them)
- Display curiosity, objectivity and perseverance in their approach to activities

**Duration:** 3 weeks/ 6 hours

**Objectives:**

- Demonstrate that air takes up space, is all around us, has mass/weight, is colourless and exerts pressure
- Identify some components of air
- Explore some uses of selected components of air
- Predict outcomes of investigations on the properties of air
- Make and record observations about the properties of air and its uses
- Analyse and compare data from investigations about the properties of air
- Collect and display data from investigations on the properties of air
- Use data from investigations to draw conclusions about the properties of air
- Carry out investigations into the properties of air with due regard to safety
- Communicate scientific information about the properties of air and its uses
- Plan and design solutions to stated problems about the properties of air and its uses
- Carry out fair tests when conducting investigations on the properties of air
- Work cooperatively in groups

<p><b>Attainment Targets:</b></p> <ul style="list-style-type: none"> <li> <b>COMMUNICATION AND COLLABORATION</b> - use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others</li> <li> <b>RESEARCH, CRITICAL THINKING AND DECISION MAKING</b>- use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations</li> <li> <b>DESIGNING AND PRODUCING</b> – use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions</li> <li> <b>DIGITAL CITIZENSHIP</b>- recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour</li> </ul>	
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<b>Suggested Teaching and Learning Activities – Focus Question 1</b>	<b>Key Skills</b>	<b>Assessment Criteria</b>
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• In groups, after discussions with teacher, use a plastic bag and plastic twist (e.g. that used to seal bread bags), to determine if air is present in the atmosphere. Solve the problem by asking questions e.g. <ul style="list-style-type: none"> <li>i. Where do we find air?</li> <li>ii. Can you feel air?</li> </ul> </li> </ul> <p>Record the responses to the questions posed using simple scientific language. Produce a simple plan to show how the group will carry out the task. Execute plans, make and record observations / findings in words, diagrams, sketches or other means. Report findings to the class using oral, written or audio-visual and expressive forms, and also respond to queries from classmates/teachers.</p>	<ul style="list-style-type: none"> <li>• Observe, hypothesise, collaborate, manipulate, communicate, think critically - investigate, infer, plan and design</li> </ul>	<ul style="list-style-type: none"> <li>• Plan produced that addresses the problem</li> <li>• Effective execution of plan</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<ul style="list-style-type: none"> <li>• In groups, predict, investigate and explain what happens when:               <ol style="list-style-type: none"> <li>a. air is blown into a balloon,</li> <li>b. a crumpled piece of dry paper is squeezed into the bottom of a transparent plastic cup, which is inverted and totally immersed in a container of water, (making sure that the paper remains at the bottom of the cup). Carefully take the cup back out of the water, allowing the water on the cup to drip off, and then check if the paper remains dry.</li> </ol> <p>Make observations and record information obtained in a variety of ways. Evaluate the reliability of evidence observed by repeating the investigations, then draw conclusions. Report on findings.</p> </li> <li>• Work in groups to investigate if air has mass. Blow up the balloons to the same size and tie their necks with string. Tie the balloons to each end of a clothes hanger and balance it. Predict what would happen if you burst one of the balloons. Push the pin into one of the balloons and make observations. Record findings and draw conclusions. Compare your conclusions to your predictions. Report outcomes to classmates in oral, written, visual and expressive forms.</li> <li>• In groups, find evidence in their immediate environment to support the fact that air is colourless (e.g. the effect of air on kites, parachutes, umbrellas, drying clothes etc.). Present evidence to the class.</li> <li>• In groups, participate in pumping up an under-inflated ball/bicycle tyre/balloon/plastic bag. Squeeze the inflated object, observe and record the outcomes/results. Make inferences from their observations, regarding the force exerted by the air over a specific area, and if air can be seen and felt. Discuss their findings in groups/class and from this, arrive at a basic understanding of ‘<b>pressure</b>’, and then write a simple statement to express</li> </ul>	<ul style="list-style-type: none"> <li>• Manipulate, observe, collaborate communicate, think critically - predict , infer, draw conclusions</li>   <li>• Manipulate, observe, collaborate, communicate, think critically - infer, draw conclusions, make comparisons, predict</li>   <li>• Observe, communicate, collaborate, think critically - infer</li>   <li>• Collaborate, manipulate, communicate, define operationally, observe, record, think critically - infer, draw conclusions</li> </ul>	<ul style="list-style-type: none"> <li>• Explanations aligned with findings</li> <li>• Conclusions supported by observations</li>   <li>• Instructions followed and apparatus properly setup</li> <li>• Conclusions supported by findings</li>   <li>• Evidence provided supports fact that air is colourless</li>   <li>• Correct inferences made from observations</li> <li>• Appropriate statement on air pressure</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
<p>their understanding.</p> <ul style="list-style-type: none"> <li>In groups, carry out research on the main components of air, using a variety of sources e.g. print, digital/multimedia content on CDs/DVDs, websites, etc. Report to the class and communicate main ideas in a variety of ways.</li> </ul> <p><b>ICT Integration</b> Ideas maybe communicated via multimedia presentations with text, charts, graphs, tables, pictures etc.</p> <ul style="list-style-type: none"> <li>Research (online/offline) and identify situations in which air is used. Collect samples of objects that use air and discuss how the air is used in each case. Individually/in groups, create a graphic organizer (electronic/non-electronic) e.g. diagram, showing how the air is used in the samples.</li> </ul>	<ul style="list-style-type: none"> <li>Research, communicate, collaborate</li> <li>Use search engines safely</li> <li>Design and produce a multimedia presentation</li> <li>Navigate digital content on websites</li> <li>Research, communicate, create, collaborate</li> <li>Navigate digital content on websites</li> <li>Use search engines safely</li> <li>Design and produce a multimedia presentation</li> </ul>	<ul style="list-style-type: none"> <li>Correct information about the components of air presented</li> <li>Correct information about the uses of main components of air presented</li> <li>Graphic organiser present accurate information on airflow in devices</li> </ul>
<p><b>Learning Outcomes</b> Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ Describe the properties of air</li> <li>✓ Identify the main components of air</li> <li>✓ Illustrate how air is used in particular devices</li> <li>✓ Use selected ICT tools effectively to browse and search for information on the components of air</li> <li>✓ Select relevant information from various sources and communicate main ideas in different media formats</li> </ul>		



<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• <b>Only the main components of air should be identified: Nitrogen, Oxygen, Carbon Dioxide, Water vapour.</b></li> <li>• All activities should be carefully supervised. Teacher should carry out all investigations to ensure that the activities work as intended. In dealing with the components of air, focus on the gases listed.</li> </ul> <p>Cross-curricular links: Social Studies (AT 2)</p>	<p><b>Extended Learning</b></p> <p>Do research on the effects of changes in air pressure on humans.</p> <p style="text-align: center;">OR</p> <p>Do research on the role of air in fuelling fires and how fire extinguishers put out fires.</p>
<p><b>Resources</b></p> <p>Textbooks, Pamphlets, Newspapers and magazines, Plastic bags, Plastic twists, Balloons, Paper, Transparent plastic cups, Water, Containers Scissors or other appropriate cutting implement, String, Clothes hanger, Multi-media materials on air, Internet access, Bicycle or ball Pump, Materials for class display</p> <p>Internet, multimedia projector, presentation software, digital encyclopaedias and any other available resources</p>	<p><b>Key vocabulary</b></p> <p>Air, pressure, mass, space, colourless, odourless, gases, volume, water vapour, oxygen, nitrogen, carbon dioxide</p>



## Focus Question 4: How can the air I breathe in be unsafe?

**THEME:** Living things, Life Processes and the Environment

### Attainment Target:




- Recognise the variety of living things, their interdependence and their inter-relationship with the environment
- Gain an understanding of and apply the engineering design process
- Gain an understanding of and apply aspects of the scientific method.
- Begin to appreciate the influence and limitations of science
- Demonstrate a positive attitude towards the use of scientific language
- Demonstrate positive interpersonal skills in order to foster good working relationships

### Benchmarks:

- Know some characteristics of air and its importance to life
- Know the effects of air pollution, and ways of reducing it
- Describe a simple design that addresses a specific challenge and indicate what defines success and what limitations exist
- Devise and carry out a fair test in a familiar context
- Predict the outcomes of events based on their knowledge (e.g. steeper inclines increase the speed of toy cars rolling down them)
- Display curiosity, objectivity and perseverance in their approach to activities

**Duration:** 2 weeks/ 4 hours


### Attainment Targets:

-  **COMMUNICATION AND COLLABORATION** - use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others
-  **RESEARCH, CRITICAL THINKING AND DECISION MAKING**- use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations
-  **DESIGNING AND PRODUCING** – use appropriate digital tools and resources

### Objectives:

- Identify sources of air pollution and explain ways of reducing their detrimental/harmful effects
- Plan, design and construct a model air filter
- Identify some common air-borne diseases, and explain how these can be prevented/treated
- Carry out investigations with due regard to safety
- Communicate scientific information about air and what makes it unsafe
- Work cooperatively in groups
- Make and record observations about air
- Analyse and compare data from investigations on air
- Collect and display data from investigations on air pollution
- Use data from investigations to draw conclusions
- Carry out fair tests
- Plan and design solutions to stated problems

to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions

-  **DIGITAL CITIZENSHIP-** recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour

Suggested Teaching and Learning Activities – Focus Question 4	Key Skills	Assessment Criteria
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>View animated videos or pictures on air pollution. Identify the sources of the pollutants (e.g. factories, vehicles, burning etc.). Record in a table. Discuss how working or living in polluted areas can affect health.</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>In groups, research air pollutants and their effects on living things and the environment. Place emphasis on:               <ol style="list-style-type: none"> <li>sources of air pollution</li> <li>preventative measures</li> </ol> </li> </ul> <p>Record findings in a variety of ways (electronic and non-electronic). Report findings to class and use the information to set up a class display.</p> <p>Listen to a resource person talk about / or watch video on how the air pollution from emissions and/or burning are reduced.</p> <p><b><u>ICT Integration</u></b></p> <p>Browse and search a variety of information sources, e.g., encyclopaedias, educational CDs/DVDs, websites etc.)</p> <ul style="list-style-type: none"> <li>In groups, plan and design (<i>using pre-prepared planning sheet</i>) a device for filtering air in order to make it suitable for breathing (<i>plans should include criteria for success and constraints</i>). As a class compare group</li> </ul>	<ul style="list-style-type: none"> <li>Observe, record, communicate, think critically – analyse, draw conclusions</li> <li>Collaborate, communicate, think critically - create, research</li> <li>Use search engines safely</li> <li>Navigate digital content on websites</li> <li>Record information accurately</li> <li>Recognise and acknowledge owners and creators of digital information</li> <li>Create multimedia presentations</li> <li>Communicate, manipulate, collaborate, think critically - analyse, evaluate, plan and</li> </ul>	<ul style="list-style-type: none"> <li>Sources correctly identified</li> <li>Cause and effect relationships between air pollution and health identified</li> <li>Accurate information presented on air pollutants, their sources, their effects on living things and the environment, and ways of mitigating them</li> <li>Plan addresses the given task.</li> <li>Design is feasible.</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 4	Key Skills	Assessment Criteria
<p>designs and select the most effective one for implementation. In groups, construct a model of the selected design and evaluate how well the model works.</p> <ul style="list-style-type: none"> <li>With guidance from the teacher, search relevant sources of information and evidence on common air-borne diseases. Use findings to create a display (electronic/non-electronic)</li> </ul> <p><b>Listen to health personnel (such as a doctor or public health inspector) speak about airborne diseases and how to protect against/reduce the likelihood of contracting these. Revisit the display they created and make adjustments to improve it.</b></p>	<p>design, create, research</p> <ul style="list-style-type: none"> <li>Communicate, think critically – create, research</li> </ul>	<ul style="list-style-type: none"> <li>Model device reflects design</li> <li>Correct information on sources of airborne diseases and their prevention or treatment</li> </ul>
<p><b>Learning Outcomes</b></p> <p>Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> <li>✓ Name some sources of air pollution and state their damaging effects</li> <li>✓ Implement pollution reduction strategies</li> <li>✓ Distinguish between clean air and polluted air</li> <li>✓ Create an air filter</li> <li>✓ State ways of reducing common air-borne diseases.</li> <li>✓ Use selected ICT tools effectively to browse and search for information on air pollutants and their effects on the environment; select relevant information and communicate main ideas in different media formats</li> </ul>		
<b>Points to Note</b>	<b>Extended Learning</b>	
<p>Air filters constructed by students don't have to work perfectly. However, the device should be fairly logical and should be feasible</p> <p>Teachers should provide/guide students to information on common airborne diseases</p> <p>Cross-curricular links: Technical Vocational Education (Grade 6, AT 2-3)</p> <p>Students should follow guidelines to promote healthy use of ICT tools</p>	<p>Create a board game on air pollution, e.g. a game designed like snakes and ladders or monopoly</p>	
<p><b>Resources</b></p> <p>Multi-media materials on air pollution</p> <p>Materials for making the filtering device</p>	<p><b>Key vocabulary</b></p> <p>Air filter, air pollution, air pollutants, air-borne diseases, carbon dioxide, carbon monoxide, contaminated air, chicken pox, influenza</p>	

Suggested Teaching and Learning Activities – Focus Question 4	Key Skills	Assessment Criteria
Materials for the display or props for the performance piece Multi-media materials on air-borne diseases Resource person(s) Computer, Internet	(flu), measles, mumps, whooping cough, rubella (German measles), tuberculosis (TB)	

# SOCIAL STUDIES

## GRADE 4

### UNITS

## Philosophical Statement

Social Studies is primarily concerned with the study of the interaction of individuals and groups within societies and their relationship with their environment. The study of the relationships within societies and their interaction with the environment requires an interdisciplinary approach. Ergo, the essential knowledge, concepts and skills taught in Social Studies are drawn from a coordinated and systematic study of the Social Sciences; Geography, History, Sociology, Political Science, and Economics and where appropriate, content, concepts and skills from Mathematics and the natural sciences are infused.

The primary purpose of Social Studies is to create active participatory citizens who are able to make informed and reasoned decisions that are beneficial to a culturally diverse and democratic society in a changing and interdependent world. In order to create the type of citizen, the National Standards Curriculum (NSC) uses the tenets of constructivism which embraces the student centred approach to teaching and learning. Constructivists view students as thinkers who create, shape, re-form and internalize information. In the constructivist approach it is not about what students can repeat, but what they can generate, demonstrate and exhibit. To this end, Webb's Depth of Knowledge is used to write objectives with a focus on the complexity and depth of thinking.

*"Tell me and I forget. Teach me and I remember. Involve me and I learn."* Benjamin Franklin

The constructivist pedagogy demands that students work in collaborative groups to complete hands-on, minds-on activities which tackle real world problems. In the NSC the Science, Technology, Engineering, Arts and Mathematics (STEM/STEAM) methodologies, practices and principles are used to develop teaching and learning activities. In a rapidly evolving technological age, with new and emerging problems such as those associated with climate change, citizens must be able to evaluate situations, solve problems, create and innovate solutions. In the NSC Social Studies Units the teachers facilitate this process by engaging students in meaningful authentic activities which allow them to explore and interrogate information, explain their solutions and the processes used to arrive at a solution.

*"Learning results from what the student does and thinks. The teacher can advance learning only by influencing what the student does learn."* Herbert Simon.

The awareness that only the learner can develop his or her own understanding is one of the fundamental pillars upon which this curriculum rests. Student learning is not directly visible, but may only be inferred through action. Thus to assess students learning teachers must constantly observe student actions/behaviours. In the NSC, assessment is both formative and summative. Self- assessment and peer evaluation are also encouraged. The students are required to provide evidence of learning by producing pieces of work which are assessed using specific criteria.

*"If we teach today's students as we taught yesterday's, we rob them of tomorrow."* John Dewey

## **STEM in the National Standards Curriculum Social Studies Grades 4-9**

The 21<sup>st</sup> Century brings with it new challenges which we must face and overcome if we are to survive as a nation. The imperatives of the present and the future require that we create a nation of critical thinkers and problem solvers. To achieve this goal we must change the way we teach to using methods which are aligned with how students learn. It is vital that teaching and learning in the 21st Century embrace the principles, practices and methodology embedded in the STEM/STEAM approach.

STEM/STEAM (Science, Technology, Engineering, Arts and Mathematics) thinking is more than the content of the disciplines on which the methodology is based. It is a way of thinking that embraces and promotes multidisciplinary and interdisciplinary integration, collaboration, critical thinking and solving real world problems through hands-on and minds-on activities. The STEM/STEAM methodology was used in the development of teaching and learning activities in the NSC Social Studies Units. In instances where the content of the STEM/STEAM disciplines is evident it is incorporated and used in the teaching and learning activities. The scientific method, the engineering design process, mathematical thinking and technology in its various forms are used where the content of the STEM/STEAM disciplines is not overly apparent.

The Social Studies Units in the National Standards Curriculum are written using, inter alia, STEM/STEAM principles, practices and methodologies, such as:

- Project based learning
- Problem solving
- Developing and using models
- Planning and carrying out investigations
- Analysing and interpreting data
- Using mathematical and computational thinking
- Engaging in argument for evidence
- Obtaining, evaluating and communicating information

Students at the primary and secondary levels are required to design and make scaled models that meet specific criteria. Making a scaled model requires the application of mathematical content and principles such as knowing the units of measurement, converting units, and/or drawing a diagram to scale. Students will have to use the engineering design process to design and make the model to meet the given criteria. The design can be developed with the aid of computer technology or with pen and paper and may involve designing and redesigning until the model adequately meets all the criteria given. These activities are done collaboratively and the process and product are communicated to the rest of the class, school or community.

Using the scientific method, students are presented with or asked to identify problems at the class, school, community, or national level and are then guided through the problem solving methodology in an effort to solve the problem. The problem solving method involves gathering data related to the problem, interpreting and analysing the data, drawing conclusions, making recommendations and taking action to solve the problem.

STEM/STEAM in Social Studies therefore, requires students to apply the knowledge of scientific and mathematical principles, where relevant and applicable, and use available and emerging technologies to solve real world problems.



## Aims of Social Studies

The study of Social Studies should enable students to:

- understand the facts, concepts, principles and perspectives that make up Social Studies
- acquire skills and competencies, which will enable them, to examine and analyze concepts related to culture and the physical environment as well as to appreciate the symbiotic nature of the relationship between man and his environment
- use a combination of technological and spatial skills to extract, analyze and use information to construct spatial patterns and understand processes that shape the human environment and decision-making
- become active and responsible citizens who are able to make informed and reasoned
- decisions in the interest of all citizens in a democratic society and a globalized world
- independently and collaboratively locate, analyze and evaluate information from a variety of sources and effectively use it in a variety of decision-making situations

<p>AT1 <b>THEME:</b> The physical environment and its impact on human activities</p>	<p>AT 2 <b>THEME:</b> Diversity, interdependence and sustainability in nature and society</p>	<p>AT3 <b>THEME:</b> Living together</p>	<p>AT4 <b>THEME:</b> Our common heritage</p>
<p><b>Standard:</b> Students should understand the processes and forces that have influenced the present landscape. They should understand how the landscape impacts on both the natural and built environments and influences the way people live. They should understand the factors that produce weather, and realize the effect that climate has on living things. They should be aware of the way the Earth’s position and movement within the Solar System affects us all.</p>	<p><b>Standard:</b> Students should appreciate and respect the diversity in nature and society and the need to protect and encourage this diversity. They should realize that people depend on each other and on the environment. They should be aware of and be engaged in activities to promote sustainable development.</p>	<p><b>Standard:</b> Students should know the institutions that enable communities to organize themselves make decisions and live together in peace and harmony. They should recognize the patterned interactions within institutions and how these have changed and developed over time. Students should understand that institutions play an important role in national development, and in the promotion of regional integration and international cooperation.</p>	<p><b>Standard:</b> Students should develop a sense of national and regional identity. They should know and appreciate the rich culture and heritage of Jamaica and understand the events and influences that have shaped its development over time. They should understand how this relates to broad movements of world history and to some of the key events and peoples who have shaped that history. They should understand the historical forces that have brought about changes within and across the periods of history that they study.</p>

**OVERVIEW OF SUBJECT CONTENT GRADE 4**

SUBJECT	TERM 1	TERM 2	TERM 3
<b>Social Studies</b>	<p align="center"><b>Our Common Heritage</b></p> <p align="center">The Tainos in Jamaica</p> <p>The ethnic origin of names of places, food, dress, dance, folklore</p> <p align="center">National and community heroes</p>	<p align="center"><b>The Physical Environment and its Impact on Human Activities</b></p> <p align="center">Locating places using cardinal points and the physical features of Jamaica</p> <p align="center"><b>Living Together</b></p> <p align="center">Political divisions and how places have changed over time</p> <p align="center">Community leadership and responsible citizenship</p>	<p align="center"><b>The Physical Environment and its Impact on Human Activities</b></p> <p align="center">The elements of weather –temperature, wind and sunshine</p> <p align="center">The Earth in the Solar System</p> <p align="center"><b>Diversity, Interdependence Sustainability in Nature and Society</b></p> <p align="center">Importance of plants to humans</p> <p align="center">Land pollution and waste management</p>

## About the Unit

In this Unit students will begin to examine the lifestyle of the original inhabitants of Jamaica, the Tainos. They will describe the appearance and dress of the Tainos, and explore how they met their basic needs. They will be encouraged to appreciate the ingenuity of the Tainos and their close relationship with their environment. Students will be engaged in collaborative problem solving activities in order to develop responsibility for completing assigned tasks and responsiveness to the contributions of group members. They will also be encouraged to be innovative and creative by simulating Stone Age technology. Students will be required to gather information from no more than three (3) sources. Sources may include but are not limited to pictures, textbooks, videos, and internet sites.

### UNITS OF WORK GRADE 4 TERM 1 UNIT 1 (4 Weeks)

#### Prior Learning

Check that students can:

- Identify basic needs

#### Focus Question: Who were the original inhabitants of Jamaica?





##### Attainment Target 4:

Recognize the contribution of individuals and groups who have helped to shape Jamaica's development over time

**THEME:** Our Common Heritage

##### Objectives:

- Define and use correctly the concepts/terms Tainos, inhabitants, European, indigenous people, migration
- Identify the early inhabitants of Jamaica
- Describe the physical appearance of the Tainos
- Describe and propose reasons for the style of dress of the Tainos
- Use information gathered to draw and label on a map the route taken by the Tainos from South America to Jamaica
- Locate on a map of Jamaica three sites where the Tainos settled and develop logical arguments to explain why the Tainos settled at these sites
- Distinguish between needs and wants and compare their needs and wants with those of the Tainos
- Describe how the Tainos met their basic needs and draw conclusions about how their economic activities affected the environment.
- Use shapes/3D objects and measurement to design and construct models of items related to Tainos lifestyle and explain how these items made life easier.
- Gather and interpret evidence from multiple sources on Taino culture in Jamaica and explain their use and importance in today's society

	<ul style="list-style-type: none"> <li>• Compile a list of resources/references including type of source, title and author</li> <li>• Listen to the contributions of group members and contribute to group assignments</li> <li>• Appreciate indigenous cultures and respect their view of the environment</li> </ul>	
<p><b>ICT ATTAINMENT TARGET(S):</b></p> <ul style="list-style-type: none"> <li> <b>COLLABORATION AND COMMUNICATION</b> - use technology to communicate ideas and information and work collaboratively to support individual needs and contribute to the learning of others</li> <li> <b>DESIGNING &amp; PRODUCING</b> –use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations</li> <li> <b>RESEARCH, CRITICAL THINKING PROBLEM SOLVING AND DECISION MAKING</b> - use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</li> <li> <b>DIGITAL CITIZENSHIP</b>-recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</li> </ul>		
<p><b>Suggested Teaching and Learning Activities</b> <b>Students will:</b></p>	<p><b>Key Skills</b></p>	<p><b>Assessment Criteria</b></p>
<p>Examine the Jamaican Coat of Arms (or pictures of the Tainos/read text) and describe the physical appearance and dress of Tainos. Write a short paragraph describing the appearance dress of the male and female Tainos. Design and make clothing and accessories worn by the Tainos using trashables (materials that may be reused) or materials from the immediate environment. During the design and construction students should identify the types of lines used and use accurate measurements to make the clothes and accessories. Answer questions e.g. Why do you think the Tainos dressed as they did?</p>	<p>Examining pictures and recording details</p> <p>Designing</p>	<p>Give a vivid description of the Tainos appearance and dress. Tainos clothing and accessories should be a simple representation of Taino male and female clothing and accessories made with specific measurements and using at least two types of lines</p>

<p>Use an atlas/ world map/globe to identify the places of origin of the Tainos; then use blank maps of the Caribbean to label the area from which the Tainos originated and the countries into which they settled. Use arrows to trace the route taken by the Tainos from South America to Jamaica. Answer questions such as: How did they travel from their place of origin to Jamaica? How safe were these journeys? Why did the Tainos settle in the areas that they did?</p>	<p>Locating places on maps</p>	<p>Completed map of the Caribbean shows where the Tainos originated and countries where they settled</p>
<p>Work in collaborative groups to find out how the Tainos met their basic needs. Groups can investigate the following areas: fishing, farming, hunting, housing, and clothing. Students will suggest how these activities may have affected the environment. Each group will find out the utensils, tools and weapons used by the Tainos to help them to meet their basic needs. Students will explain how the tools, weapons, utensils were used. Collect natural materials from their environment that can be used to make tools, weapons, or utensils. Make simple tools that the Tainos would have used. Display pictures, information and tools made.</p>	<p>Conducting research Drawing conclusions Planning and Designing</p>	<p>Display provides brief, accurate account of how the Tainos satisfied their basic needs and the impact of these activities on the environment. Final presentation to show evidence of collective planning and research.</p>
<p>Work collaboratively to make models of the homes of the Tainos. Use selected and appropriate materials to construct a caneye or bohio .The caneye should be circular while the bohio should be rectangular. Both should be made with a water proof roof and done to specific measurements.</p>	<p>Using mathematical concepts in design and construction</p>	<p>Construction of a sturdy model of Tainos houses made to specification given by the teacher.</p>
<p>Collect pictures from online sources, magazines showing the different aspects of Tainos life. Creatively design and label pages in their scrap book. Or create an e-book using book creator Software e.g. Blurb.</p>	<p>Organising information</p>	<p>Scrap book or e-book should show different aspects of Taino life e.g. farming, fishing, recreation, religion, family life. Pictures should be labelled.</p>
<p>Conduct research on the contribution of the Tainos to Jamaican culture. Collect information on their contribution, use image- capturing devices to take pictures of food given to us by the Tainos. Present information in the form of songs, poems, pictures, drawings or use movie maker software to make movie on the contribution of the Tainos.</p>	<p>Working collaboratively Gathering information Drawing conclusions</p>	<p>Presentation should reflect the Tainos influence on names of places, food, use of hammocks and thatch roofs.</p>
<p><b>Learning Outcomes</b> <b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>✓ Clearly define concepts and use them appropriately in a variety of situations</li> <li>✓ Accurately locate on a map of the Caribbean the area from which the Tainos originated.</li> </ul>		

<ul style="list-style-type: none"> <li>✓ Accurately locate at least three Tainos sites on a map of Jamaica</li> <li>✓ Compare their needs and wants with those of the Tainos</li> <li>✓ Explain how the Tainos used their environment to satisfy their basic needs</li> <li>✓ State aspects of Jamaica’s culture that have been influenced by the Tainos</li> <li>✓ Begin to articulate the nature of the relationship between the Tainos and the environment</li> <li>✓ Demonstrate awareness of the changes in technology over time.</li> <li>✓ Present information gathered from research</li> <li>✓ Develop social skills of listening, sharing and cooperating</li> <li>✓ Create digital story using appropriate software</li> </ul>	
<b>Points to Note</b>	<b>Extended Learning</b>
<ul style="list-style-type: none"> <li>• It should be emphasised that basic needs in this Unit refers to food, shelter and clothing.</li> <li>• Tainos settlements include inter alia Seville –St. Ann, White Marl and Guanaboa Vale- St. Catherine.</li> <li>• Sustainable use refers to minimal damage being done to the environment while it is being used.</li> <li>• Students should not be asked to draw maps. Blank maps should be provided and students be allowed to trace the route taken by Tainos from South America to Jamaica.</li> <li>• Teacher should ensure that students have access to available technology, observe and practice online safety, respect, as well as proper posture when using the keyboard.</li> </ul>	<p>Students could find out if there are monuments, relics etc. of the Tainos in their communities. Students may visit the site, collect information and share with their classmates.</p> <p>Students may conduct research on other indigenous groups in the Caribbean.</p> <p>Students could determine the sustainability of the practices that they engage in.</p>
<b>Resources</b> Atlas, globe, blank map of the Caribbean, television/multimedia projector, trashables, picture of Coat of Arms, pictures of Tainos, pictures of the houses of Tainos <a href="http://www.arrivalgame.com/content/history.htm#wear">http://www.arrivalgame.com/content/history.htm#wear</a> <a href="http://www.jnht.com/download/influence.pdf">http://www.jnht.com/download/influence.pdf</a> <a href="http://www.nlj.gov.jm/FeastingontheHeritage/tainos.htm">http://www.nlj.gov.jm/FeastingontheHeritage/tainos.htm</a> <a href="https://hwaairfan.wordpress.com/walk-in-somebody-elses-shoes/the-taino-of-the-caribbean-the-people-who-are-no-supposed-to-exist/">https://hwaairfan.wordpress.com/walk-in-somebody-elses-shoes/the-taino-of-the-caribbean-the-people-who-are-no-supposed-to-exist/</a> <a href="http://www.smithsonianmag.com/people-places/what-became-of-the-taino-73824867/?no-ist">http://www.smithsonianmag.com/people-places/what-became-of-the-taino-73824867/?no-ist</a>	<b>Key vocabulary</b> Tainos, inhabitants, European, indigenous people , cacique, Stone Age, technology, needs, wants, migration
<b>Links to Other Subjects</b> Mathematics, Visual Arts, Language Arts, Information Technology	

## **About the Unit**

In this Unit students will begin to examine the various ethnic groups in the English Speaking Caribbean and the diversity they created in our customs and traditions, which help to make the Caribbean a “melting pot” of cultures. The ethnic groups to be examined are the Spanish, the British, the Africans, the East Indians and the Chinese. They will state the country of origin of each ethnic group and begin to appreciate that those shared historical experiences have helped to make the Caribbean unique. Students will also begin to appreciate the importance of preserving their cultural heritage. This is an introductory unit. Students will examine these ethnic groups in greater detail at other levels of the school system. Students will be required to gather information from no more than three (3) sources. Sources may include but are not limited to pictures, textbooks, videos, and internet sites.

### **Prior Learning**

Check that students:

- Have an awareness of their Jamaican culture and heritage
- Know their identity

## **UNITS OF WORK GRADE 4 TERM 1 Unit 2 (4 weeks)**


**Focus Question: How have the cultural practices of our ethnic groups helped to shape our regional identity?**


### **Attainment Target 3:**

Know and value the contributions of communities and institutions in fostering national development, regional integration and international cooperation

**THEME:** Living Together

### **ICT ATTAINMENT TARGET(S):**



 **COLLABORATION AND COMMUNICATION** - use technology to communicate ideas and information and work collaboratively to support individual needs and contribute to the learning of others

 **DESIGNING & PRODUCING** – use digital tools to design and develop creative products to demonstrate their learning and

### **Objectives:**

- Define and use correctly the following concepts: culture, ethnic group, customs, heritage, ancestors
- Name the major ethnic groups in the Caribbean
- Examine and with the aid of diagrams describe, compare, and explain the ethnic composition of countries in the English speaking Caribbean.
- Locate on a map of the world the place of origin of each major ethnic group in the English speaking Caribbean.
- Interpret a timeline showing the arrival of the ethnic groups to the English speaking Caribbean
- Conduct research, select appropriate information, and use the information to make connections between aspects of the Jamaican culture (names of places, food, dress, dance, folklore) and that of the various ethnic groups
- Describe ways in which we preserve our national heritage at the school and community level.



<p><b>understanding of basic technology operations</b></p> <p> <b>RESEARCH, CRITICAL THINKING PROBLEM SOLVING AND DECISION MAKING</b> - use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</p> <p> <b>DIGITAL CITIZENSHIP</b>-recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</p>	<ul style="list-style-type: none"> <li>Propose ways in which we can preserve our national heritage at the school and community level.</li> <li>Gather information from a variety of sources and compare cultural practices (food, dance, music) in Jamaica, Barbados, Guyana and Trinidad.</li> <li>Share ideas and opinions and listen to ideas from members of the group</li> <li>Show tolerance for customs/ traditions of various ethnic groups</li> <li>Compile a list of resources/references including source, author and title</li> </ul>	
<b>Suggested Teaching and Learning Activities</b> <b>Students will:</b>	<b>Key Skills</b>	<b>Assessment Criteria</b>
<p>Use graphic organisers to define and use correctly the following concepts: culture, ethnic group, customs, heritage, ancestors</p>	<p>Organising</p>	<p>Graphic organiser e.g. concept web gives clear definition of concepts, gives attributes and examples of the concepts. Concepts are used correctly in written and oral forms.</p>
<p>Brainstorm to identify the various ethnic groups within the class/school/community. Students will then represent the ethnic composition of the class on a simple bar graph/pictograph or interpret statistical diagram which shows the ethnic composition of English speaking islands in the Caribbean.</p>	<p>Representing information using diagrams /interpreting statistical diagrams</p>	<p>Bar graph/pictograph accurately represents the ethnic composition of the class/school/country or interpretation accurately describes information presented in statistical diagrams</p>
<p>Conduct research using online or offline resources for pictures depicting the different ethnic groups in Jamaica, create picture collage of the different ethnic groups in Jamaica and explain in one paragraph what is depicted</p>	<p>Use search engine safely to perform single topic searches</p>	<p>Collage shows at least three ethnic groups that exist in Jamaica</p>
<p>View video presentation on the coming of the various ethnic groups/ read the poem “Jamaican is our name” (Ballads for Jamaica by Alma Norman)  <a href="https://tinyurl.com/yak4p682">https://tinyurl.com/yak4p682</a></p> <p>Use short sentences to summarise the video presentation/ the poem.</p>	<p>Summarising information</p>	<p>Sentences give concise information about the coming of the various ethnic groups</p>
<p>Examine and locate on a world map the different countries from which the ancestral groups came. Complete a blank map of the world showing the country of origin of each ethnic group. Create a key for the map. Each ethnic group must be represented by a different symbol or</p>	<p>Mapping information</p>	<p>Map of the world shows places of origin of the ethnic groups that came to Jamaica. Map key must</p>

colour on the map.		include a separate symbol for each ethnic group. Map must also have a title and arrow indicating north
Use a word processing software to create timeline/use ruler to draw timeline to scale. Use pictures which depict each ethnic group to decorate the timeline.	Sequencing information  Creating and formatting documents	Timeline correctly shows the date of arrival of various ethnic groups
Listen to presentations from resource persons/read information about the ethnic groups. Complete a table of the culture of each ethnic group (names, words folklore, and food). Create menu cards using food from the various ethnic groups, create new dishes using foods from the ethnic groups, make dolls wearing clothes from the ethnic groups, design clothes using a mix clothes from various ethnic groups, and tell folktales from various ancestral groups. Items created should be displayed in class. Use a recording device to capture presentation and folktales then playback for class	Listening for information  Creative thinking  Organising information	Table should be organised to show ethnic groups and their contribution to Jamaica's cultural practices. Menu card must include foods from at least two ethnic groups. Design for clothes must include influence from at least two ethnic groups
Work in cooperative groups to conduct research on the culture (names of people and places, dress, dance, food and food preparation methods, storytelling, proverbs) of the different ethnic groups who settled in the Caribbean then present their findings in a variety of ways; video presentation, panorama, scrapbook, poster, display etc.	Creative thinking  Designing	Presentation should show in new and innovative ways aspects of Caribbean culture(names of people and places food and food preparation methods, storytelling, proverbs) influenced by the Europeans, Africans, East Indians and Chinese
Conduct interviews with members of the community/school about cultural retention/heritage of the community/school. Find out what has been handed down, by whom and how it is passed on and/or maintained. Design a poster/write a report of their findings to be displayed during Heritage Week. Work in collaborative groups to conduct online/offline research on how heritage is preserved in different places. Discuss their findings and use the information found to assist in writing a report or making a poster.	Working in collaborative groups  Gathering information through interviews  Organising information	Poster or report must reflect the cultural retentions/heritage in the school/community. Suggestions re preserving the culture/heritage of the school must be feasible.

<p>Participate in a field trip to a heritage site/Institute of Jamaica. Write a report on the things learnt during the visit.</p>	<p>Writing reports</p>	<p>Report must include the name of the site, date of the trip, description of artefacts seen. Report should also include what students think about what they learnt about Jamaica's culture/heritage on the field trip.</p>
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Identify the ethnic groups and the cultural practices associated with each group in the English speaking Caribbean</li> <li>✓ Use maps to identify the countries from which the different ethnic groups came and the territories in the Caribbean where they settled</li> <li>✓ Construct a timeline highlighting different events in Jamaica's history</li> <li>✓ Construct diagram/ chart showing ethnic composition of counties in the English speaking Caribbean</li> <li>✓ Write a paragraph or give oral presentation to show that they value the contributions made by our ancestors to our cultural heritage</li> <li>✓ Identify ways in which culture is preserved in the English speaking Caribbean</li> <li>✓ Propose new strategies for preserving Caribbean culture</li> <li>✓ Use pictures depicting the different ethnic groups in Jamaica, to create a collage</li> </ul>		
<p><b>Points to Note</b></p>	<p><b>Extended Learning</b></p>	
<ul style="list-style-type: none"> <li>• Cultural practices to be compared should include – food, dance, music</li> <li>• Students' work should be placed on display</li> <li>• Teachers should ensure students have access to available technology observe and practice online safety and proper posture when using the keyboard.</li> <li>• Video presentations should be downloaded and saved for future reference.</li> <li>• Creative thinking is a way of looking at problems or situations from a fresh perspective that suggests unorthodox thinking or thinking outside of the box.</li> </ul>	<p>Parents/ Guardians can provide students with information regarding their ethnic background, heritage and cultural practices in their family. Reports may be made to class.</p>	
<p><b>Resources</b> atlas, blank maps of Jamaica, Caribbean and the world, individuals from selected ethnic groups, video clips, visit to cultural and historical events Jamaica Day, resource persons, pictures of different ethnic groups, crayons/markers, historical cartoons / video clip presentations <a href="http://www.eduplace.com/graphicorganizer/">http://www.eduplace.com/graphicorganizer/</a> <a href="http://www.heritagepreservation.org/ABOUTHP/INFO.HTM">http://www.heritagepreservation.org/ABOUTHP/INFO.HTM</a></p>	<p><b>Key vocabulary</b> Jamaican, culture, ethnic group, customs, tradition, heritage, ancestors, identity.</p>	
<p><b>Links to other subjects</b> Mathematics, Visual Arts ,Language Arts, Civics</p>		

## **About the Unit**



In this Unit, students will begin to examine the life and contribution of nation builders in their communities and the national heroes and their contributions to the development of Jamaica as a nation. Students will explore the characteristics that are used to describe individuals as heroes. They will select and justify their selection of personal and community heroes.



### **Prior Learning**

Check that students can:

- Name the national heroes and heroine

## **UNITS OF WORK GRADE 4 TERM 1 UNIT 3 (4 weeks)**

<b>Focus Question: Who are some of the important persons that have helped to shape my community and Jamaica as a nation?</b>	
<p><b>Attainment Target 4:</b></p> <p>Recognize the contribution of individuals who have helped to shape Jamaica’s development over time</p> <p><b>THEME: Our common heritage</b></p>	<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Define and use correctly the following concepts: hero, heroine, nation, nation builder, unsung heroes</li> <li>• Identify the national heroes/ heroine by names and pictures</li> <li>• Gather information from a variety of sources and compile basic biographical information about each national hero/heroine</li> <li>• Use criteria to justify selection of heroes/heroines in their communities</li> <li>• Works with group members to weigh options and make decisions</li> <li>• Appreciate the contribution of community heroes to national development</li> <li>• Describe the activities of National Heritage Week and discuss how these activities show appreciation for the contribution of our national heroes to nation building</li> </ul>
<p><b>ICT Attainment Target(s):</b></p> <p> <b>COLLABORATION AND COMMUNICATION - Use technology to communicate ideas and information and work collaboratively to support individual needs and contribute to the learning of others</b></p> <p> <b>DESIGNING &amp; PRODUCING –Use digital tools to design and develop creative products to demonstrate their learning and understanding of</b></p>	

<p><b>basic technology operations</b></p> <p> <b>RESEARCH, CRITICAL THINKING PROBLEM SOLVING AND DECISION MAKING - Use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</b></p> <p> <b>DIGITAL CITIZENSHIP- Recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</b></p>		
<p><b>Suggested Teaching and Learning Activities</b> <b>Students will:</b></p>	<p><b>Key Skills</b></p>	<p><b>Assessment Criteria</b></p>
<p>Use a word wall to develop definitions and use correctly the following concepts: hero/heroine, nation, nation builder, unsung heroes</p>	<p>Developing and using concepts</p>	<p>Definitions correctly written. Use concepts correctly in written and oral communication.</p>
<p>Use graphic organiser to show the characteristics of an individual in the community that they see as a hero/heroine. With the assistance of the teacher, develop questions to ask the individual during an interview. Conduct an interview with the person and use a recording device to record interview. Share the interview with the class and give justification for selection of the individual as a hero.</p>	<p>Presenting evidence to support conclusion</p>	<p>Suitable characteristics outlined and justification given for selection of hero</p>
<p>In small groups, use resource materials provided to create a chart identifying the national heroes/heroine Conduct research online or offline in groups and produce a fact sheet on the biography and contribution to Jamaica’s development of each hero/heroine. Use findings from the research and given resource materials to write an essay entitled, “My Favourite National Hero/Heroine”. Use word processing software to create document /write essay</p>	<p>Gathering and organizing relevant information Create and format document</p>	<p>Biography fact sheet with correct information Essay writing portrays appreciation for the heroes/heroine.</p>
<p>In collaborative groups select and dramatize an event in the life of a national hero/heroine. Presentation should be critiqued for understanding and clarification by both teacher and students.</p>	<p>Communicating information Critiquing presentation</p>	<p>Dramatization shows knowledge of an event regarding a hero/heroine. e.g. Nanny fighting in the Maroon War, Sir Alexander Bustamante in the 1938 riots</p>

Participate in class discussion on the activities that take place during National Heritage Week. Students will describe activities that they participate in and discuss changes they would make to the celebrations and outline the benefits to be acquired from the changes made.		Each change suggested must be supported by a logical, feasible reason
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Clearly outline the characteristics of heroes</li> <li>✓ Present logical arguments for the selection of an individuals as a hero/heroine</li> <li>✓ Identify the national heroes/heroine from a given picture</li> <li>✓ State facts about the life of national heroes/heroine in written and oral form</li> <li>✓ Give concise explanation of the contribution of each national hero to nation building</li> <li>✓ Show appreciation for the contribution of our national and community heroes/heroines to nation building</li> <li>✓ Use word processing software to type essay about their favourite National Hero/Heroine</li> </ul>		
<b>Points to Note</b>	<b>Extended Learning</b>	
<ul style="list-style-type: none"> <li>• Information gathered about heroes/heroine should be basic and factual.</li> <li>• Work produced by students should be placed on display.</li> <li>• Community heroes should have some of the following characteristics – caring, courageous, selfless, helpful, hardworking, kind etc.</li> <li>• Teachers should ensure that students observe and practice netiquette as well as proper positioning when using the computer keyboard</li> </ul>	<p>Parents/guardians should encourage students to watch heritage programmes on television, e.g. national awards and visit heritage sites and celebrations (especially during National Heritage Week)</p> <p>Class could mount heritage display- including presentations on the national and community heroes for Heritage Week</p>	
<p><b>Resources</b> Pictures of national heroes/heroine, cartridge paper, markers, brochures/booklets with information on individual heroes, JIS video on national heroes /heroine, DVD player, television/multimedia projector, speakers</p>	<p><b>Key vocabulary</b> Hero, heroine, national, nation builder</p>	
<p><b>Links to other subjects</b>  English Language , Drama, Civics</p>		



### **About the Unit**

In this Unit, students will begin to use basic map reading skills such as using cardinal points to locate places in Jamaica, and Jamaica in relation to other Caribbean countries. They will begin to develop an awareness of the key physical features of Jamaica especially its rivers and plains. Students will be actively engaged in the learning process by observing the landforms in their immediate environment, and by examining relief maps which show physical features across the island. They will identify these features on maps. Students will also be engaged in a number of activities including games which are aimed at developing skill in the use of cardinal points. Further, they will be made aware of the importance of rivers and plains through gathering and classifying information about these features.

#### **Prior Learning**

Check that students:

- Know the parish and the county in which they live
- Understand that Jamaica is an island and is a part of the Caribbean

### **UNITS OF WORK GRADE 4 TERM 2 Unit 1 (4 weeks)**

**Focus Question:** How do I locate places on maps and what are the main physical features of Jamaica?

#### **Attainment Target 1 :**


Understand the processes and forces that have influenced the physical and built environment


**THEME:** The physical environment and its impact on human activities

#### **Objectives:**

- Define and use correctly the concepts/terms cardinal points, highlands, lowlands, physical features, mountains, hills, valleys, plains, plateaux, rivers, compass
- Classify physical features in a variety of ways
- Examine pictures then compare the human activities which take place on mountains/hills, valleys and in plains
- Draw a simple sketch of an area and use symbols to show its natural and man-made features
- Locate and name on a map of Jamaica the plains and the major rivers
- Locate places in Jamaica using cardinal points
- Use cardinal points to locate Jamaica in relation to other Caribbean territories
- Locate, name and distinguish between the water bodies that border Caribbean countries
- Classify the uses of rivers and plains in Jamaica,
- Describe the impact of human activities on rivers and propose simple


#### **ICT ATTAINMENT TARGET(S):**

 **COLLABORATION AND COMMUNICATION** - use technology to communicate ideas and information and work collaboratively to support individual needs and contribute to the learning of others

 **DESIGNING & PRODUCING** – use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations

 **RESEARCH, CRITICAL THINKING PROBLEM SOLVING AND DECISION**



<p><b>MAKING.</b> - use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</p> <p> <b>DIGITAL CITIZENSHIP</b>-recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</p>	<p>measures to address the issues identified</p> <ul style="list-style-type: none"> <li>• Appreciate the importance of cardinal points in locating places</li> <li>• Develop an awareness of the various landforms that make up the Jamaican landscape</li> </ul>
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<b>Suggested Teaching and Learning Activities</b> <b>Students will:</b>	<b>Key Skills</b>	<b>Assessment Criteria</b>
<p>Walk through the community to identify and describe physical features near to the school or in the community. Use image capturing device to capture images on walk. Send pictures of the features to your e-pal. Use trashables/play dough/clay to make a model of physical features, mountains, hills, plains, valleys, plateaux, and river. Complete graphic organisers with the characteristics of each feature. The organiser should include pictures or drawings of each feature. Features should also be classified based on characteristics. Type and email a letter to an e-pal telling him/her about the features of the landscape observed.</p>	<p>Creating models</p> <p>Classifying</p>	<p>The model must show physical features in relation to each other e.g. a mountain is much higher than a hill. Each feature must be labelled correctly.</p> <p>Graphic organiser must highlight the characteristics of each feature.</p>
<p>Examine a physical (relief) map of Jamaica and note the colours and symbols that are used to show physical features of the land. On a blank map of Jamaica draw the symbols and colours used to represent rivers and plains in their correct location and then name the plains and major rivers.</p>	<p>Map making</p>	<p>Completed map must be neat and major rivers and plains named and correct symbol and colour used.</p>
<p>Use trashables to make a compass showing the cardinal points. Teacher may download a compass app from Google play store and use these to establish north in the classroom. North may also be established by observing where the Sun rises, which is in the east. Once east is established the other cardinal points may be established. The students will match north on the compass made with north that has been established by the teacher. Students will then use their compass to locate things in the classroom and on the school compound.</p>	<p>Locating places using cardinal points</p>	<p>Give the location of places using cardinal points</p>
<p>Play a game of treasure hunt using cardinal points to find the treasure hidden in the classroom. Or play online game on cardinal points. <a href="http://www.wartgames.com/themes/geography/compass-">http://www.wartgames.com/themes/geography/compass-</a></p>	<p>Using directions to find places</p>	<p>Correct locations given.</p> <p>Table gives major rivers and plains in the correct parishes</p>

[directions.html](#). <http://mrnussbaum.com/news-pizza-city/> Teacher must select the most appropriate game for the students.  
 Student will create a table showing the major rivers and plains and the parishes in which they are located.  
 Use a map of Jamaica in their atlases to determine the direction in which various rivers flow and relative location of parishes, parish capitals and other towns. The north arrow on the map must be used to determine the direction of places on the map.

Use a map of the Caribbean in their atlases to give Jamaica's location in relation to other countries in the Caribbean  
 Locate and name the two main water bodies bordering the Caribbean territories. In groups examine pictures or watch videos online/offline showing the uses of rivers. Then create a table to show the uses of rivers and plains in Jamaica (Agriculture, domestic, recreational)

Uses	Rivers	Plains
Agriculture	Irrigation	Farming
Domestic	Washing, cooking bathing	Housing
Tourism	Rafting, tubing	Hotels,



Examine the pictures similar to the ones above and identify the landforms e.g. mountain and plain. They will then identify the human activities in each picture e.g. farming, housing. Students will then list the similarities and differences in the houses/building and vegetation/farming observed in the pictures. Students will then suggest reasons for the differences.

Finding relative location

Gathering information

Tabulating information

Gathering information from pictures

Making comparisons

Jamaica's location in relation to Caribbean neighbours is correctly stated

Uses of rivers are classified correctly

Type of landform must be identified and the human activity named. Comparisons must be made between like things e.g. buildings with other buildings.

<p><b>Learning Outcomes</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Given a picture or diagram identify the main physical features of Jamaica</li> <li>✓ Give a clear and concise description of the main physical features of Jamaica</li> <li>✓ Use map symbols to show main physical features on Jamaica</li> <li>✓ Correctly name the water bodies bordering the Caribbean and locate them on the map.</li> <li>✓ State Jamaica's location relative to its Caribbean neighbours</li> <li>✓ Use a compass to state the location of and between places in Jamaica</li> <li>✓ Give clear description the uses of rivers and plains in Jamaica</li> <li>✓ Put into categories the activities carried out on rivers and plains</li> <li>✓ Correctly use image capturing device on fieldtrip</li> <li>✓ Construct and send email safely to e-pal</li> </ul>	
<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• The Cardinal points are North, East, South and West. The intermediate points e.g. North West will be taught in Grade 5.</li> <li>• Please note that North must be established using a magnetic compass or by noting the position rising of the Sun in the east.</li> <li>• The major rivers in Jamaica run in a northerly or southerly direction with the exception of the Plantain Garden River which runs in an easterly direction</li> <li>• Teacher should ensure that students have access to available technology, observe and practice online safety, respect, as well as proper posture when using the keyboard.</li> </ul>	<p><b>Extended Learning</b></p> <p>Encourage children to talk to their families about places that they have visited in Jamaica and give directions from their homes using cardinal points.</p> <p>Draw a simple map of a classroom, school compound or community and create a game which requires the use of cardinal points and has physical features such as a river, a hill, and a plain.</p>
<p><b>Resources</b></p> <p>atlas, map of Jamaica, map of the Caribbean  blank maps of Jamaica and the Caribbean, computer  DVD, image capturing device, internet</p>	<p><b>Key vocabulary</b></p> <p>Cardinal points, highlands, lowlands, relief, physical features, landforms, valley, mountain, plateaux, hill, plain, compass, mountain peak, mountain range</p>
<p><b>Links to other subjects</b></p> <p>Visual Arts, Language Arts</p>	

### **About the Unit**

In this Unit, students will examine Jamaica's political divisions and discuss why Jamaica is divided into counties and parishes. They will recognise the key characteristics of a community, parish capital and large town. The students will also trace the changes in parishes, and communities over time, consider why places change and suggest how these places may change in the future.

#### **Prior Learning**

##### **Check that students:**

- Recognise a map of Jamaica
- Understand the meaning of community

### **UNITS OF WORK GRADE 4 TERM 2 UNIT 2 (3weeks)**

#### **Focus Question: How is Jamaica divided and how have divisions and places changed over time?**





##### **Attainment Target 3:**

Know and value the contributions of communities and institutions in fostering national development, regional integration and international cooperation.

**THEME:** Living together

##### **Objectives:**

- Define and use correctly the terms/concepts: parish, county, capital, community, city
- Create a map of Jamaica to show and name counties, parishes and parish capitals
- Classify parishes according to size and location of the parish capital
- Explain why Jamaica is divided into counties and parishes,
- State the changes in the number and names of parishes in Jamaica from 1841 to present
- Name the capital cities that Jamaica has had over time
- Identify functions that are common to parish capitals
- Use a variety of sources to describe how communities have changed over time and propose reasons for the changes
- Present logical arguments about how their communities may change in the future
- Be aware that change is a constant feature of places
- Listen to the point of view of others

<p><b>ICT ATTAINMENT TARGET(S):</b></p> <ul style="list-style-type: none"> <li> <b>COLLABORATION AND COMMUNICATION:</b> students use technology to communicate ideas and information and work collaboratively to support individual needs and contribute to the learning of others</li> <li> <b>DESIGNING &amp; PRODUCING –Students use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations</b></li> <li> <b>RESEARCH, CRITICAL THINKING PROBLEM SOLVING AND DECISION MAKING.</b> Students use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</li> <li> <b>DIGITAL CITIZENSHIP</b>-students recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour</li> </ul>	
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<b>Suggested Teaching and Learning Activities</b> <b>Students will:</b>	<b>Key Skills</b>	<b>Assessment Criteria</b>
<p>Examine a map of Jamaica in their atlases and identify the parish and county in which they live, and then name the other counties, parishes and their capitals. Complete a blank map of Jamaica showing the counties, parishes and parish capitals. Create a key for the map using colours and symbols. Create a jigsaw puzzle by pasting their maps onto a sheet of card board and then cutting into puzzle pieces. Names of counties, parishes, and parish capitals may be made as separate removable labels. Try to put the puzzle together and label counties, parishes and capitals.</p>	<p>Map making</p>	<p>Completed map with counties, parishes and parish capitals correctly labelled.</p>
<p>Conduct online/offline research to find out the size of each parish. Arrange parishes in ascending or descending order, place parishes into groups according to their size. Examine digital/paper map of Jamaica and identify parish capitals. Create a table showing the location of parish capitals - whether the capital is situated near the coast or if it is situated further inland.</p> <p>Answer the question – Why do you think parish capitals developed along the coast?</p>	<p>Arranging information in ascending or descending            Classifying            Drawing conclusions</p>	<p>Completed table shows parishes classified according to size and location-coastal or inland            Correct responses may include the availability of flat</p>

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria												
		land, proximity to water supply, ease of trade-export and import of goods												
<p>Brainstorm and discuss why Jamaica is divided into counties and parishes. In collaborative groups conduct online/offline research on changes in the names and number of parishes in Jamaica over time. Find out when the parish that they are living in came into being, how it got its name, if the name has changed, if the size has changed. Examine past and present maps of Jamaica showing parish boundaries and identify the differences in the maps examined. Present the information gathered in a brochure. Brochure may include pictures of significant buildings in the parish both old and new.</p>	<p>Presenting reasoned arguments</p> <p>Making comparisons</p> <p>Organising and presenting information</p>	<p>Brochure should include name of parish, how parish got its name, map of Jamaica highlighting the parish, significant buildings/monuments in the parish</p>												
<p>Participate in a walk through and/or drive through the parish capital and a main town. Identify the government/administrative, commercial, recreational, and religious, educational buildings, places &amp; landmarks in both the parish capital and main town. Use image capturing device to take pictures of these places and use free online virtual tour software <a href="http://www.vtivity.net/">http://www.vtivity.net/</a> to create a virtual tour of the parish capital and main town. Create a table to compare buildings (activities) in the parish capital and large town. Draw inferences about the location of different types of activities.</p> <table border="1"> <thead> <tr> <th>Activities</th> <th>Parish capital – Spanish Town</th> <th>Large town- Linstead</th> </tr> </thead> <tbody> <tr> <td>Administrative (Government)</td> <td>Parish Council office Court house</td> <td></td> </tr> <tr> <td>Commercial</td> <td>Banks, insurance companies, market</td> <td>Department stores, market</td> </tr> <tr> <td>Religious</td> <td>Parish church</td> <td></td> </tr> </tbody> </table> <p>Work in collaborative groups to interview members of their community or parish to find out how and why it has changed over time. Use image capturing device or audio recording device to record the</p>	Activities	Parish capital – Spanish Town	Large town- Linstead	Administrative (Government)	Parish Council office Court house		Commercial	Banks, insurance companies, market	Department stores, market	Religious	Parish church		<p>Observing</p> <p>Organising information</p> <p>Drawing inferences</p> <p>Comparing past and present</p>	<p>Table shows clear distinction between activities of the parish capital and main town.</p> <p>Presentation shows how the community</p>
Activities	Parish capital – Spanish Town	Large town- Linstead												
Administrative (Government)	Parish Council office Court house													
Commercial	Banks, insurance companies, market	Department stores, market												
Religious	Parish church													



Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
<p>interview and playback for class discussion. Will ask the questions such as; what was the community/parish like when you were growing up? What did people do in their spare time? How did they travel about? What is the biggest change in the community/parish from their point of view? (OR conduct online/offline search could compare old maps with current maps and study photographic and newspaper archives to find out how their community or a selected community has changed over time). Share their findings with their classmates.</p>	<p>Gathering information from various sources</p> <p>Chronological thinking</p>	<p>or parish has changed over time.</p> <p>Information or pictures should be arranged in chronological order</p>
<p>Use think pair share strategy to suggest how their community/parish will change in the future and why. Students will think about their suggestions, then share their ideas with another student, after which each pair will share their suggestions and justification for changes.</p> <p>Share information with an e-pal in another country about the parish and community in Jamaica in which you live and how these have changed over time.</p>	<p>Making predictions</p> <p>Gathering information</p> <p>Communicating information</p> <p>Collaborating and communicating</p>	<p>Suggestions are supported by evidence or logical reasoning</p>
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Given a map of Jamaica identify counties, parishes and their capitals accurately</li> <li>✓ Name the past and present capitals of Jamaica</li> <li>✓ Clearly distinguish between parish capitals and large towns</li> <li>✓ Give vivid descriptions of the changes in their parish or community over time</li> <li>✓ Provide evidence to support their predictions about how their community/parish will change</li> <li>✓ Identify changes in communities on given maps</li> <li>✓ Use digital map to identify the parish in which they live, capital, important buildings major towns.</li> </ul>		



<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• The function of a settlement such as a city or a town refers to activities and services carried out by people in the city/town and are evident in the buildings. Functions include industrial (factories), commercial (stores, banks, markets), religious (places of worship), educational (schools, colleges), administrative (government offices), entertainment (theatres, cinemas, clubs), residential (homes), transportation hub (transport centre, bus terminus).</li> <li>• Factories or manufacturing companies are classified as industrial, parish council offices are regarded as administrative and markets and plazas are termed commercial.</li> <li>• Google Earth may be used to show changes in areas over a period of ten years. Use the clock icon to do this.</li> <li>• Teacher should ensure that students have access to available technology, observe and practice online safety, respect, and proper posture when using the keyboard</li> </ul>	<p><b>Extended Learning</b></p> <p>Encourage students to hold Interviews / fact finding conversations with older members of the school and local community to provide valuable experiences to share with their class</p>
<p><b>Resources</b> computers, internet, digital audio recorder, image capturing device, <a href="http://www.oldmapsonline.org/map/rumsey/4613.062">http://www.oldmapsonline.org/map/rumsey/4613.062</a>  <a href="http://old.jamaica-gleaner.com/pages/history/story0025.html">http://old.jamaica-gleaner.com/pages/history/story0025.html</a></p>	<p><b>Key vocabulary</b> County, parish, community, city, capital, town, digital map</p>
<p><b>Links to other subjects</b></p> <p>Language Arts, Mathematics, Visual Arts</p>	

## **About the Unit**

This Unit will help to develop in students' civic competence through an introduction to leadership and civic responsibility at the community level. They will be introduced to the concepts of citizen, democracy and government. Students will begin to examine leadership in the home, school and at the community level. They will begin to explore their responsibility as members of a community.

### **Prior Learning**

Check that students:

- Understand what is a community

## **UNITS OF WORK GRADE 4 TERM 2 Unit 3 (2 weeks)**

**Focus Question: How are we governed in the community and what are my responsibilities as a member of my community?**





### **Attainment Target 3:**

Know and value the contributions of communities and institutions in fostering national development, regional integration and international cooperation

**THEME:** Living Together

### **Objectives:**

- Define and use correctly the following terms: government, citizen, democracy, leader, rules, community
- Identify leaders in the home, school, and community
- Develop organisational charts to show the relationship between members in the home, school and community and describe the role of leaders on the chart
- Develop working definition for the concept "being responsible"
- Outline the responsibilities of members of the home, school and community and draw conclusions about the outcome when responsibilities are not carried out.
- Examine economic choices they make and critique these choices
- Identify a problem in the school to develop a plan of action to solve the problem
- Work in collaborative groups to solve problems in the class/community
- Begin to practice responsible citizenship

<p><b>ICT Attainment Targets:</b></p> <ul style="list-style-type: none"> <li> <b>COLLABORATION AND COMMUNICATION - use technology to communicate ideas and information and work collaboratively to support individual needs and contribute to the learning of others</b></li> <li> <b>DESIGNING &amp; PRODUCING –use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations</b></li> <li> <b>RESEARCH, CRITICAL THINKING PROBLEM SOLVING AND DECISION MAKING - use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</b></li> <li> <b>DIGITAL CITIZENSHIP-recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</b></li> </ul>		
<p><b>Suggested Teaching and Learning Activities</b> <b>Students will:</b></p>	<p><b>Key Skills</b></p>	<p><b>Assessment Criteria</b></p>
<p>Brainstorm about the meaning of the concepts leader and rules. Through discussion refine their definition of the concepts. Use the concepts in sentences. Engage in class discussion to identify the qualities of a good leader. Then identify leaders in the home, school, community.</p>	<p>Developing meaning of concepts</p> <p>Listening attentively and sharing opinions</p>	<p>Sentences should reflect correct meaning of concepts Leaders identified should possess wholesome leadership qualities.</p>
<p>Work in collaborative groups to identify a leader in the school or community. Conduct an interview with the leader to find out the role of the person in the school or community. Create a profile of the leader interviewed.</p>	<p>Recording, organising and summarising information</p>	<p>Profile may include a picture of the leader, his/her position in the school or community and the functions carried out.</p>

<p>Work in collaborative groups to identify a problem or issue in the school or community. They will then discuss their role and the role of members of the community in the problem. Students will then discuss strategies for solving the problem and specify their responsibility and that of members of the community in solving the problem. Give a report on the problem to classmates.</p>	<p>Problem solving</p>	<p>Report on the school or community problem must clearly identify the problem, and indicate the responsibility of community members in solving the problem.</p>
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Give simple precise definitions for given terms</li> <li>✓ Use given criteria to identify leaders in the home, school community</li> <li>✓ Write 3 paragraphs about a leader in their community</li> <li>✓ State clearly the roles of leaders in the home, school and community</li> <li>✓ Identify and justify qualities that leaders should possess</li> <li>✓ State clearly the responsibilities of members of their community</li> <li>✓ Contribute meaningfully to group activity to solve problems</li> <li>✓ Demonstrate responsible citizenship</li> </ul>		
<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• Teacher should ensure that students have access to available technology and demonstrate responsible and safe online behaviour</li> </ul>	<p><b>Extended Learning</b></p> <p>Students will be involved in a school or community project in which they have to take responsibility for the success of the project. Projects may include keeping the class clean, maintaining corners in the class, maintaining a green space on the compound. Students should be assigned specific task (s) and be made aware of success criteria.</p>	
<p><b>Resources</b> Computer , internet</p>	<p><b>Key vocabulary</b> government, citizen, democracy, leader , rules</p>	
<p><b>Links to other subjects</b> Civics, Language Arts</p>		

### About the Unit

In this Unit, students will be introduced to some of the elements of weather (wind, rain, temperature and sunshine). They will read and interpret weather records. They will explore the positive and negative impact of the elements of weather on the activities of human beings and put forward suggestions for dealing with the negative effects.

#### Prior Learning

Check that students can:

- Describe weather conditions

### UNITS OF WORK GRADE 4 TERM 3 UNIT 1 (4 weeks)

**Focus Question: How does weather affect human activities?**

#### Attainment Target 1:





Understand the processes and forces that have influenced the physical and built environment

**Theme:** The physical environment and its impact on human activities.

#### Objectives:

- Define and use correctly the terms/concepts: weather, wind, temperature, thermometer, solar, meteorology, and meteorologist.
- List the elements of weather (wind, temperature, rain, sunshine, cloud cover)
- Gather information from a variety of sources on the effects of wind, sunshine and temperature and use it to deduce the impact of these on their environment
- Interpret weather reports and use patterns identified to make simple forecasts
- Gather information from a variety of sources about how humans utilize sunshine and wind to meet their needs and propose ways these may be used in the school or community
- Identify the negative effects of wind and sunshine and propose strategies for dealing with the negative effects of these on the environment
- Explain how weather can affect the supply and demand of goods and services
- Recognise the impact of weather on man's activities

**ICT ATTAINMENT TARGET(S):**

<ul style="list-style-type: none"> <li> <b>COLLABORATION AND COMMUNICATION - use technology to communicate ideas and information and work collaboratively to support individual needs and contribute to the learning of others</b></li> <li> <b>DESIGNING &amp; PRODUCING – use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations</b></li> <li> <b>RESEARCH, CRITICAL THINKING PROBLEM SOLVING AND DECISION MAKING. - use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</b></li> <li> <b>DIGITAL CITIZENSHIP-recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</b></li> </ul>		
<p><b>Suggested Teaching and Learning Activities</b>  <b>Students will:</b></p>	<p><b>Key Skills</b></p>	<p><b>Assessment Criteria</b></p>
<p>Listen to or watch a weather report and identify the elements of weather mentioned in the report. Use online/offline sources to create concept maps for the elements of weather. Make word cards and sentence strips to match words to their meanings</p>	<p>Concept mapping</p>	<p>Concept maps should have correct attributes and examples of each. Sentences include the concept and the context show correct meaning.</p>
<p>Make a simple homemade thermometer using the following materials; rubbing alcohol, (red) food colouring, clear plastic drinking straw, modelling clay, and water. Add equal parts of rubbing alcohol and water to the bottle. Fill bottle quarter way up. Add a few drops of food colouring and mix by shaking the bottle. Put the straw in the bottle making sure it does not touch the bottom. Use the modelling clay to seal the straw in place. Leave a portion of the straw sticking out from the bottle. Attach an index card to the top of the straw. Use clear tape to hold it in place. Record changes in temperature on the card.  Use a thermometer / thermometer app from Google play store to record temperatures at different times of the day (beginning of school day, at 12'o clock and at the end of the school day) and at different locations on</p>	<p>Gathering data, representing data  interpreting data</p>	<p>Correctly record temperature over a specified time period. Accurately construct bar graph showing a record of temperature</p>

<p>the school compound. Use statistical diagrams (line graph or bar chart) to record the temperature. Interpret their findings.</p>										
<p>Observe wind on the school compound and record observations. Use table to record observations over a period of time. Use statistical diagram to represent observations over a period of time.</p> <table border="1"> <thead> <tr> <th>Description of Wind</th> <th>Conditions observed</th> </tr> </thead> <tbody> <tr> <td>Calm</td> <td>Calm, leaves are not moving</td> </tr> <tr> <td>Gentle breeze</td> <td>Leaves and twigs constantly moving</td> </tr> <tr> <td>Strong breeze</td> <td>Large branches moving</td> </tr> </tbody> </table>	Description of Wind	Conditions observed	Calm	Calm, leaves are not moving	Gentle breeze	Leaves and twigs constantly moving	Strong breeze	Large branches moving	<p>Making and recording observations</p>	<p>Table must include day, date and time of observation over a specified time.</p> <p>Statistical diagram must show description of wind, when it occurred and how often</p>
Description of Wind	Conditions observed									
Calm	Calm, leaves are not moving									
Gentle breeze	Leaves and twigs constantly moving									
Strong breeze	Large branches moving									
<p>They will role play being a meteorologist and give the weather report and forecast for the next three days for their school or community. Forecast should be in line with patterns observed over period when observations were made.</p>	<p>Imaginative thinking</p>	<p>Weather report and forecast should include the elements of weather- wind, rainfall, temperature, sunshine.</p>								
<p>Work in collaborative groups to conduct research online/offline on how Jamaicans use sunshine (solar energy) and wind to meet their energy needs and the benefits of using these types of energy. Make a scrap book showing the uses of solar and wind energy in Jamaica. Students will write sentences about the benefits of using wind and solar energy.</p>	<p>Communicating information</p>	<p>Scrap book has pictures of solar water heaters, solar lights, wind turbines etc. Sentences show understanding of the benefits of solar and wind energy.</p>								
<p>Participate in a field trip to observe the process of using wind or sunshine to generate energy</p>	<p>Writing reports</p>	<p>Field trip report includes name of place visited, date of visit, and description of processes observed</p>								
<p>In groups conduct research online/offline and create a bulletin board highlighting the effects of wind, sunshine and temperature on human activities. Bulletin board must include pictures and information to show the positive and negative effects of the elements of weather on human</p>	<p>Making predictions</p>	<p>Bulletin board includes pictures and information that show clear understanding of the positive as well as negative effects of the elements of weather. Strategies to deal with the negative effects of the elements of</p>								



<p>activities such as farming, building, and human health. A section of the bulletin board should be used to suggest strategies for dealing with the negative effects of the elements of weather.</p>	<p>Gathering information</p>	<p>weather should be feasible.</p>
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<p><b>Learning Outcomes</b>  Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Give simple definitions for the terms and concepts</li> <li>✓ Use concepts and terms correctly within context</li> <li>✓ Represent and interpret simple weather data</li> <li>✓ Provide simple descriptions of the positive and negative effects of the elements of weather on human activities</li> <li>✓ Explain how humans use wind and sunshine to meet their energy needs.</li> <li>✓ Put forward simple workable strategies for dealing with the negative effects of the elements of weather</li> </ul>
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<p><b>Points to Note</b></p>	<p><b>Extending Learning</b></p>
<ul style="list-style-type: none"> <li>• Students should not be taught about the <b>Beaufort Scale</b> at this level</li> <li>• Attention should only be placed on sunshine and wind as elements of weather. The other elements will be taught at higher grade levels</li> </ul>	<p>Students will ask relatives and friends to relate experiences during extreme weather condition in the past e.g. during a hurricane. Students will share the experiences with their classmates.</p>
<p><b>Resources:</b>  Newspaper clippings, video clips, internet, computer, pictures, thermometers, smart phone/tablets, multimedia projector</p>	<p><b>Key vocabulary:</b>  Weather, wind, temperature, thermometer, meteorology, meteorologist, hurricane, storm.</p>
<p><b>Links to other subjects</b>  Mathematics, Language Arts, Visual Arts, Science</p>	

## About the Unit





In this Unit students will recognize that Earth is one of eight planets in orbit around the sun. They will also become cognisant of Earth's uniqueness among the eight planets and begin to appreciate that the solar system is a part of a vast universe. Students will be required to examine evidence and test hypothesis, in an effort to develop their critical thinking skills.

## UNITS OF WORK GRADE 4 TERM 3 Unit 2 (2 weeks)

### Prior Learning

Check that students:

- Know the planet on which they live

Focus Question: Why is planet Earth unique in the Solar System?	
<b>Attainment Target 1:</b>  Understand the processes and forces that have influenced the physical and built environment <b>Theme:</b> The physical environment and its impact on human activities	<b>Objectives:</b> <ul style="list-style-type: none"><li>• Define and use correctly the concepts/terms: solar, orbit, planet, space, habitable zone, spherical, Solar System, terrestrial, atmosphere</li><li>• Label a diagram of the Solar System</li><li>• Identify Earth's position in the Solar System and determine how this position affects its characteristics and its ability to support life.</li><li>• Gather information from a variety of sources and use it to explain why planet Earth is able to support life</li><li>• Gather information from a variety of sources and use it to explain how human activities affects Earth's ability to support life and propose measures to mitigate these effects</li><li>• Examine diagrams, pictures and models of the Earth and use the information gathered to describe its shape</li><li>• Be aware of planet Earth's unique ability to support life</li></ul>
<b>ICT ATTAINMENT TARGET(S):</b> <ul style="list-style-type: none"><li> <b>COLLABORATION AND COMMUNICATION</b> - use technology to communicate ideas and information and work collaboratively to support individual needs and contribute to the learning of others</li><li> <b>DESIGNING &amp; PRODUCING – use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations</b></li><li> <b>RESEARCH, CRITICAL THINKING PROBLEM SOLVING AND DECISION MAKING.</b> - use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</li><li> <b>DIGITAL CITIZENSHIP</b>-recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</li></ul>	

Suggested Teaching and Learning Activities	Key Skills	Assessment Criteria
<p><b>Students will:</b>            Be given a blank diagram of the solar system and be asked to label it using clues given by the teacher. Examples of clues- I am the largest planet, my name is Jupiter; I am the planet nearest to the sun, my name is Mercury. Students will then describe the position of planet Earth in relation to the sun and the other planets. They will then compare the shape and size of other planets with planet Earth.</p>	Sequencing	Diagram must show all planets correctly named in order of distance from the sun.
<p>Brainstorm to answer the question “What do living things need to survive on planet Earth?”            Work in collaborative groups to conduct research online or offline to find out the characteristics of planet Earth which enable it to support life. Present the information in a creative way- song, poem, or drawings.</p>	Gathering information  Presenting information in a variety of ways	Presentation should highlight the characteristics of planet Earth that make it habitable.
<p>Students will be asked to examine a globe and to describe its shape. Students will then identify other objects with a similar shape. They will then participate in a demonstration to prove the shape of the Earth. Materials needed for the demonstration; two foam balls of different sizes/balls of different sizes made from play dough, flashlight or other light source. The larger ball represents the Earth, the smaller ball the moon and the flashlight the sun. The sun, Earth and moon must be placed in a straight line. The light from the flashlight must be shone on the Earth. The shadow of the Earth will be cast on the moon. Students will describe the shape of the shadow seen. Students will then use other shapes to cast a shadow and describe the shape of the shadow seen. Students will then watch a video clip of a moon eclipse <a href="https://www.youtube.com/watch?v=lcRp1jKjMJU">https://www.youtube.com/watch?v=lcRp1jKjMJU</a> and describe the shape of the shadow. Compare eclipse in video with shadow in the demonstration. Students will then write a paragraph and draw a diagram showing how a moon eclipse proves that the Earth is spherical.</p>	Examining evidence	Written piece and drawing shows how a moon eclipse proves that the earth is spherical
<p>Answer the question: How high will I have to climb to see the Earth’s curved horizon?            Students’ responses will be recorded. They will then go outside at the lowest level on the school compound to observe the shape of the Earth’s horizon. Students will describe what they see. Students will then go to a higher level and describe the horizon at this point. Students will then go to the highest level on the compound to observe the horizon. At a certain height above the ground, the Earth’s horizon will appear curved. Students will record their observations at each level and write a concluding statement.</p>	Testing hypothesis	Students’ records will describe the shape of the Earth’s horizon at different levels/heights on the school compound.

<p>Examine photographs of the Earth taken from space and describe the shape of the Earth seen in the photographs.</p>	<p>Gathering evidence from pictures</p>	<p>Simple descriptions identifying specific shape</p>
<p><b>Learning Outcomes</b>  Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ State simple meaning for terms and concepts</li> <li>✓ Use terms and concepts in the correct context</li> <li>✓ Label a simple diagram of the solar system</li> <li>✓ identify Earth’s position on a diagram of the solar system</li> <li>✓ Give a simple description of the shape of the planet Earth</li> <li>✓ Put forward evidence to support the shape of the Earth</li> <li>✓ Begin to give reasoned explanations of planet Earth ability to support life</li> <li>✓ Demonstrate awareness of planet Earth’s unique ability to support life</li> </ul>		
<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• Students are not expected to be taught about the composition of the Solar System in regards to asteroids, meteoroids, comets and meteors as well as Earth’s movement. This will be done in Grade 5.</li> <li>• Teacher should ensure that students have access to available technology, observe and practice online safety, respect, as well as proper posture when using the keyboard.</li> </ul>	<p><b>Extended Learning</b></p> <p>Students can explore other evidence to prove the shape of the Earth and why Earth is able to support life.</p>	
<p><b>Resources:</b>  Blank diagram of the solar system, crayons, markers, cord, glue, cartridge paper, car board, chart/diagram of the solar system, multimedia projector, computer, handout, text  <a href="http://www.universetoday.com/120982/what-is-the-habitable-zone/">http://www.universetoday.com/120982/what-is-the-habitable-zone/</a>   <a href="http://quest.nasa.gov/projects/astrobiology/astroventure/challenge/Articles/habitablezone.pdf">http://quest.nasa.gov/projects/astrobiology/astroventure/challenge/Articles/habitablezone.pdf</a></p>	<p><b>Key vocabulary:</b>  Solar, orbit, planets, space, habitable zone, spherical, system, terrestrial, atmosphere, horizon,</p>	
<p><b>Links to other subjects</b>  Language Arts, Science, Mathematics</p>		

### **About the Unit**

In this Unit students will be introduced to plants and their many uses. They will examine how humans utilize plants to meet basic needs for food, clothing and shelter. Students will begin to explore the impact of human activities on plant life and recognise the importance of plant life to life on Earth. They will collect, organise and analyse data about their environment which will develop their observation and investigative skills. The activities in this unit are intended to develop environmental awareness and sensitivity in students.

#### **Prior Learning**

Check that students:

- Know some uses of plants

### **UNITS OF WORK GRADE 4 TERM 3 UNIT 3 (2 weeks)**

#### **Focus Question: Why are plants important to humans?**

##### **Attainment Target 2:**

Develop an understanding of the interdependent relationship between humans and the environment.

**THEME:** Diversity, interdependence and sustainability in nature and society

##### **Objectives:**

- Define and use terms correctly : interdependent, nature, forest, habitat, deforestation
- Examine how plants are used in various places, develop categories of use and classify plants accordingly
- Gather information about how humans use and depend on plants and use this information to justify the importance of protecting plant life
- Examine multiple sources, draw conclusions about impact of human activities on plants and propose measures to mitigate its impact
- Show concern for the environment by taking care of plants in their environment
- Practice and inform others of environmentally friendly behaviours at school and in the community
- Work in cooperative groups to solve problems
- Be aware of the interdependent relationship between plants and the other elements of the environment

Suggested Teaching and Learning Activities	Key Skills	Assessment Criteria																									
<p><b>Students will:</b> Walk through school compound / community, and observe plants. Record the different uses each plant seen. Uses should be classified using the table below as a guide. Image capturing devices may be used to take pictures of plants.</p> <table border="1"> <thead> <tr> <th>Plant name/description</th> <th colspan="4">Uses</th> </tr> <tr> <td></td> <td>Food for humans/animals</td> <td></td> <td>Beauty</td> <td>Lumber for shelter/furniture</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </thead> </table> <p>Represent the information gathered about plants and their uses on a bar graph or pictograph. Pictures taken may be used on the pictograph.</p>	Plant name/description	Uses					Food for humans/animals		Beauty	Lumber for shelter/furniture																<p>Observing  recording  classifying</p>	<p>Bar graph or pictograph provides a record of the plants and their uses</p>
Plant name/description	Uses																										
	Food for humans/animals		Beauty	Lumber for shelter/furniture																							
<p>With the use of online/offline dictionary, define the concepts nature, forest, habitat, interdependent, and deforestation. Use concepts to write a short story.</p>	<p>Concept mapping  Creative writing</p>	<p>Short story should include all the concepts and context shows clear understanding of the concepts</p>																									
<p>In cooperative groups conduct research online/offline about the uses of plants. Each group will conduct research on one or two uses e.g. Plants for Food, Plants for Medicine. Each group should provide pictures or samples of the plant/s, describe how the plant is used/give examples of how they use the plant and talk about the importance of plants, briefly explain how mankind's use of the plant affects plant life and suggest how plants can be used and plant life maintained.</p> <p>Participate in a class project which focuses on a particular use of plants. (Food, beautification, shade etc.). Students will decide on the type of plants they want</p>	<p>Gathering information  Classifying          Caring for the environment</p>	<p>Group presentations must provide information on the uses of plants, the impact of mankind's use of plants and what can be done to ensure that we will always have these plants.</p> <p>Garden should include plants for various uses. Students should explain why each plant was</p>																									

Suggested Teaching and Learning Activities	Key Skills	Assessment Criteria
<p>to grow and why. Identify an area on the school compound or with the assistance of the teacher collect containers for growing their plants. Along with the help of the teacher collect or purchase items needed for the garden. Students will care for the garden according to a schedule.</p>		<p>chosen. Students should help to develop schedule to water plants, remove weeds, fertilize etc.</p>
<p><b>Learning Outcomes</b>  Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Give simple working definitions of the concepts</li> <li>✓ Use the concepts correctly in oral and written communication</li> <li>✓ Place plants into meaningful categories based on their uses</li> <li>✓ Clearly describe how human beings use plants to meet their needs</li> <li>✓ Provide simple explanation of the importance of protecting plants</li> <li>✓ Briefly explain how human beings are affecting plant life</li> <li>✓ Demonstrate an awareness of the interdependent relationship between plants, animals, water, air and soil</li> <li>✓ Begin to take actions that demonstrate environmental care and sensitivity</li> </ul>		
<b>Points to Note</b>	<b>Extended Learning</b>	
<ul style="list-style-type: none"> <li>• Teacher can take students on field trip to natural parks/sanctuaries or invite resource personnel from the forestry department to speak with students on plant diversity.</li> <li>• Multiple sources refer to the use of two or three sources e.g. pictures, textbooks, videos, websites etc.</li> </ul>	<p>Parents/guardians should be encouraged to assist students in sourcing plants for project.  Students can think about the different ways they use plants. They can record their uses of plants in a journal. They should record their feelings about plants at the beginning and at the end of the period.</p>	
<p><b>Resources:</b>  Field trip, NEPA, Forestry Department</p>	<p><b>Key vocabulary:</b>  environment, forest, interdependence, nature, habitat, deforestation</p>	
<p><b>Links to other subjects</b>  Science, Mathematics</p>		



## **About the Unit**

In this Unit students will examine land pollution in their local environment. They will find out the causes of land pollution and the effects it has on humans and the environment. Students will conduct their own observations and investigations on the types of pollutants in their communities and develop strategies to solve these problems. They should begin to advocate for proper waste management at school, at home and in the community.

### **Prior Learning**

Check that students:

- Know the meaning of environment
- Know some ways in which they can harm the environment

## **UNITS OF WORK GRADE 4 TERM 3 UNIT 4 (2 weeks)**

**Focus Question: How can I help to keep my community clean?**

### **Attainment Target 2:**



Develop an understanding of the interdependent relationship between man and his environment.



**THEME:** Diversity, interdependence and sustainability in nature and society

### **Objectives:**

- Define and use correctly the concepts pollution, waste, waste disposal, recycle, reuse, reduce
- Examine a variety of sources in order to describe and classify the different types of pollution
- Examine multiple sources to identify and describe the causes of land pollution.
- Examine their daily activities in order to identify the goods and services that they use and state the type of waste that is created
- Examine and classify different types of waste, and use this information to determine how to deal with waste in the environment
- Gather information from a variety of sources on the effects of poor waste management on humans and the environment and propose ways in which land pollution can be minimized in the school and community.
- Use different methods to inform members of the school and community about the importance of

### **ICT ATTAINMENT TARGET(S):**

-  **COLLABORATION AND COMMUNICATION** - use technology to communicate ideas and information and work collaboratively to support individual needs and contribute to the learning of others
-  **DESIGNING & PRODUCING** – use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations

<p> RESEARCH, CRITICAL THINKING PROBLEM SOLVING AND DECISION MAKING. - use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</p> <p> DIGITAL CITIZENSHIP-recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</p>	<p>protecting their environment.</p> <ul style="list-style-type: none"> <li>Practice environmentally friendly habits in the school and community</li> </ul>	
<p><b>Suggested Teaching and Learning Activities</b> <b>Students will:</b></p>	<p><b>Key Skills</b></p>	<p><b>Assessment Criteria</b></p>
<p>Brainstorm to define the concepts pollution, waste, waste disposal, reuse, recycle. Develop concept maps for each and write a definition</p>	<p>Brainstorming</p>	<p>A simple definition of each term</p>
<p>Observe the school compound or surrounding community to identify various types of waste and the sources of these wastes. (e.g. Classroom, canteen, home, offices, stores, the market). Use image capturing devices to take pictures of the waste. Classify the waste into various categories such as reusable, recyclable, will decompose, will not decompose etc.</p>	<p>Developing criteria for classification</p>	<p>Waste classified according to defined criteria</p>
<p>Identify places on the school compound with different environmental conditions e.g. sunny most of the time, shaded most of the time. Place the same types of waste materials in the different locations. Observe how the materials change (decay) over a one week period. Record their finding in their notebooks. Based on the changes in the waste materials students will determine how waste should be sorted and how different types of waste should be treated.</p>	<p>Investigating</p>	<p>Notes show observations made over a period of one week. Conclusions draw are related to observations made.</p>
<p>Use appropriate methods such as counting, weighing etc. to determine the volume of waste generated in the class daily. Present the data gathered on a graph or chart</p>	<p>Measuring and presenting data</p>	<p>Graph or chart shows the volume of different types of waste generated in the classroom.</p>
<p>Work in cooperative groups to develop a waste management plan for the class</p>	<p>Designing and planning</p>	<p>Waste management plan includes</p>

or school. The plan must include ways of teaching other members of the school about proper waste management (jingles, posters, flyers, brochures etc.) , sorting of waste, reducing waste, recycling waste, composting. Create posters, brochures, flyers using publishing or word processing software or other appropriate software, record jingles and playback		campaign for spreading proper waste management practices. Plans are in place for sorting of garbage, reducing waste, reusing and recycling waste.
Conceptualize and design a garbage bin that sorts garbage	Conceptual thinking Creating	Drawing showing design of bin that sorts garbage
Collect pictures and create picture story/use Windows movie maker to create movie showing the improper disposal of garbage and its effects on humans and the environment.	Sequencing events to show casual relationships	Story or movie shows the sequence of events from improper disposal to the effects on human and the environment
Write a letter to the editor of the local newspaper about the effects of improper waste disposal and strategies to improve waste management	Advocating for change	Letter outlines effects of improper waste management and strategies to improve same.
Work in collaborative groups to design and develop strategies to inform members of the school/community of importance of proper waste management	Problem solving	Strategies must be feasible in the school/community
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Give simple workable definitions for the given terms</li> <li>✓ State clearly the different types of pollution</li> <li>✓ Give concise explanation of the causes of land pollution</li> <li>✓ Sort solid waste into meaningful categories</li> </ul>		

- ✓ Put forward workable strategies for dealing with solid waste
- ✓ Provide sequential information on the effects of land pollution on humans and the environment
- ✓ Begin to advocate for proper waste management

Points to Note	Extended Learning
<ul style="list-style-type: none"> <li>• If teacher decides to take children on community walk, written permission should be sought from the parents/guardians.</li> <li>• Where technology is not available to project/play audio-visual materials, teacher could provide articles with the information and use cartoons/ pictures as stimulus material</li> <li>• There are opportunities in this section to link with the subject of Science</li> <li>• Teacher should ensure that students have access to available technology, observe and practice online safety, respect, as well as proper posture when using the keyboard.</li> </ul>	<p>Parents/guardians can help children to create plans/rules to minimize/prevent pollution and enforce these.</p> <p>Sort garbage at home or in the community Start a compost heap at home or in the community.</p> <p>Students can be encouraged to join the environmental club.</p>
<p><b>Resources:</b> Markers, crayons, cartridges, glue, scissors Multimedia projector Computer, video <a href="http://eschooltoday.com/pollution/land-pollution/what-is-land-pollution.html">http://eschooltoday.com/pollution/land-pollution/what-is-land-pollution.html</a></p>	<p><b>Key vocabulary</b></p> <p>pollution, compost, waste (garbage) land pollution, conservation, waste disposal, preserve, sustain, conserve, reduce, reuse and recycle</p>
<p><b>Links to other subjects:</b> Language Arts, Mathematics, Science</p>	

**GRADE 4**

**UNITS**

# Mathematics

## UNIT OF WORK

## Mathematics Philosophy

Internet access has so changed the information landscape, and technological developments have so revolutionized the means available to either create or solve problems, that mathematical literacy is today as important as the ability to read text. All students must possess understanding of basic computation, statistics and geometry in order to make an informed response to the global environment of the twenty first century in which they live.

Mathematics contributes to the process of inquiry as a means of solving problems. It provides the opportunity for learners to be creative and inventive and in doing so, empowers them to construct their own mathematical knowledge to make sense of the physical, social, technological aspects of their environment.

The Mathematics Curriculum serves as a real life context for learners and teachers to engage in meaningful activities that are relevant to life, including their languages, cultures and everyday experiences beyond the walls of school. The Mathematics Curriculum from Grades 1-9 challenges and inspires learners to:

- a) Use mathematical concepts and processes to interpret the world
- b) Make connection between their previous mathematical knowledge to new situations
- c) Communicate mathematical ideas and processes that have helped them to understand their experiences and refine their problem solving skills
- d) Explore in a variety of ways, the application of mathematics to problems in their everyday life
- e) Reflect on their experiences and decisions and make adjustments to their prior conceptions or meanings of situations
- f) Develop attitudes such as perseverance, honesty and courage as they manipulate mathematical concepts and skills and engage in critical reflective thought



## OVERVIEW OF SUBJECT CONTENT GRADE 4

TERM 1	TERM 2	TERM 3
Number (5 weeks) <ul style="list-style-type: none"> <li>• Sets</li> <li>• number value</li> <li>• Fraction ideas</li> <li>• Estimation and mental calculation</li> </ul>	Number (3 weeks) <ul style="list-style-type: none"> <li>• Multiplication &amp; division of whole numbers (up to 4 digits) including mental calculation</li> <li>• Decimals</li> </ul>	Number (4 weeks) <ul style="list-style-type: none"> <li>• Multiplication and division</li> <li>• Use of calculator</li> </ul>
Measurement (4 weeks) <ul style="list-style-type: none"> <li>• Units of measurement</li> <li>• Computing with units of measurement</li> </ul>	Measurement (2 weeks) <ul style="list-style-type: none"> <li>• Comparing length and area</li> <li>• Estimating and comparing measures</li> </ul>	
Geometry (2 weeks) <ul style="list-style-type: none"> <li>• Relationships between lines and angles</li> </ul>	Geometry (2 weeks) <ul style="list-style-type: none"> <li>• Lines of symmetry</li> </ul>	Geometry (2 weeks) <ul style="list-style-type: none"> <li>• Similarities and differences in shapes</li> </ul>
	Algebra (2 weeks) <ul style="list-style-type: none"> <li>• Using variables</li> </ul>	Algebra (2 weeks) <ul style="list-style-type: none"> <li>• Using variables</li> </ul>
Statistics (3 weeks) <ul style="list-style-type: none"> <li>• Collect, organize, interpret and display information</li> </ul>	Statistics (2 weeks) <ul style="list-style-type: none"> <li>• Mean</li> <li>• Sampling population</li> </ul>	Probability (2 weeks) <ul style="list-style-type: none"> <li>• Outcomes of an event</li> </ul>

## **Aims**

### **The study of Mathematics should enable students to:**

- Acquire the necessary mathematical skills and learn concepts that will be used in real life situations and related disciplines.
- Develop the necessary processes for the acquisition and application of mathematical concepts and skills.
- Recognise and integrate mathematical ideas with other disciplines.
- Develop positive attitudes toward mathematics.
- Make effective use of a variety of mathematical tools (including information and communication technology) in the learning and application of mathematical concepts and skills
- Produce imaginative and creative products arising from mathematical concepts and skills.
- Develop the abilities to reason logically, communicate mathematically, learn independently and cooperatively.

### **The role of Mathematics in the curriculum**

Students need to develop the necessary mathematical competence to function in society. This includes the ability to count, measure, handle money and do straightforward calculations with confidence. Students will also be able to conceptualize spatial properties, gather and graphically represent data in different ways, manipulate mathematical ideas or apply mathematical knowledge to new situations and to communicate these effectively. Competence within Mathematics contributes to learning in all other subjects.

### **Contribution to the competencies**

Mathematics contributes to all three of the Framework competencies: knowledge, skills and attitude. The subject is an ideal context for the development of critical thinking and problem solving skills, and for making judgments. It should provide opportunity to work independently and in teams.

### **Range of activities**

Students should be involved in a range of practical activities through which they can explore mathematical properties and relationships. They plan their own investigations and explore different ways of solving problems. By learning mathematics in a practical way, they should be able to relate its operations and principles to real life situations. Wherever possible, students should explore the mathematical uses of a range of ICT equipment.

## UNIT OF WORK GRADE 4 TERM 1 UNIT 1

### Strand: Number

### Suggested Time: 5 weeks

### About the Unit



In this unit, students will:


- Use knowledge of sets to describe the set, name and list their elements/members.
- Read and write number names, and numerals using the Hindu – Arabic Place Value System up to seven digits.
- Compute with whole numbers accurately and fluently; use these skills to find answers in realistic problem situations.
- Compute with fractional numbers quickly and accurately; use these skills to find answers in realistic problem situations.
- Use approximation and estimation with numbers involving division.

### Prior Learning

Check that students can:

- Read and write 4 digit numbers.
- partition and combine groups of objects
- identify fractional numbers (halves to tenths)
- compute with whole numbers ( up to 3 digits)
- round whole numbers to the nearest thousand

<p><b>Focus Question 1:</b> How do I know the value of a number?</p> <p><b>Attainment Target:</b> Know and use the values of numerals and associate them with their names, numbers and ordinals.</p>	<p><b>Benchmark:</b> Read and write number names, and numerals using the Hindu – Arabic Place Value System up to seven digits.</p>
<p><b>Standard: Number Representation:</b> Know the value of numerals, associate them with their names, numbers, ordinals and use concrete objects to model patterns, expressions and numbers.</p> <p><b>Sub-theme: Number Ideas</b></p>	<p><b>Mathematics Objectives:</b></p> <ul style="list-style-type: none"><li>● Distinguish between value, place value and face value of a digit.</li><li>● Identify the value of whole numbers with up to seven digits.</li><li>● Read and write whole numbers with up to seven digits.</li></ul>
<p><b>ICT Attainment Target (s)</b></p> <ul style="list-style-type: none"><li> <b>COMMUNICATION AND COLLABORATION</b> – Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.</li><li> <b>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING</b> – Students use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</li></ul>	

 <b>DIGITAL CITIZENSHIP</b> – Students recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour.		
<b>Suggested Teaching and Learning Activities – Focus Question 1</b>	<b>Key Skills</b>	<b>Assessment</b>
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Design a questionnaire to find out how many boys and girls are in each class in each grade. Use the information obtained to determine the population of the school.</li> <li>• Discuss instances in which large numbers are used, for example, buying a car, census taking and school budget. Use spread-sheet and place value template to display the budget. Discuss the population of Jamaica as it relates to the fourteen parishes. Analyse, interpret and make inferences from data. Read and write numbers up to seven digits. Discuss and compare the value of each digit.</li> <li>• Explore place value chart with up to seven digits. Discuss the idea that each place is ten times greater than the other as we move from right to left. For example, 7 hundreds is ten times larger than 7 tens while 7 tens is ten times smaller than 7 hundreds.</li> <li>• Examine numbers written in standard, expanded and worded forms to find similarities and differences. Express numbers given in one form (standard, expanded or worded forms) to another form. For example, from worded form to expanded or standard form.</li> <li>• Use place value template to investigate the value, place value and face value of numbers (e.g. the “2” in 24 has value 20, occupies a place value of 10 and has a face value of 2).</li> <li>• Use technology to research the census population of each parish in Jamaica and discuss how many digits they each have and the place value of each digit.</li> <li>• Participate in group competitions in which individuals from different groups compete to add and subtract two or three digit numbers with/without renaming mentally. Replace student as soon as an incorrect answer is given. Allow students to explain their methods and mental processes used to derive their responses.</li> <li>• Create their own 5, 6 or 7 digit numbers using 0-9 number cards. Challenge their peers to see who can create the largest/least number in one move. Each person has one move at a time.</li> <li>• Examine cash prices of cars of the same year and model from different car marts to determine the ‘best buy’. Visit stores to collect data on the cost of their preferred vehicle, television set, technological gadgets, etc . Identify and state the company that gives the best value for money.</li> </ul>	<ul style="list-style-type: none"> <li>• Read and write numbers.</li> <li>• Explore Place Value chart.</li> <li>• Write numbers.</li> <li>• Investigate numbers</li> <li>• Compute mentally</li> <li>• Create numbers</li> <li>• Solve real life problems</li> <li>• Enter data into columns and rows in a spread-sheet</li> <li>• Enter Text</li> <li>• Create Tables</li> <li>• Collecting data</li> <li>• Design questionnaire</li> </ul>	<p>Value of digits accurately identified for numbers up to 7 digits.</p> <p>Place value of digits correctly identified and appropriately placed on Place Value Chart.</p> <p>Face value of digits correctly recognised.</p> <p>Place value charts are clearly labelled.</p> <p>Solution methods and processes are clearly explained.</p> <p>Cooperatively work in group.</p>
<b>Learning Outcomes</b>		

<p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>✓ State when large numbers are used.</li> <li>✓ Read, write and expand numbers up to seven digits.</li> <li>✓ Distinguish between different face, place, and the value of each digit in a given number.</li> <li>✓ Plan and conduct research, using a wide variety of electronic sources to sort digits in their respective place value.</li> </ul>	
<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• Highlight the population for each parish that it is either a five or six digit number and that the overall population is a seven digit number.</li> <li>• Highlight that in the Base Ten/ Hindu-Arabic System each succeeding digit is a tenth of the preceding digit. For example 70 is 1//10 of 700.</li> </ul>	<p><b>Extended Learning</b></p> <ul style="list-style-type: none"> <li>• Explore the population census of other countries in the Caribbean region.</li> <li>• Research how information from a census is used by the government to plan for its people.</li> </ul>
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Population census of Jamaica. (JIS or STATIN)</li> <li>• Base ten blocks</li> <li>• Place Value Chart</li> <li>• Checklist</li> <li>• Spread sheet-budget and place value template</li> <li>• Computer</li> <li>• Multimedia projector</li> <li>• Questionnaire</li> </ul>	<p><b>Key vocabulary:</b></p> <p>Face value, Place value, Value, Census, Population, Standard Form, Expanded Form, Least, Largest, Digit, information, questionnaire</p>
<p><b>Links to other subjects</b></p> <p>Social Studies</p> <ul style="list-style-type: none"> <li>- The physical environment and its impact; Describe the main features of Jamaica using appropriate vocabulary. Locate main parishes etc.</li> <li>- Census population: explore the number of persons living in, the fourteen parishes in Jamaica, and Caribbean Regions</li> </ul> <p>English Language</p> <ul style="list-style-type: none"> <li>- Use inferences and deduction to find meaning beyond the literal: compare the census population for the parishes and have discussions</li> </ul> <p>Civics</p> <ul style="list-style-type: none"> <li>- Demonstrate an understanding of self as an individual and in a prescribed context: The ability to identify self as a member of a parish and a nation.</li> </ul>	

**Prior Learning**

Check that students can:

- Identify equivalent sets.
- Tell the worth of a set of notes and coin.

<p><b>Focus Question 2:</b> What do I need to know about sets?</p> <p><b>Attainment Target:</b> Operate with numbers and number patterns.</p>	<p><b>Benchmark:</b> Use knowledge of sets to describe the set, name and list their elements/members.</p>		
<p><b>Standard_Number Operation and Application:</b> Use the basic operations, number relationships, patterns, number facts, calculators and appropriate software to compute and estimate in order to solve real world problems involving fractions, percentages and decimals.</p> <p><b>Sub-theme: Number Ideas</b></p>	<p><b>Mathematics Objectives:</b></p> <ul style="list-style-type: none"> <li>• Define the concept of a set.</li> <li>• Describe a set.</li> <li>• Name any set using braces.</li> <li>• Name and list members of any given set.</li> </ul>		
<p><b>Suggested Teaching and Learning Activities – Focus Question 2</b></p>		<p><b>Key Skills</b></p>	<p><b>Assessment</b></p>
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• In groups, sort objects according to their sizes, shapes, colours, textures, purposes/uses. Brainstorm other ways in which things may be grouped in the classroom or/and at home. Sketch and label what each group looks like.</li> <li>• Discuss and describe each group of objects that were sorted and sketched above. Be guided by teacher that a group or collection of objects with similar characteristics is called a set. Note how each set is alike or different.</li> <li>• In pairs, list as many items that can be found within the classroom. Group items listed according to similarities. Describe what makes the members in each group a set.</li> <li>• Select an element from a bag then add other elements with similar attribute(s) to form a set.</li> <li>• Describe the set formed outlining the common attribute(s).</li> </ul>		<ul style="list-style-type: none"> <li>• Sort objects</li> <li>• Describe sets/groups</li> <li>• Sketch sets/groups</li> <li>• Name/Label sets</li> <li>• Discuss characteristics</li> <li>• Lists members</li> <li>• Define terms</li> <li>• Note similarities and differences</li> <li>• Describe attributes</li> <li>• Brainstorm</li> </ul>	<ul style="list-style-type: none"> <li>• Objects with similar attributes are grouped and labelled accurately.</li> <li>• Similarities and differences clearly communicated</li> <li>• Elements correctly categorized by sets</li> <li>• Work cooperatively in group.</li> </ul>

<p><b>Learning Outcomes</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Sort objects according to their characteristics.</li> <li>✓ List members of a set.</li> <li>✓ Label/name a sets</li> </ul>		
<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• Help students to note that a set is a distinct collection of similar objects.</li> <li>• Let students them know that sizes, shapes, colours, textures, uses/purposes are some of the attributes used to distinguish a set of objects.</li> <li>• A set is name using capital letters.</li> <li>• The set A, of counting numbers less than 7 is denoted by <math>A = \{\text{counting numbers less than 7}\}</math>. The elements or members are listed as: <math>A = \{1, 2, 3, 4, 5, 6\}</math>.</li> </ul>	<p><b>Extended Learning</b></p> <ul style="list-style-type: none"> <li>• Create a scrap book showing various sets by cutting and pasting pictures of things in the environment.</li> <li>• Make journal entry of their experiences with sets or their understanding of the meaning of set.</li> <li>• Research the varieties/set of bananas available in Jamaica.</li> <li>• Find information about the nutritional values of bananas.</li> </ul>	
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Objects in the environment</li> <li>• Sorting trays</li> <li>• Pictures of varieties of bananas</li> <li>• Scrapbooks</li> <li>• Journals</li> </ul>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Sets</li> <li>• Groups</li> <li>• Characteristics</li> <li>• Similarities</li> <li>• Differences</li> <li>• Attributes</li> <li>• Members</li> <li>• Sorting</li> <li>• Varieties</li> <li>• Nutritional Value</li> </ul>	
<p><b>Links to other subject areas</b></p> <p>Visual Arts</p> <ul style="list-style-type: none"> <li>- Create and develop; communicate ideas through the creation of two dimensional art forms</li> </ul> <p>Physical Education</p> <ul style="list-style-type: none"> <li>- Allow students to identify games that are played with a ball, die, strings, etc.</li> </ul> <p>Language Arts</p> <ul style="list-style-type: none"> <li>- Construct questions to find out information about sets</li> <li>- Describing and listing members of a set based on their characteristics</li> </ul>		



**Prior Learning****Check that students can:-**

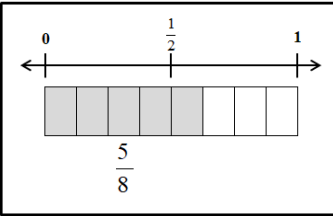
- Name parts of fractions i.e. halves through tenths.
- Place fractions with same denominator/numerator in serial order.
- Identify the numerator or denominator in a fraction.
- Identify mixed numbers.
- Write fractions in their simplest forms using the understanding of equivalence.
- Write fraction families.

<p><b>Focus Question 3:</b> How do I apply fraction ideas to real life situations?</p> <p><b>Attainment Target:</b> Understand and apply fractional ideas.</p>	<p><b>Benchmark:</b> Compute with fractional numbers quickly and accurately; use these skills to find answers in realistic problem situations.</p> <ul style="list-style-type: none"> <li>• Model the number operations: addition and subtraction.</li> </ul>
<p><b>Standard: Number Operation and Application:</b> Use the basic operations, number relationships, patterns, number facts, calculators and appropriate software to compute and estimate in order to solve real world problems involving fractions, percentages and decimals.</p>	<p><b>Mathematics Objectives:</b></p> <ul style="list-style-type: none"> <li>• Distinguish among whole numbers, proper fractions, improper fractions and mixed numbers.</li> <li>• Recognize like fractions (fractions with equal denominators).</li> <li>• Order fractions with different denominators.</li> <li>• Benchmark fractions using 0, <math>\frac{1}{2}</math> and 1.</li> <li>• Subtract a proper fraction or a mixed number from a whole number.</li> </ul>

<b>Suggested Teaching and Learning Activities – Focus Question 3</b>	<b>Key Skills</b>	<b>Assessment</b>
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Build fraction chart using fraction spread-sheet template. Discuss and compare as it relates to the fraction families for (<math>\frac{1}{2}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math> etc.).</li> <li>• Use tangram pieces to further explore part-whole meaning of fractions. Discuss the relationships among the two large triangles, the small triangles, the square and the parallelogram.</li> <li>• Investigate the relationships between fractions using the fraction circle or use spread-sheet to create their own fraction chart.</li> <li>• Listen to the recording of a “Fraction Song” (sung in both S.J.E and</li> </ul>	<ul style="list-style-type: none"> <li>• Build fraction chart</li> <li>• Discuss/compare fraction relationship</li> <li>• Manipulate fractions</li> <li>• Investigate fraction relationships</li> <li>• Discuss fractional concepts</li> <li>• Develop fractions</li> <li>• Judge fractional proportions</li> </ul>	<ul style="list-style-type: none"> <li>• Illustrations on Fraction chart correctly reflect proportions of fractions.</li> <li>• Fraction relationship suitably identified.</li> <li>• Equivalent Fractions correctly identified.</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 3	Key Skills	Assessment
<p>Jamaican dialect) from an audio device then discuss the concepts of fractions, numerator, denominator, proper fraction, improper fractions and common denominators. Create their own dictionary adding fractional terms with illustrations.</p> <ul style="list-style-type: none"> <li>• Develop the concept of equivalent fraction through investigation, for example paper folding. Use multiplication table to further explore equivalence.</li> <li>• Judge the relative size of two or more fractions and arrange them in ascending or descending order.</li> <li>• Compare fractions by representing each portion concretely and pictorially using presentation software.</li> <li>• In groups, use sets of fractions with different denominators/numerators to compare and order fractions. Discuss their reasons and check/compare results with other groups.</li> <li>• Identify a set of objects as one whole. Discuss the part-whole relationship of members in given sets.</li> <li>• Collect, sort and display sets of objects according to various attributes (i.e. colour, size, shape etc.) in their environment. Compare the fractional parts of given sets and write fractional cards to match each part.</li> <li>• Share a pizza among five persons such that no two persons get the same amount. Place in ascending or descending order, the amount that each person receives. Gradually increase the number of persons that the pizza is to be shared among.</li> <li>• Individually/in pairs/in groups, write 2-steps problem using situations from real life information. Create mathematical statements based on worded problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Represent fractions</li> <li>• Work in groups</li> <li>• Compare fractions</li> <li>• solve real-life problems</li> <li>• operate electronic devices</li> </ul>	<ul style="list-style-type: none"> <li>• Fraction Models creatively presented and illustrations done accurately.</li> <li>• Work cooperatively in group.</li> </ul>
<p><b>Learning Outcome:</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Create Fraction Chart</li> <li>✓ Explain the relationship between fractional numbers</li> <li>✓ Write equivalent fractions</li> </ul>		

Suggested Teaching and Learning Activities – Focus Question 3	Key Skills	Assessment
✓ Partition objects to represent fractional numbers		

Points to Note	Extended Learning
<ul style="list-style-type: none"> <li>• A fraction can be represented as part-whole model or part of a set model.</li> <li>• The measurement model can be exemplified using tape, ribbon, or other appropriate materials.</li> <li>• The Fraction Chart for Benchmarks of 0, <math>\frac{1}{2}</math> and 1 can be used to compare fractions and explore equivalent fractions.</li> </ul> 	<ul style="list-style-type: none"> <li>• Evaluate the use of fraction chart, tangram pieces and fraction circle in exploring fractional parts.</li> <li>• Explore the relationships of each tangram piece against a circular portion.</li> <li>• Explore areas in which fractions are being used in real life situation e.g. cooking, masonry, dressmaking, carpentry etc.</li> <li>• Engage in paper folding to divide one fractional number by another.</li> <li>• In their journals, allow students to record the importance of using fractions in everyday situation.</li> </ul>
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Tangram pieces</li> <li>• Fractional circles</li> <li>• Fraction cards</li> <li>• Objects in the environment</li> <li>• computers, speakers, CD/DVD players</li> <li>• Fraction song</li> <li>• Multimedia Projector and any other available Technologies</li> <li>• Scissors</li> <li>• Ruler</li> <li>• Fraction pizza reproducible</li> </ul>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>• <b>Numerator</b></li> <li>• <b>Denominator</b></li> <li>• <b>Estimate</b></li> <li>• <b>Proper/Improper Fractions</b></li> <li>• <b>Parallelogram</b></li> <li>• <b>Unit fraction</b></li> <li>• <b>Equivalent</b></li> </ul>
<p><b>Links to other subjects</b></p> <p>Language Arts</p> <ul style="list-style-type: none"> <li>- Apply study skills and search for information using a wide range of mediums; Develop own questions and finds answers to questions; Interpretation of worded problems; discussion of real life scenarios</li> </ul>	

Visual Arts

- Create and develop: Appreciate how art can be used to reflect everyday activities


Technical Vocational Education

- Explore Methods and Procedures: Identify and select materials and tools that are appropriate for the execution of simple tasks.
- Use sketches and models to aid articulation of their ideas and problems.

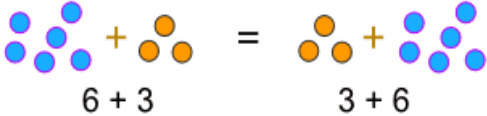
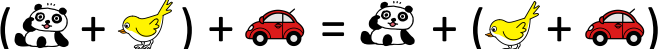
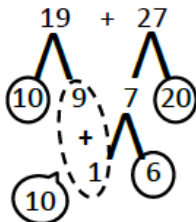
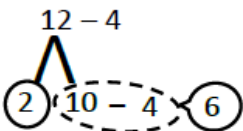
**Prior Learning**

**Check that students:-**

- Mentally recall addition and subtraction of 2-digit numbers.
- Construct addition and subtraction problems.
- Use and write three-digit numbers in standard form.
- Round two-digit numbers to nearest ten.
- Use rounded numbers to estimate answers for addition and subtraction problems.

<p><b>Focus Question 4:</b> How can I estimate and verify my answers?</p> <p><b>Attainment Target:</b> Explain the process of the basic operations, use estimation appropriately, and demonstrate proficiency with basic facts.</p>	<p><b>Benchmark:</b> Compute with whole numbers accurately and fluently; use these skills to find answers in realistic problem situations.</p> <ul style="list-style-type: none"><li>• <i>Model the number operations: addition and subtraction of two digit numbers.</i></li></ul>	
<p><b>Standard_Number Operation and Application:</b> Use the basic operations, number relationships, patterns, number facts, calculators and appropriate software to compute and estimate in order to solve real world problems involving fractions, percentages and decimals.</p> <p><b>Sub-theme: Number Ideas</b></p>	<p><b>Objectives:</b></p> <ul style="list-style-type: none"><li>• Make reasonable estimate when computing whole numbers.</li><li>• State how the properties of commutativity and associativity apply to addition and subtraction.</li><li>• Add or subtract two digit whole numbers mentally.</li></ul>	
<p><b>ICT Attainment Target:</b></p> <p> <b>COMMUNICATION AND COLLABORATION</b> – Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.</p>		
<p><b>Suggested Teaching and Learning Activities – Focus Question 4</b></p>	<p><b>Key Skills</b></p>	<p><b>Assessment</b></p>
<p><b>Students will:</b></p> <ul style="list-style-type: none"><li>• In groups set up a shop corner. Make up a shopping list and estimate the total cost of the items on the list.</li><li>• Use the idea of rounding off in estimating to facilitate computation when adding or subtracting.</li></ul>	<ul style="list-style-type: none"><li>• Write two-digit numbers</li><li>• Model numbers</li><li>• Utilize Base Ten blocks/objects</li></ul>	<ul style="list-style-type: none"><li>• Whole numbers accurately written.</li></ul>

<p>For example add <math>42 + 86 =</math> approximately <math>40 + 90</math>. Compute actual answer then make comparison. Discuss results.</p> <ul style="list-style-type: none"> <li>• In pairs/groups, write two-digit numbers then take turns to add/subtract mentally. Share results and methods used.</li> <li>• In pairs/groups, assign sets of ten flash cards and objects for counting. Take turns displaying cards then model the value of each number on cards. Add/subtract representations.</li> <li>• Use Base Ten blocks to model addition of two-digit numbers shown on flash cards. Then add the same sets of numbers in the reverse. E.g. <math>26 + 14 = 14 + 26</math>; <math>45 + (53 + 16) = (45 + 53) + 16</math> conduct web research to locate interactive websites to reinforce the concept.</li> <li>• With straws/fudge sticks, represent addition of two-digit numbers in as many ways possible. E.g. <math>78 = 10 + 10 + 10 + 10 + 10 + 10 + 10 + 8 = 20 + 20 + 30 + 8</math>.</li> <li>• Estimate answers of given addition problems using the idea of rounding off. Compute actual answers then compare actual with estimated results.</li> </ul>	<ul style="list-style-type: none"> <li>• Add numbers</li> <li>• Subtract numbers</li> <li>• Communicate online</li> <li>• Estimate</li> <li>• Work in groups</li> </ul>	<ul style="list-style-type: none"> <li>• Sum of two or more whole number accurately computed.</li> <li>• The difference of two whole numbers accurately computed.</li> <li>• Work cooperatively in group.</li> </ul>
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>Estimate to a reasonable degree of accuracy when computing</li> <li>✓ Show numbers in written form/standard form.</li> <li>✓ Estimate the sum of two or three given addends</li> <li>✓ Calculate addition and subtraction of two-digit numbers.</li> </ul>		

Points to Note	Extended Learning
<ul style="list-style-type: none"> <li>Commutative property for addition using representation model   <math display="block">\begin{array}{c} \bullet \bullet \bullet \bullet \bullet \bullet \\ 6 + 3 \end{array} + \begin{array}{c} \bullet \bullet \bullet \\ 3 + 6 \end{array} = \begin{array}{c} \bullet \bullet \bullet \\ 3 + 6 \end{array} + \begin{array}{c} \bullet \bullet \bullet \bullet \bullet \bullet \\ 6 + 3 \end{array}</math> </li> <li>Associative property for addition using representation model   <math display="block">(\text{panda} + \text{bird}) + \text{car} = \text{panda} + (\text{bird} + \text{car})</math> </li> <li>Addition and subtract can be done using make 10 concept   <math display="block">19 + 27 = 10 + 10 + 6 + 20 = 46</math>  <math display="block">12 - 4 = 2 + 6 = 8</math> </li> <li>'Mentally' refers to having the child think without doing.</li> </ul>	<p>Have each child make number cards to add to their Mathematics Kit</p>
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Straws/fudge sticks</li> <li>• Flash cards</li> <li>• Base Ten blocks</li> <li>• Computer</li> <li>• Multimedia Projector and any other available technologies</li> <li>• Internet</li> <li>• Shop corner</li> <li>• Items to set up shop corner</li> </ul>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Digit</li> <li>• Addition</li> <li>• Subtraction</li> <li>• Mentally</li> <li>• Estimate</li> </ul>
<p><b>Links to other subjects</b></p> <p>Technical Vocational Education  Creativity and Innovation: Use sketches and models to aid articulation of students' ideas; build skills in the manipulation of materials and handling of tools.  Information Communication Technology  Work collaboratively to share a range of ICT activities within groups to complete tasks; Participate in peered and guided information searches</p>	



## UNIT OF WORK GRADE 4 TERM 1 Unit 2


### **Strand: Measurement**

**Suggested Time: 4 weeks**


#### **About the Unit**



In this unit, students will:

- Estimate and measure distances, and use these to solve related problems involving conversion between centimetres, millimetres and kilometres.
- Read and write time, and know the relationships between units of time.
- Estimate and measure liquid capacity or volume, while converting between millilitres and litres. Know the meaning of milli, centi, deci and kilo.
- Choose and use appropriate units of measure for volume/capacity, mass with the units and instruments best used.
- Estimate and measure temperature and it to solve related problems involving degree Celsius.
- Estimate and measure mass and use it to solve related problems involving grams and kilograms.

<p><b>Focus Questions:</b></p> <ul style="list-style-type: none"><li>• What units should I use to measure lengths in my environment?</li><li>• What units should I use to measure time?</li><li>• What units should I use to measure liquids in my environment?</li></ul> <p><b>Attainment Target:</b> Explain and carry out the processes of estimation and measurement, including the selection of appropriately precise units.</p>	<p><b>Benchmark:</b></p> <ul style="list-style-type: none"><li>• Estimate and measure distances, and use these to solve related problems involving conversion between millimetres, centimetres, metres and kilometres.</li><li>• Read and write time, and know the relationships between units of time.</li><li>• Estimate and measure liquid, capacity or volume, while converting between millilitres and litres.</li></ul>
<p><b>Standard Measurement:</b> Use the correct units, tools and attributes to estimate, compare and carry out the processes of measurement to given degree of accuracy.</p> <p><b>ICT AT:</b></p> <p> <b>DESIGNING AND PRODUCING</b> – Students use digital tools to design and produce creative multimedia products to demonstrate their learning and understanding of basic technology operations.</p>	<p><b>Mathematics Objectives:</b></p> <ul style="list-style-type: none"><li>• Estimate, measure and record distances in metres and centimetres, in centimetres or to the nearest centimetres.</li><li>• Solve problems using information on a road map.</li><li>• Estimate and measure straight line distances “As The Crow Flies” on a map.</li><li>• Write lengths (metres and centimetres or centimetres) in terms of a metre using decimal form.</li><li>• Read and write time using the hour: minute format, e.g. 2:45 p.m.</li><li>• Solve problems that involve finding time and elapsed time.</li><li>• Estimate and measure capacity or volume using litres and or millilitres.</li></ul>

<p><b>Sub-theme:</b></p> <ul style="list-style-type: none"> <li>Units of measurement (distances, liquid capacity, time)</li> </ul>	<ul style="list-style-type: none"> <li>Discover that 1000 ml = 1 litre.</li> <li>Identify the appropriate unit, litre, millilitre, for use in a given measurement situation.</li> </ul>
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Suggested Teaching and Learning Activities	Key Skills	Assessment
<p>Students will:</p> <ul style="list-style-type: none"> <li>Estimate various measurements, using measuring devices to verify their estimates. Examples of such activities are: <ul style="list-style-type: none"> <li>measuring rings- use strips of papers to form rings intertwined to form a chain, then use paper clips, elastic bands or strips of paper to estimate lengths</li> </ul>  <ul style="list-style-type: none"> <li>measure curves with a piece of string</li> <li>estimate and measure lengths using centimetres as they compare the heights and reach of classmates</li> <li>Using a standard metre (rope, ruler etc), find lengths that are the same as, shorter than, or longer than a metre.</li> <li>make a list of objects in the classroom for students to estimate their length, then measure using a specified unit (include curved distances)</li> <li>throwing game - have students stand in line and throw objects(paper plane, Frisbee etc); measure the lengths of the throw in metres/centimetres to see which thrower's length is the longest/farthest.</li> <li>Create a mock Olympic event (Long jump). Discuss how metre/centimetre is utilized in an activity like this. Each student will jump and others will measure and record jumps using metre and centimetre in decimal form.</li> </ul> </li> <li>Use medicine caps, syringes, plastic cups and jars to establish base measurements for millilitre and litre.</li> </ul>	<ul style="list-style-type: none"> <li>Estimate measurements</li> <li>create measuring instruments</li> <li>measure and record</li> <li>read measuring instruments</li> <li>locate places on a map</li> <li>compare measurements</li> <li>investigate appropriate tools for measuring</li> <li>work in groups</li> <li>perform simple mathematical operations</li> </ul>	<p>Estimated measurements are approximately equal to actual measurement.</p> <p>Units of measure correctly identified.</p> <p>Measurements accurately recorded</p> <p>Appropriate measuring tools/devices correctly identified.</p> <p>Distance, volume and time accurately measured.</p> <p>Measuring tools suitably created.</p> <p>Devices/tools and units are named appropriately.</p> <p>Measuring tools/devices read correctly.</p> <p>Work cooperatively in group.</p>

Suggested Teaching and Learning Activities	Key Skills	Assessment
<div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>• Fill a 1 ml container with water and test how many of that container is needed to fill a 1 litre container.</li> <li>• Place in order five or six containers from least to greatest volume. Then use a measuring cup to test for accuracy.</li> <li>• Use string or strips representing kilometres to locate, measure and compare distances on a map. (A map of their district/town/city would create some interest).</li> <li>• With teacher's guidance, make some measuring devices: (clock, centimetre ruler, measuring tape, trundle wheel, measuring cups etc).</li> </ul> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>• Use the clock to read the time to the nearest minute and compare the length of time taken to complete several activities.</li> <li>• Discuss their experiences in using the devices (clocks, rulers, trundle wheel, measuring cup, etc.), identifying the appropriate tools and units used.</li> <li>• In groups, cut two pieces of paper 8 cm by 16 cm. Roll each sheet to form a cylinder, one 8 cm high and the other 16 cm high. Tape the edges together and stand them on a flat surface. The two cylinders have the same lateral surface area. Discuss with teacher whether or not both cylinders have the same volume. Now fill each with sand. Repeat with two papers 8 cm x 24 cm.</li> <li>• Use interactive presentation software on " Measuring Units" for class discussion and reinforcement on units of measurement for various objects.</li> </ul>		
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ estimate and measure length, capacity and time</li> <li>✓ create various measuring instruments</li> <li>✓ select appropriate tools/units for measuring</li> <li>✓ read and record measures correctly</li> </ul>		

Suggested Teaching and Learning Activities	Key Skills	Assessment
✓ complete activities cooperatively		

Points to Note	Extended Learning
<ul style="list-style-type: none"> <li>• Appropriate guidelines must be explained to students when using measuring devices.</li> <li>• Distances are measured in units of metres. Liquid, capacity or volume is measured in units of litres.</li> <li>• Reinforce that measurements consist of a number and a unit. For example, 10 millilitres, 10 ml.</li> <li>• Have representations/models for units of measurement. For example, 1 cm is approximately equal to the length of the nail on the “pinky” little finger.</li> <li>• Standard units of measurements are used globally to facilitate equality in measuring.</li> <li>• A digital clock uses a numeric display to indicate the exact time.</li> <li>• An analog clock represents time by using hands that spin around a dial and point to a location on the dial that represents the time.</li> </ul>	<ul style="list-style-type: none"> <li>• Allow students, in groups to take the measurement of each other’s height and make comparison.</li> <li>• Allow students to record time taken to complete particular events. Record findings in tabular form.</li> <li>• Encourage students to estimate the heights of building and landmarks as they travel daily. Estimate in terms of known objects (e.g. that building is 3 times as tall as my house) as well as metric measures.</li> <li>• Encourage students to estimate the volume of liquid in a container. Have students using 500 ml containers to fill other containers of 1 litre, 2 litre, 5 litre or 10 litre capacity. Students should count how many 500 ml container would fill the other containers.</li> </ul>
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Rulers</li> <li>• Tape measure</li> <li>• Clocks</li> <li>• Measuring cups</li> <li>• trundle wheel</li> <li>• Atlases /maps</li> <li>• Syringes</li> <li>• Literature books with measurement concepts</li> <li>• Paper</li> <li>• Scissors</li> <li>• Popcorn</li> <li>• Com<a href="http://illuminations.nctm.org/uploadedFiles/Content/Lessons/Resources/3-5/UsesNumbers-AS-HeightsStudents.pdf">http://illuminations.nctm.org/uploadedFiles/Content/Lessons/Resources/3-5/UsesNumbers-AS-HeightsStudents.pdf</a>puter,</li> <li>• Computers</li> </ul>	<p><b>Key vocabulary:</b></p> <p><b>Compare height</b></p> <ul style="list-style-type: none"> <li>• Time format</li> <li>• Estimation</li> <li>• Kilo- , centi-, milli-</li> <li>• Litre</li> <li>• Metre</li> <li>• Degrees Celsius</li> </ul>

- Multimedia projector and any other available resources

### **Links to other subjects**

Make links for learning with Science, Social Studies and Physical Education teaching and learning activities.

#### Technical Vocational Education

Creativity and Innovation: Use sketches and models to aid articulation of their ideas; build skills in the manipulation of materials and handling of tools.

#### Information Communication Technology

Work collaboratively to share a range of ICTs within groups to complete tasks; Participate in peered and guided information searches.

#### Social Studies

- Understand time: day and night as the earth rotates and revolves around the sun.

#### Visual Arts

- Create and develop; communicate ideas through the creation of two dimensional art forms

#### Physical Education

- Measure dimensions of play areas using units of metres. Timing races in minutes and seconds.

#### Language Arts



- Construct questions to find out information about a particular topic in measurement.

**Prior Learning**

Check that students:

- Explain the relationships between the units having the prefixes deci-, centi-, milli- and kilo- and the main units.
- Associate units of measurement and instruments to appropriate items.

<p><b>Focus Question:</b></p> <ul style="list-style-type: none"> <li>• What units should I use to measure the mass of objects in my environment?</li> <li>• What units should I use to measure temperature in my environment?</li> </ul> <p><b>Attainment Target:</b> Explain and carry out the processes of estimation and measurement, including the selection of appropriately precise units.</p>	<p><b>Benchmark:</b></p> <ul style="list-style-type: none"> <li>• Estimate and measure mass while converting between kilograms and tonne.</li> <li>• Understand the concept of temperature; estimate and measure using standard units.</li> </ul>
<p><b>Standard_ Measurement:</b> Use the correct units, tools and attributes to estimate, compare and carry out the processes of measurement to given degree of accuracy.</p> <p><b>Sub-title:</b> Units of measurement(mass, temperature)</p>	<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Estimate and measure mass using gram or kilogram or kilogram and gram.</li> <li>• Read a scale shown in a measurement situation using kilograms and/or grams.</li> <li>• Discover that 1000 kg = 1 tonne.</li> <li>• Estimate and measure temperature in degrees Celsius.</li> <li>• Tell the difference between two temperatures both above zero.</li> <li>• Tell the temperature which is a given number of degrees warmer or cooler than a given temperature.</li> </ul>

Suggested Teaching and Learning Activities	Key Skills	Assessment
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Use a two- pan balance/spring balance to weigh various objects and record the reading from the scale in grams (g), kilograms (kg) or kilograms and grams.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	<ul style="list-style-type: none"> <li>• Estimate measurements</li> <li>• create measuring instruments</li> <li>• measure and record</li> <li>• read measuring instruments</li> </ul>	<p>Estimated measurements are approximately equal to actual measurement.</p> <p>Units of</p>

- Using an object with a mass of 1 gram (paper clip, small button or screw etc), find mass that are the same as, lighter than or heavier than a gram. Extend the discussion to include the use of the larger units: tonne and kilometre.



- Place grocery items (canned foods and dry goods) on a kitchen scale without passing a predetermined mass. See how close each child gets to the limit without going over.



- View a presentation about elephants. Make inferences about the weight of elephants. Report actual weight of elephants in tonne as well as in kilogram.
- Use the thermometer to read the temperature of different substances (e.g. pipe water, ice, refrigerated milk, cooked cereal, etc.) and make comparisons.
- With teacher's guidance, make measuring devices: (thermometer, beam balance, rubber band, spring scales, etc.).



- In pairs, choose an instrument, (e.g. thermometer, beam balance, rubber band, spring scales, etc) above and research its various uses in real world activities. Then use instrument to gather data on a task carried out throughout the week i.e. measure their mass/temperature. Tabulate data, and then present it on a bar graph. Formulate questions based on data gathered. Exchange with other pairs for them to answer.

- locate places on a map
- compare measurements
- investigate appropriate tools for measuring
- work in groups
- solve problems
- make inference

measure correctly identified.

Measurements accurately recorded

Appropriate measuring tools/devices correctly identified.

Mass and temperature accurately measured.

Measuring tools suitably created.

Devices/tools and units are named appropriately.

Measuring tools/devices read correctly.

Work cooperatively in group.

### Learning Outcomes

Students will be able to:

- ✓ estimate and measure mass and temperature



<ul style="list-style-type: none"> <li>✓ create measuring instruments for mass and temperature</li> <li>✓ select appropriate tools/units for measuring</li> <li>✓ read and record measures correctly</li> <li>✓ complete tasks cooperatively in groups</li> <li>✓ solve real world related problems</li> </ul>	
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<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• Appropriate guidelines must be explained to students when using measuring devices.</li> <li>• Masses are measured in units of grams.</li> <li>• Temperature is measured in units of degree Celsius.</li> <li>• Masses are measured in units of grams.</li> <li>• Temperature is measured in units of degree Celsius.</li> <li>• Reinforce that measurements consist of a number and a unit. For example, 10 degrees Celsius, 10 °C.</li> <li>• Standard units of measurements are used globally to facilitate equality in measuring.</li> </ul>	<p><b>Extended Learning</b></p> <ul style="list-style-type: none"> <li>• Encourage students to assist family members to estimate mass of items then watch the scale to see how close the estimate is to the actual mass.</li> <li>• Encourage students to help measure ingredients in the kitchen, remembering to use metric units and compare with empirical units (pounds, ounces) where necessary.</li> <li>• Research to find out the weight of the heaviest elephant to be recorded.</li> </ul>
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Scales</li> <li>• Thermometer</li> <li>• Items for weighing</li> <li>• Literature books with measurement connections.</li> <li>• Laptop computers</li> <li>• Projector</li> </ul>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Gram</li> <li>• Kilogram</li> <li>• Temperature</li> <li>• Thermometer</li> <li>• Mass</li> <li>• Degree</li> <li>• Celsius</li> </ul>
<p><b>Links to other subjects</b></p> <p>Technical Vocational Education Creativity and Innovation: Use sketches and models to aid articulation of their ideas; build skills in the manipulation of materials and handling of tools.</p> <p>Information Communication Technology Work collaboratively to share a range of ICTs within groups to complete tasks; Participate in peered and guided information searches.</p> <p>Visual Arts - Create and develop; communicate ideas through the creation of two dimensional art forms</p>	

Physical Education


- Measure masses of tools and equipment use for games played within the Physical Education classes.

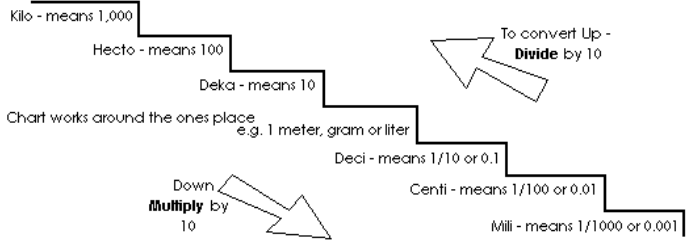
Language Arts

- Construct questions to find out information about a particular topic in measurement.

**Prior Learning****Check that students:-**

- Are able to associate units of measurement with their symbols.
- Are able to associate an item to be measured with its appropriate unit.

<p><b>Focus Question:</b> How do I record and compute the various units of measurement?</p> <p><b>Attainment Target:</b> Explain and carry out the processes of estimation and measurement, including the selection of appropriately precise units.</p>	<p><b>Benchmark:</b> Know the meaning of milli, centi, deci and kilo; choose and use appropriate units of measure.</p>	
<p><b>Standard Measurement:</b> Use the correct units, tools and attributes to estimate, compare and carry out the processes of measurement to given degree of accuracy.</p> <p><b>Sub-title:</b> Computing with units of measurement</p> <p><b>ICT AT2:</b>  <b>DESIGNING AND PRODUCING</b> – Students use digital tools to design and produce creative multimedia products to demonstrate their learning and understanding of basic technology operations.</p>	<p><b>Mathematics Objectives:</b></p> <ul style="list-style-type: none"> <li>• Convert one unit of measurement to another (length: kilometres and metres).</li> <li>• Explain the relationships among units of time.</li> <li>• Convert one unit of measurement to another (time: hours, minutes and seconds).</li> <li>• Convert one unit of measurement to another (capacity: millilitres and litres).</li> <li>• Convert one unit of measurement to another (mass: kilograms and grams).</li> <li>• Discuss the general meaning of the prefixes deci-, centi-, milli-, kilo.</li> <li>• Explain the relationships between the units having the prefixes deci-, centi-, milli- and kilo- and the main units; gram, metre and litre.</li> </ul>	
<p><b>Suggested Teaching and Learning Activities</b></p>	<p><b>Key Skills</b></p>	<p><b>Assessment</b></p>
<p><b>Students will</b></p> <ul style="list-style-type: none"> <li>• Revise jingles/rhymes/poems etc. relating to time.</li> <li>• Explore and compare relationships between various units, including time.</li> <li>• Discussing the meanings of the prefixes used for metric units, (e.g. investigating how</li> </ul>	<ul style="list-style-type: none"> <li>• Manipulating measuring devices</li> <li>• Converting units</li> <li>• Calculating the sums and differences of measurements</li> </ul>	<p>Metric unit prefixes suitably explained.</p>

Suggested Teaching and Learning Activities	Key Skills	Assessment
<p>many 5 cm strips or 10 cm strips will fit into a metre, leading to <math>100\text{ cm} = 1\text{ m}</math> and similar exercises using gram, kilogram, tonne, litre, millilitre).</p> <ul style="list-style-type: none"> <li>• Create a table (based on a metric song/mnemonic etc.) to show the order of sizes of the units in the metric table. Discuss the relationship between the units.</li> </ul>  <ul style="list-style-type: none"> <li>• Use manipulative to convert from one unit to another (eg. time, distance, capacity and mass). Suggest methods and algorithms for recording their conversion. Practise multiplying and dividing by ten and products of ten (written and orally) as they convert metric units.</li> <li>• Use addition and subtraction with the units of time, temperature, distance, capacity and mass. In pairs, investigate when they have to use each unit above in their daily activities. Then calculate the measure of each during a particular week. Present data in tabular form. Compare and share findings with other pairs.</li> <li>• In groups use a standard size plastic cup to fill various size bottles with water. Estimate and record the number of cups of water needed to fill each bottle.</li> <li>• With the assistance of their teacher use an interactive web-based measurement conversion calculator to guess/estimate the conversion of different units of measurements for reinforcement.</li> </ul>	<ul style="list-style-type: none"> <li>• Solving problems</li> <li>• Work in groups</li> </ul>	<p>Conversions between units correctly done.</p> <p>Accurate calculation of measurements</p> <p>Units of measure correctly identified.</p> <p>Appropriate measuring tools/devices correctly identified.</p> <p>Measuring tools/devices read correctly.</p> <p>Work cooperatively in group.</p>
<p><b>Learning Outcomes</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ explore and compare relationships between units</li> <li>✓ discuss relationship between units</li> <li>✓ use manipulative to convert one unit to another</li> <li>✓ add and subtract units of time temperature, distance, capacity and mass</li> <li>✓ participate in groups cooperatively</li> </ul>		

Suggested Teaching and Learning Activities	Key Skills	Assessment
<b>Points to Note</b>	<b>Extended Learning</b>	
<ul style="list-style-type: none"> <li>Students should be guided in using concrete objects in developing conversion systems. For example, students should use measuring container in millilitres to fill other containers in litres.</li> <li>Post guided questions, how many of one unit is equivalent to another unit. How many millilitres of liquid would it take to fill a container measuring 1 litre? Similar, processes should be used to develop and reinforce other units of conversion.</li> </ul>	<ul style="list-style-type: none"> <li>Allow students to do count-down exercises to events (exams, class party, sports etc.). How many weeks, days, hours etc. to the event?</li> <li>Allow students to make a chart with pictures of objects in the home or environment that are measured in litres, metres or grams.</li> <li>Make a table with objects and tell whether or not they are measured by mass, volume or length.</li> </ul>	
<b>Resources:</b> <ul style="list-style-type: none"> <li>Strips of 5cm and 10cm</li> <li>Clocks</li> <li>Metric table</li> <li>Measuring cups (ml, L)</li> <li>Small buckets</li> <li>Metre ruler</li> <li>Scales</li> <li>Objects weighing exactly 1gram and 1 kilogram</li> <li>Computer, Internet and any other available resources</li> </ul>	<b>Key vocabulary</b> <ul style="list-style-type: none"> <li>Time format</li> <li>Estimation</li> <li>kilo-, centi-, milli-</li> <li>grammes</li> <li>litre</li> <li>metre</li> </ul>	
<b>Links to other subjects</b> Technical Vocational Education <ul style="list-style-type: none"> <li>Creativity and Innovation: Use sketches and models to aid articulation of their ideas; build skills in the manipulation of materials and handling of tools.</li> </ul> Information Communication Technology <ul style="list-style-type: none"> <li>Work collaboratively to share a range of ICTs within groups to complete tasks; Participate in peered and guided information searches.</li> </ul> Visual Arts <ul style="list-style-type: none"> <li>Create and develop; communicate ideas through the creation of two dimensional art forms</li> </ul> Science <ul style="list-style-type: none"> <li>Make connection with measurement principles of science with Mathematics.</li> </ul>		

Suggested Teaching and Learning Activities	Key Skills	Assessment
<p>Language Arts</p> <ul style="list-style-type: none"> <li>- Construct questions to find out information about a particular topic in measurement.</li> </ul> <p>Social Studies</p> <ul style="list-style-type: none"> <li>- Make connection with timelines of important events that happen in Jamaica or other countries of the Caribbean.</li> </ul>		

## UNIT OF WORK GRADE 4 TERM 1 Unit 3

### STRAND: GEOMETRY

Suggested Time: 2 weeks

#### About the Unit



In this unit, students will

- Recognize horizontal, vertical and intersecting line segments;
- Know that angles are measured in degrees and that a complete turn is  $360^\circ$ ;
- Compare and order angles less than, greater than or equal to  $90^\circ$  from different orientations.

#### Prior Learning

Check that students:

- Identify and describe a point, line segment, simple closed path, square corner.

<p><b>Focus Question #1:</b> What are the relationships between lines and angles?</p> <p><b>Attainment Target:</b> Identify, describe, compare and classify geometric figures and their properties.</p>	<p><b>Benchmark:</b></p> <ul style="list-style-type: none"><li>● Investigate the properties of points and line segments when drawn or seen in the environment.</li><li>● Know that angles are measured in degrees and that one whole turn is equal to <math>360^\circ</math>; compare and order angles less than, greater than or equal to <math>90^\circ</math> from different orientations.</li></ul>
<p><b>Standard Geometry:</b> Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment.</p> <p><b>ICT Attainment Target(s):</b></p> <ul style="list-style-type: none"><li> <b>COMMUNICATION AND COLLABORATION</b> – Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.</li><li> <b>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING</b> – Students use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed</li></ul>	<p><b>Mathematics Objectives:</b></p> <ul style="list-style-type: none"><li>● Differentiate between concepts of point, space, curved/horizontal/ vertical/oblique lines or line segments.</li><li>● Identify and name rays and associate them with the formation of angles.</li><li>● Investigate the idea of a ‘turn’ and associate it with the formation of an angle.</li><li>● Use capital/common letters to name angles/rays.</li><li>● Recognize right angles when drawn or seen in the environment.</li><li>● Use estimation to identify angles less than, greater than or equal to a right angle.</li></ul>



<p>decisions.</p> <p><b>Sub-theme:</b> Relationships between lines and angles</p>	<ul style="list-style-type: none"> <li>● Identify angles from different perspective and orientations.</li> <li>● Identify parallel, perpendicular and intersecting lines when drawn or seen in the environment.</li> </ul>	
<p><b>Suggested Teaching and Learning Activities – Focus Question 1</b></p>	<p><b>Key Skills</b></p>	<p><b>Assessment</b></p>
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>● form lines and rays using small objects , for example, seeds glued on paper noting that each seed represents a point and that a line is formed when a series of points are placed together. Classify the various types of lines/rays formed in the categories: curved, horizontal, vertical, oblique lines or line segments. Discuss the conventional ways of naming segments using capital or common letters. Use drawing tools in a word processing software to illustrate the concepts of lines.</li> <li>● Discuss the use of the words: perpendicular, parallel and intersecting line segments (initiated by teacher). Model the examples of <b>these</b> relationships using straws, fudge sticks, strings etc. Identify examples of these line segments and sketch some of them.</li> <li>● Explore the concept of an angle in varying orientations and perspectives using geo-strips or rays made from cardboard strips attached at one end with split pin. Place emphasis on the amount of turn between rays. Make note that the length of the rays does not affect the size of the angle.</li> <li>● Form angles using a variety of seeds brought to class, for example, peas, corn glued on cartridge paper. Give the name of each angle formed.</li> <li>● Demonstrate the concept of the amount of turn to form an angle through the use of opening and closing objects such as the classroom door, books, students’ arms and legs. Identify the part within each simulation such as rays, vertex and the angle in each situation.</li> </ul>	<ul style="list-style-type: none"> <li>● Model angles</li> <li>● Describe angles</li> <li>● Verify right angles</li> <li>● Classify lines and angles</li> <li>● Draw angles and line segments</li> <li>● Identify and model various line segments</li> <li>● Operate software and electronic devices</li> <li>● Communicate ideas</li> <li>● Navigate digital content</li> </ul>	<ul style="list-style-type: none"> <li>● Suitable distinction made between points and lines.</li> <li>● Line segments correctly named, labelled and identified.</li> <li>● Line segments correctly categorized.</li> <li>● Line segments appropriately sketched.</li> <li>● Parts of an angle identified correctly.</li> <li>● Illustration on angle formation correctly identified on objects within the environment.</li> <li>● Angles correctly identified within the environment.</li> <li>● Right angle identified correctly</li> <li>● Classification of angles accurately done.</li> </ul>



- Identify other examples of angles formed within in the classroom. Make sketches of these angles and discuss the conventional ways of naming angles using capital and common letters.
- Form right angles using paper folding activities (Use as tester for right angle). Identify right angles around them and discuss how objects such as houses and trees would look if they were not at right angles to the ground. Additionally, ask students what they think would happen if the arms of brackets used to make shelves were not positioned at right angles.
- Compare the sizes of angles formed in the environment using terms such as: less than, greater than or equal to a right angle. Where possible, use their testers to verify their observations.
- Use materials from the environment for example fudge sticks strings etc. to form angles of various sizes. Mount these in scrap book.
- Use tangible objects, e.g. straws, fudge sticks, match sticks without sulphur, etc. to design a closed figure using nine line segments with three of them vertical and at least two of them horizontal. Ensure the shape has two right angles and at least one angle less than a right angle. Compare the drawing with that of other students'.

**Learning Outcomes**

Students will be able to:

- differentiate between types of lines/ line segment as seen in the environment
- identify parallel, perpendicular and/or intersecting line segments seen in the environment

<ul style="list-style-type: none"> <li>● show from own designs of parallel and intersecting line segments</li> <li>● associate the idea of a turn with the formation of an angle.</li> <li>● classify angles as right angles.</li> <li>● classify a set of given angles into less than, equal to or greater than a right angle.</li> <li>● communicate and explore information about lines using productivity tools.</li> </ul>		
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<b>Points to Note</b>	<b>Extended Learning</b>
<ul style="list-style-type: none"> <li>● Line segments are formed by connecting points.</li> <li>● Angles are formed when two rays meet or two lines intercept.</li> <li>● Ensure that line segments and angles are located within the environment. Students should be taken on a Field Trip outside their classroom. One objective of the Field Trip; student be allowed to identify instances where line segments and angles are used within the school's environment.</li> <li>● The amount of turn in an angle is measured in degrees.</li> </ul>	<p>Identify in the environment other instances where line segments, lines and angles are used.</p>
<p><b>Resources</b>          Straws          Thread          Cardboard strips/Geo-strips          Protractor (for teachers' use)          Paper for folding          Seeds (corn/peas)          Protractor master app</p>	<p><b>Key vocabulary</b>          angle          parallel          perpendicular          intersecting          line segment          turn          right angle          ray</p>
<p><b>Links to other subjects</b>          Technical Vocational Education          - Creativity and Innovation: Use sketches and models to aid articulation of their ideas; build skills in the manipulation of materials and</p>	

handling of tools.

Information Communication Technology

- Work collaboratively to share a range of ICTs within groups to complete tasks; participate in peered and guided information searches.

Visual Arts

- Create and develop; communicate ideas through the creation of two dimensional art forms.

Social Studies

- There should be integration of the topics; Jamaica - Its location and Physical Features (Lines of Latitude and Longitude).

Language Arts

- Read and understand Mathematical concepts and words related to geometric features.

Physical Education

- Use shape, size, angle and space while exercising or participating in Physical Education games and dance.

**Prior Learning**


Check that students can identify:

- simple closed path
- polygons (having up to four sides)

**About the Unit**

In this unit, students will:

- Make and explore geometric shapes: polygons, non-polygons and compound shapes; and apply knowledge of their properties to problem solving situations.

<p><b>Focus Question 2:</b> What are the similarities and differences among geometric shapes?</p> <p><b>Attainment Target:</b> Identify, describe, compare and classify geometric figures and their properties.</p>	<p><b>Benchmark:</b> Make and explore geometric shapes: polygons, non-polygons and compound shapes; and apply knowledge of their properties to problem solving situations.</p>
<p><b>ICT Attainment target(s):</b></p> <p> <b>COMMUNICATION AND COLLABORATION</b> – Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.</p> <p><b>Sub-theme:</b> Geometric Shapes</p>	<p><b>Mathematics Objective(s):</b></p> <ul style="list-style-type: none"><li>• Identify congruent shapes and explain why they are congruent.</li><li>• Differentiate between polygons and non-polygons.</li><li>• Explore combinations of geometric shapes especially triangles and quadrilaterals.</li><li>• Identify and draw the following polygons: triangles, square, rectangle and irregular quadrilaterals.</li><li>• Draw pictures of a polygon to a reasonable degree of accuracy where the lengths of the sides or descriptions are given.</li></ul>

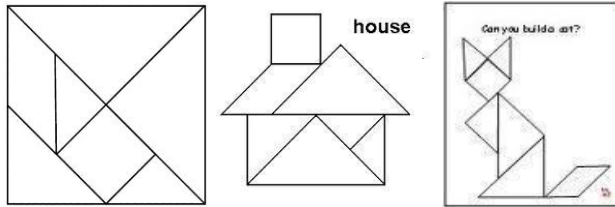
Suggested Teaching and Learning Activities	Key Skills	Assessment
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>Identify from a set of cut out shapes of different sizes, those that will fit exactly onto another. Examine and discuss the concept of congruence.</li> </ul> <p>Boxed in Boxes</p> <ul style="list-style-type: none"> <li>In small groups, apply real-world situation to help develop spatial visualization skills and geometric understanding. Assist a new employee at a box factory to make cube-shaped boxes. Help to determine how many different nets are possible and then analyze the faces of the resulting cubes with emphasis on congruent and non-congruent polygons used to make the boxes.</li> <li>Observe a set of ‘package photographs’ of various sizes and identify those which are similar and those which are congruent.</li> <li>Examine another set of cut out shapes of different sizes to identify those that are polygons and those that are non-polygons. Have them create their definition of a polygon and then determine what a non-polygon is.</li> <li>View interactive presentation entitled: “POLYGONS”, and deduce and discuss the differentiating properties of regular and irregular polygons.</li> </ul> <p>Tri, Tri, Triangles</p> <ul style="list-style-type: none"> <li>In pairs, explore ways of building different basic shapes from triangles. Additionally, investigate the basic properties of triangles, as well as relationships among other basic geometric shapes.</li> <li>Sort a given set of triangles according to various attributes. State the criteria used in sorting the shapes. Discuss the characteristics among triangles which cause them to be similar.</li> <li>Sort and classify quadrilaterals based on their properties (length of sides, size</li> </ul>	<ul style="list-style-type: none"> <li>Differentiate polygons</li> <li>Sort shapes</li> <li>Make observations</li> <li>Draw conclusions</li> <li>Critique</li> <li>Analyze</li> <li>Create</li> <li>Construct</li> <li>Share and compare</li> <li>Identify patterns</li> <li>Relate</li> <li>Cite evidence</li> <li>Create figures from combining shapes</li> <li>Examining geometric properties</li> <li>Draw shapes to degrees of accuracy.</li> <li>Communicate ideas, stories and events using graphics</li> </ul>	<ul style="list-style-type: none"> <li>Oral responses given correctly.</li> <li>Written responses are correct.</li> <li>Shapes are accurately identified by properties.</li> <li>Shapes created accurately.</li> <li>Triangles and quadrilateral accurately drawn.</li> <li>Congruent shapes identified accurately.</li> <li>Work cooperatively in group.</li> <li>Appropriate software used to draw triangles and quadrilaterals correctly.</li> </ul>

of angles, etc.)

- Examine drawings of triangles, squares, rectangles and other quadrilaterals. Identify from the environment, situations where these shapes are used (square – tiles ; doors – rectangles; triangles – house top)
- Use cut out shapes provided by the teacher to make other shapes. E.g.



- Use the seven piece tangram to create other shapes such as:



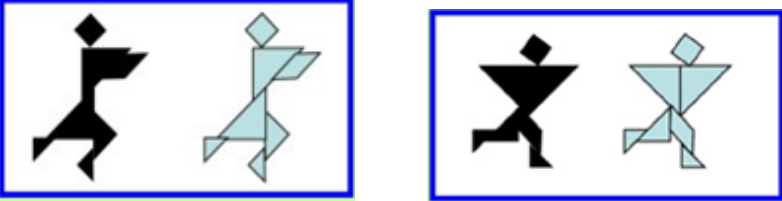
- Draw; using software or pencil and ruler, quadrilaterals and triangles from specific instructions (drawings should be as accurate as possible).

### Learning Outcomes

Students will be able to:

- identify shapes which are similar and those which are congruent
- differentiate between polygons and non-polygons
- make shapes of objects found in the environment
- Manipulate ICT tools in aid of learning geometry concepts



Points to Note	Extended Learning
<ul style="list-style-type: none"> <li>• A polygon is a plane figure bounded by three or more, straight line segments.</li> <li>• Polygons are congruent if they are equal in all the following respects:               <ol style="list-style-type: none"> <li>1) same number of sides</li> <li>2) corresponding sides are the same length</li> <li>3) corresponding interior angles are the same size.</li> </ol> </li> <li>• Tangram pieces are useful materials that can be used to form combinations of shapes; representation of animals and plants; and other items in the environment.</li> </ul> <div style="border: 1px solid blue; padding: 5px; display: flex; justify-content: space-around; align-items: center;">  </div> <ul style="list-style-type: none"> <li>• Triangles are three sided polygons.</li> <li>• Quadrilaterals are four sided polygons.</li> <li>• Rectangles are parallelograms having 4 right angles.</li> <li>• Rhombuses are parallelograms having the lengths of each side measuring the same distance.</li> <li>• Squares are parallelograms having 4 right angles and the lengths of each side measuring the same distance.</li> </ul>	<ul style="list-style-type: none"> <li>• Give students a hexagon pattern block and ask them to trace it on a piece of paper several times. Give students a ruler and ask them to break down the hexagon into triangular pieces. Alternatively, students can fold the paper, but this will make it harder for students to undo mistakes. Make it a requirement for students to make at least three different types of triangle.</li> <li>• Challenge students to make as many different triangles/quadrilaterals as they can. As they are doing so, ask them to describe the characteristics which make triangles/quadrilaterals.</li> <li>• Pose questions such as:               <ul style="list-style-type: none"> <li>○ Can you make a triangle/quadrilateral using only one shape?</li> <li>○ Can 4 triangles make a bigger triangle?</li> <li>○ Can 4 Triangles can make a quadrilateral?.</li> <li>○ What's the fewest number of pieces needed to make other triangles and/or quadrilaterals?</li> </ul> </li> <li>• Use the shapes to make other designs.</li> </ul>
<p><b>Resources and Websites:</b></p> <p><a href="http://en.wikipedia.org/wiki/Box">http://en.wikipedia.org/wiki/Box</a></p> <p><a href="http://polygons-e4.blogspot.com/2010/06/polygons-in-nature.html">http://polygons-e4.blogspot.com/2010/06/polygons-in-nature.html</a></p> <p><a href="https://sites.google.com/site/getintoshape123/polygons-in-nature">https://sites.google.com/site/getintoshape123/polygons-in-nature</a></p> <p><a href="http://en.wikipedia.org/wiki/Polygon">http://en.wikipedia.org/wiki/Polygon</a></p>	<p><b>Key vocabulary:</b></p> <p>regular and irregular polygons</p> <p>congruence</p> <p>congruent/non-congruent</p> <p>polygons</p>

<https://www.ups.com/content/us/en/resources/ship/packaging/guidelines.html>

- [Building a Box Activity Sheet](#)
- Square Polydron or Geofix pieces, or centimeter grid paper to cut and fold
- [Just Two Triangles Activity Sheet](#)
- [How Do You Build Triangles? Activity Sheet](#)
- Scissors
- Glue or tape
- Triangular shapes of various sizes
- Pattern blocks
- [Patch Tool](#) (optional)
- seven piece tangram

irregular polygons  
triangles  
squares  
rectangles  
quadrilaterals  
parallelogram  
rhombus  
kite  
trapezium  
hexagons  
pentagons  
septagons/heptagons  
decagons  
octagons  
nonagons  
similar  
tangram

**links to other Subjects:**

- Sciences
- Social Studies
- Visual Arts
- Information Technology
- Language Arts

## UNITS OF WORK Grade 4 Term 1 Unit 4

### Strand: Statistics

Suggested Time: 3 weeks

#### About the Unit

In this unit students will:

- Identify and distinguish between a population and a sample.
- Collect, organize, represent and present data.

#### Prior Learning

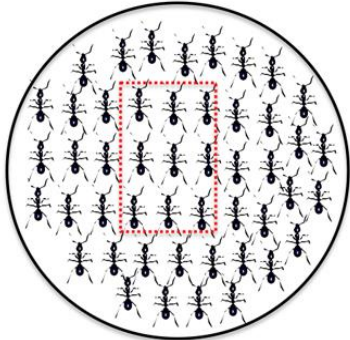
Check that students can:-

- Collect and record data.

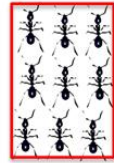
<p><b>Focus Question 1:</b> How can I use a sample to describe a population?</p> <p><b>Attainment Target:</b> Collect, organize, graph, describe and interpret data in a problem-solving context.</p>	<p><b>Benchmark:</b> Distinguish between and identify a population and a sample.</p>
<p><b>Standard_ Statistics and Probability:</b> Collect, organise, interpret and represent data and make inferences by applying knowledge of statistics and probability.</p> <p><b>Sub-theme:</b> Sample</p>	<p><b>Mathematics Objectives:</b></p> <ul style="list-style-type: none"> <li>• Explain the idea of a 'sample'.</li> <li>• Recommend a suitable sample size, based on a given scenario.</li> <li>• Explain the concept of 'population'.</li> <li>• Determine whether a sample selected is appropriate based on the population.</li> <li>• Distinguish between a sample and a population as it relates to their sizes.</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Draw conclusions about sample and population based on pictures shown:</li> </ul>	<ul style="list-style-type: none"> <li>• Draw conclusion</li> <li>• Discuss sampling options</li> <li>• Create scenarios</li> </ul>	<ul style="list-style-type: none"> <li>• Statements accurately written about a sample and its population.</li> </ul>

**Population (N)**



**Sample (n)**



- Discuss ... “is Science a well-liked subject in my school?” Do we need to ask all the students in the school in order to obtain this information? They will also be guided to understand that a smaller (sample) number of students could be asked and then a generalization be made.
- Use population scenarios such as “Which type of patty (chicken or beef) should be sold at the tuck shop?” or “what sport is most liked in the school” to determine the sample to be used. They should be further guided to realize that a class can be selected as the sample or the first twenty or thirty students who came through the school gate may be used as another sample.
- Present data about the school population (the total number of students, the number of girls and boys, and number of children in each year group). Imagine they want to find out how many children at their school like to play football, and that they will do this by asking a sample of the school population. Be guided by the following questions: What size sample will you choose and why? How many boys and girls will be in this sample? How many children in each year group will be in this sample?
- Work in pairs to create scenarios and appropriate samples. Discuss the appropriateness in terms of the sample size. They will be guided to realize that samples that are not appropriate are called “biased” samples.
- Be presented with scenarios which outline the population as well as

- Sample a population
- Organize information
- Conduct survey

- Accurately determine an appropriate sample that is not biased.
- Similarities and differences appropriately identified and suitably explained between samples and population.
- Work cooperatively in groups.

<p>the related sample size for them to determine whether or not each sample size is appropriate for its population.</p> <ul style="list-style-type: none"> <li>• Conduct a simple survey on their topic of choice. Ensure that an appropriate sample is selected which will produce a suitable reflection of the population.</li> </ul>		
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ differentiate between sample and population</li> <li>✓ determine the appropriateness of a sample for a given population</li> <li>✓ apply appropriate sampling technique in conducting surveys</li> </ul>		
<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• Distinguish between a population and a sample, providing examples for both.</li> <li>• Population includes all members of a defined group that we are studying or collecting information on for data driven decisions. Population is also sometimes called “universe.” It is the full or entire collection to be analyzed or studied.</li> <li>• A sample represents a portion of the population you are going to test or study; in other words, it is a smaller group of the population.</li> </ul> <p>[<a href="http://www.differencebetween.net/miscellaneous/difference-between-population-and-sample/">http://www.differencebetween.net/miscellaneous/difference-between-population-and-sample/</a>]</p> <ul style="list-style-type: none"> <li>• It is suggested that an appropriate sample size could be about <math>\frac{1}{10}</math> of the population.</li> </ul>	<p><b>Extended Learning</b> Make generalization about particular issues within their community. For example, Is a school bus service needed in the community?</p> <p>Students will discuss the processes that will be used to ascertain a final decision based on the question asked.</p>	
<p><b>Resources</b> Projector, participants, data about the population</p>	<p><b>Key vocabulary</b> Sample, sample size, population, biased sample, interview, survey.</p>	
<p><b>links to other Subjects:</b></p> <ul style="list-style-type: none"> <li>• Link concept to “Population” taught in Social Studies.</li> </ul>		

<p><b>Focus Question 2:</b> How do I collect, organise, display and interpret information?</p> <p><b>Attainment Target:</b> Collect, organize, graph, describe and interpret data in a problem-solving context.</p>	<p><b>Benchmark:</b> Collect, organize, represent and present data.</p>
<p><b>Standard Statistics and Probability:</b> Collect, organise, interpret and represent data and make inferences by applying knowledge of statistics and probability.</p> <p><b>Sub-title:</b> Tally Chart</p>	<p><b>Objective(s):</b></p> <ul style="list-style-type: none"> <li>• Collect numeric data based on interviews and observation.</li> <li>• Classify and sort data.</li> </ul>

<b>Suggested Teaching and Learning Activities</b>	<b>Key Skills</b>	<b>Assessment</b>
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Discuss different ways of collecting data (observing and interviewing) and explain how and when each is used.</li> <li>• In groups, with teacher’s guidance, research/discuss the methods of data collecting i.e. Observations and Interviews with examples. Present and share information with the entire class using a-teacher created presentation software.</li> <li>• Choose one of the following questions to answer through interviewing: What time do students in our class get up in the morning? How many pets do students in our class have? Which ice-cream flavour do students in our class like best?</li> <li>• Practise collecting data using observation. Collect data to answer questions such as: How much does a dictionary weigh? How long is the teacher’s desk? How many cars are there in the car park? Who is</li> </ul>	<p>Collect data</p> <p>Use tally marks</p> <p>Create bar graph</p> <p>Make inferences</p> <p>Making models of transportation</p>	<ul style="list-style-type: none"> <li>• Methods of collecting numeric data accurately identified.</li> <li>• Statements accurately written on the methods used for collecting data.</li> <li>• Tally chart and table accurately presents data collected.</li> <li>• Suitably inferences made based on data collected.</li> <li>• Suitable interviewing and observation skills displayed in conducting interviews/observations.</li> <li>• Work cooperatively in groups.</li> </ul>

<p>the tallest student in the class?</p> <ul style="list-style-type: none"> <li>● Formulate questions on what they would like to find out about the population of students at their school that they could find out by interviewing a sample of students.</li> <li>● Collect data on topics as directed by teacher, such as the parishes in which they or their parents were born, basic/infant/pre-school attended.</li> <li>● Collect information about the mode of transportation used by students in Grade 4 to get to school.</li> <li>● Use tally marks and a table to present the data.</li> <li>● Make inferences based on the data collected.</li> </ul>		
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ collect data</li> <li>✓ present data on table and bar graph</li> <li>✓ make inferences</li> </ul>		
<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>● Ensure that students conducted an interviewing session either among classmates, teachers, and other school personnel.</li> <li>● Engage students in activities that will ensure the use of all of their senses to examine people behaviours in natural settings or naturally occurring situations. Encourage students to model best behaviours and practices observed among their peers.</li> <li>● Definition for interview, observation and tally chart.</li> </ul>	<p><b>Extended Learning</b></p> <ul style="list-style-type: none"> <li>● Allow students to design their own interviewing questions on a subject of their choice. Ask students in another class to fill it in.</li> <li>● Students should be encouraged to conduct interviewing sessions with members of different sectors of their household and community.</li> <li>● Find how many students in the school take the taxi or bus to school and record this information. Students should describe the method use to collect the data.</li> </ul>	



**Resources**

Simple questionnaire

**Key vocabulary**

Tally marks, data, bar graph, transportation

**links to other Subjects:**

- Link concept to all other subject areas.
- Social Studies : data collected for the population of a country is called its census.

## **UNIT OF WORK GRADE 4 TERM 2 Unit 1**

### **STRAND: Number**

**Suggested Time: 3 weeks**

#### **About the Unit**

In this unit, students will:

- Compute whole numbers accurately and fluently; use these skills to find answers in realistic problem situations.
- Use approximation and estimation with whole numbers involving multiplication and division.
- Apply and justify the use of a variety of problem solving strategies in two step problems.
- Compute with fractional numbers quickly and accurately; use these skills to find answers in realistic problem situations.
- Use approximation and estimation with decimal fractions involving addition and subtraction.

#### **Prior Learning**

Check that students can:

- Recall multiplication facts up to 4 times
- Identify pairs of related multiplication facts
- Multiply a 3-digit number by a 1-digit number
- Use the commutative property
- Arrange sets of items using arrays
- compute with whole numbers ( up to 3 digits)
- estimate and check the reasonableness of answers

#### **Focus Question 1:**

How can I apply multiplication and division to larger numbers?

#### **Attainment Target:**

Explain the processes of the basic operations, use estimation appropriately, and demonstrate proficiency with basic facts.

#### **Benchmark:**


- Compute whole numbers accurately and fluently; use these skills to find answers in realistic problem situations.
- *Model the number operations: multiplication of four digit numbers by up to two digit numbers.*
- Apply and justify the use of a variety of problem solving strategies in two step problems.

#### **Standard Number Operation and Application:**

Use the basic operations, number relationships, patterns, number facts, calculators and dynamic software to compute and estimate in order to solve real world problems involving fractions, percentages and decimals.


**Sub-theme:** Multiplication and division of whole numbers.

#### **ICT Attainment Target**

 **COMMUNICATION AND COLLABORATION** – Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.

#### **Mathematics Objectives:**

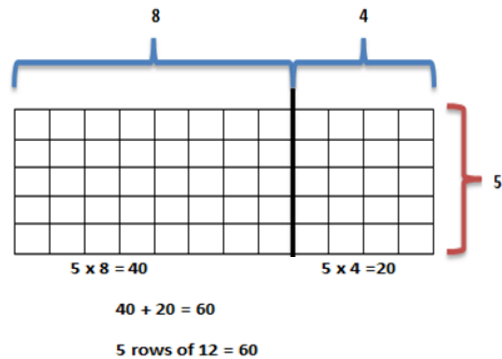
- Multiply numbers of up to four digits by any one or two digit number (including money).
- Reinforce the mental multiplication of two digit numbers by one digit numbers.
- Multiply a number by multiples of ten.
- Identify and correct wrong answers in problems involving multiplication.
- Discover, memorize and recall all multiplication facts up to at least  $12 \times 12 = 144$ .
- Differentiate between the use of addition and multiplication, subtraction and division in problem situations involving whole numbers.

 <b>DIGITAL CITIZENSHIP</b> – Students recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour. <b>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING</b> – Students use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.	<ul style="list-style-type: none"> <li>• Select data relevant to a problem when finding its solution.</li> <li>• Identify and solve two-step problems.</li> <li>• Write mathematical sentences for a two-step problem.</li> <li>• Estimate and check answers to computations/problems.</li> </ul>	
<b>Suggested Teaching and Learning Activities – Focus Question 1</b>	<b>Key Skills</b>	<b>Assessment</b>
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• As a class or in groups, investigate the concept of a million by working with small numerical units, such as blocks of 10 or 100, and then expanding the idea by multiplication or repeated addition until a million is reached. Additionally, apply critical thinking to analyze situations and identify mathematical patterns that will enable the development of the concept of very large numbers.</li> <li>• Identify an example of something that they do once a day such as eat breakfast, listen to school announcements, or play with a friend. Ask them to name something they do about ten times each day, which might include saying hello in the hall, changing the television channel, or writing their names on papers. Finally ask students to name something that they do at least one hundred times a day. A narrow range of responses often includes blinking and breathing. If not, take a deep breath and ask, "What about breathing?" Ask students, "Do you take more than 100 breaths in a day? More than 100 or 1000 breaths in an hour?" After a brief discussion, ask each student to estimate the number of breaths a person takes each hour.</li> <li>• Investigate and reinforce the area concept of multiplication; using unit squares to explore multiplication with rectangles. With the assistance of teacher, complete exercises from online interactive programs on the concept of "Multiplication".</li> <li>• Explore the 12 x 12 multiplication chart.</li> </ul>	<ul style="list-style-type: none"> <li>• Investigate and explore numbers</li> <li>• Compute mentally</li> <li>• Create alternate strategies for multiplication and division</li> <li>• Estimate when multiplying</li> <li>• Deduce and recall multiplication and division facts</li> <li>• Identify key terms</li> <li>• Define terms</li> <li>• Create division sentences</li> <li>• Critique other students' work</li> <li>• Revise facts</li> <li>• Write answers as mixed numbers when possible</li> <li>• Model operations</li> <li>• operate electronic devices</li> </ul>	<ul style="list-style-type: none"> <li>• Correctly compute numbers mentally.</li> <li>• Information on flash card correctly reflects mathematical patterns.</li> <li>• Oral responses reflect suitable estimations.</li> <li>• Statements accurately constructed and written in portfolio, generated from observations and generalizations made.</li> <li>• Key terms are</li> </ul>

$4 \times 5 = 20$
$4 \times 6 = 24$
$4 \times 7 = 28$
$4 \times 8 = 32$
$4 \times 9 = 36$

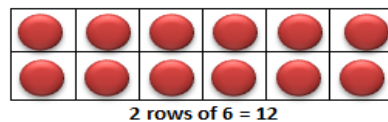
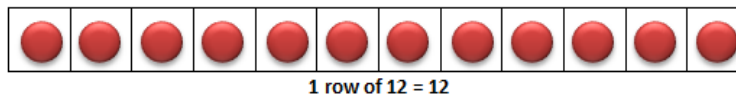
Example: On the partial at the left, when the multiplier is increased by one, the product is increased by 4. Similarly, when the multiplier is decreased by one the product is reduced 4.

- Explore the distributive property of multiplication by using, for example, a 5 x 12 grid.



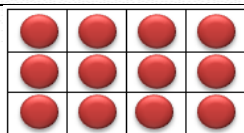
That is,  $5 \times 12 = 5 \times 8 + 5 \times 4 = 40 + 20 = 60$

- Develop alternative ways or inventive strategies for multiplying mentally when numbers are close to rounded figures, e.g.  $30 \times 99$  as  $30 \times 100 - 30 \times 1$ .
- Investigate a product and use array to show its multiplicative pair(s). For example the product 12 when arranged may give:



- observe moral principles when using digital materials

- accurately defined.
- Appropriate checklist created and used to evaluate students work.
- Patterns and relationships correctly identified and described.
- Illustration of multiplication procedures correctly reflects multiplication concepts.
- Correct operation selected and used to solve problems.
- Work cooperatively in groups.



3 rows of 4 = 12

- Use tables or graphic organizers to record observable patterns when multiplying by multiples of ten.
- Investigate the fact families for multiplication and division. Example,  $120 \div 6 = 20$ ;  $6 \times 20 = 120$ ;  $20 \times 6 = 120$  &  $120 \div 6 = 20$ .
- With teachers assistance safely explore appropriate online or electronic quiz/games on “Multiplication”.

**Learning Outcomes**

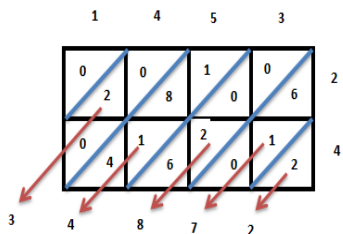
Students will be able to:

- ✓ Provide correct and quick response to mental multiplication situations.
- ✓ Model division and multiplication situation to determine accurate results.
- ✓ Make correct generalisations after observing number patterns.
- ✓ Decide which operation to use in a given situation.
- ✓ Use invented strategies to aid multiplication and division.
- ✓ Safely use the internet to explore concepts of multiplication

**Points to Note**

- Explore and discuss the various multiplication techniques. For example the lattice methods.

**Lattice method of Multiplication**



1453 x 24 = 34872

- Establish connection between multiplication arrays and repeated addition.
- Make connection between multiplication and real life situations.

**Extended Learning**

**See Appendices: NUMBER : UNITS OF WORK Grade 4 Term 2 Unit 1**

Additionally students in groups can design strategies that may be used to solve the problem below:




**Problem solving:** In the village of Hur everyone raises horses. An old man who had 3 sons and 17 horses made a will before dying. The will stated that Son A should get  $\frac{1}{2}$  of the number of horses, Son B is to get  $\frac{1}{3}$  of the number of horses and Son C is to get  $\frac{1}{9}$ . As a member of the village can you help the family to properly share their

<ul style="list-style-type: none"> <li>• Use the concept of multiplication in their daily lives and integrate within other subject areas.</li> <li>• Use knowledge of inverse operations and commutative property to identify number facts.</li> <li>• Explore other multiplication facts using the distributive property of multiplication. For example <math>8 \times 12 = 8 \times 7 + 8 \times 5</math> or <math>8 \times 12 = 2 \times 12 + 6 \times 12</math>. Integrate this system of multiplication with the teaching of finding area of squares and rectangles.</li> <li>• Software can be used, where possible, to enhance to learning experience. Initially, division is to be linked to multiplication as division can be taught as the inverse of multiplication.</li> </ul>	<p>17 horses, since it would be cruel to cut-up a horse?</p>
<p><b>Resources</b></p> <p>Calculators</p> <p>Website: <a href="#">Making Your First Million Activity Sheet</a></p> <p>A stopwatch, digital watch, or clock with second hand</p> <p>Internet-generated devices e.g. laptop and desktop computers, smart phones, tablets etc.</p> <p>Multimedia projector</p> <p>Websites:</p> <p><a href="http://www.holisticonline.com/yoga/hol_yoga_breathing_importance.htm">http://www.holisticonline.com/yoga/hol_yoga_breathing_importance.htm</a></p> <p><a href="http://www.abc-of-yoga.com/pranayama/importance.asp">http://www.abc-of-yoga.com/pranayama/importance.asp</a></p> <p><a href="http://www.naturalcleansingtechniques.com/breathing.html">http://www.naturalcleansingtechniques.com/breathing.html</a></p> <p><a href="http://illuminations.nctm.org/Lesson.aspx?id=931">http://illuminations.nctm.org/Lesson.aspx?id=931</a></p> <ul style="list-style-type: none"> <li>• <a href="#">Every Breath You Take Activity Sheet</a></li> <li>• <a href="#">Graph paper</a></li> <li>• Base ten blocks</li> <li>• Counters</li> <li>• Worksheets</li> <li>• Online-interactive programs on “Multiplication”</li> </ul>	<p><b>Key vocabulary</b></p> <ul style="list-style-type: none"> <li>• Multiplier</li> <li>• Product</li> <li>• Estimation</li> <li>• Million</li> <li>• Breathing</li> <li>• Breathe</li> <li>• Breath</li> <li>• Physical exercise</li> <li>• Health</li> </ul> <p><b>Links to other Subjects:</b></p> <ul style="list-style-type: none"> <li>• Physical Education</li> <li>• Science</li> <li>• Information Technology</li> <li>• Language Arts</li> <li>• Social Studies : Allows students to discuss population size of countries within the Caribbean, or by continents, or by Common Wealth Countries.</li> </ul>

**Prior Learning**

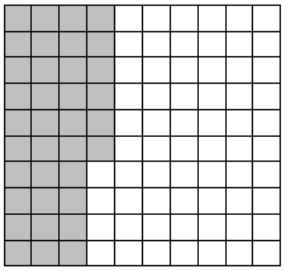
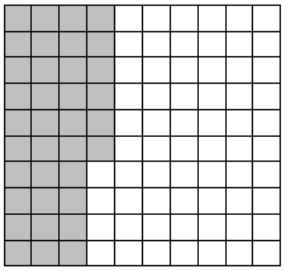
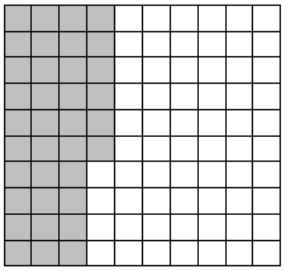
**Check that students can:-**

- Distinguish between types of fractions.
- Know the place value of each digit in decimals.
- Add and subtract fractions with the same denominator up to 12ths.
- Model the addition and subtraction of fractions using fraction pieces or shading a grid.
- Subtract a proper fraction from whole numbers.

<p><b>Focus Question 2:</b> How can I apply addition and subtraction to fractional numbers?</p> <p><b>Attainment Target:</b> Understand and apply fractional Ideas.</p>	<p><b>Benchmark:</b> Compute with fractional numbers quickly and accurately; use these skills to find answers in realistic problem situations.</p> <p><i>Model the number operations: addition and subtraction.</i></p>
<p><b>Standard: Number Operation and Application:</b> Use the basic operations, number relationships, patterns, number facts, calculators and appropriate software to compute, estimate, and solve real world problems involving fractions, percentages and decimals.</p> <p><b>Sub-theme: Addition and Subtraction of Fractional Numbers</b></p> <p><b>ICT Attainment Target</b></p> <ul style="list-style-type: none"><li> <b>COMMUNICATION AND COLLABORATION</b> – Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.</li><li> <b>DIGITAL CITIZENSHIP</b> – Students recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</li><li> <b>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING</b> – Students use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</li></ul>	<p><b>Objectives:</b></p> <ul style="list-style-type: none"><li>• Express fractional numbers with denominators 10 or 100 in decimal form and vice versa.</li><li>• Write money in decimal form.</li><li>• Complete sequence of fractional numbers in decimal form counting by tenths or hundredths.</li><li>• Compute with decimals, including dollars and cents, using the four basic operations.</li><li>• Investigate the base ten place value system when it is extended to show tenths and hundredths.</li><li>• Add and subtract decimal fractions (including money).</li><li>• Name whole numbers as fractions.</li><li>• Solve real world problems involving the addition or subtraction of fractions with like denominators.</li><li>• Add or subtract mixed numbers, improper fractions and proper fractions with equal denominators.</li><li>• Convert a mixed number to an improper fraction and vice versa.</li></ul>

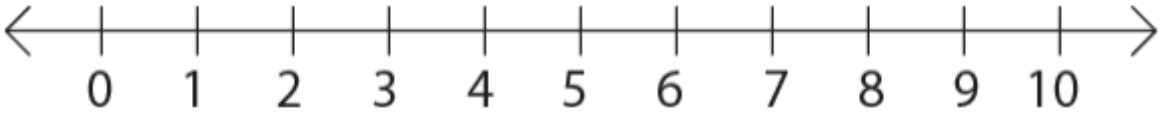
<b>Suggested Teaching and Learning Activities – Focus Question 2</b>	<b>Key Skills</b>	<b>Assessment</b>
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Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment						
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>Use <math>10 \times 10</math>, hundred grid to convert proper fractions to decimals and vice versa.</li> </ul> <table border="1"> <thead> <tr> <th>Fraction</th> <th>Picture</th> <th>Decimal</th> </tr> </thead> <tbody> <tr> <td> <math display="block">\frac{36}{100}</math> </td> <td>  </td> <td>0.36</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Observe grid to recognise that the grid is divided into 100 equal parts. Of these 100 parts 36 have been shaded. If this is written as a decimal number, it would be 0.36; written as a fraction, it would be <math>\frac{36}{100}</math>. Both 0.36 and <math>\frac{36}{100}</math> are equal. Each one represents 36 parts of the whole grid.</li> <li>In small groups, compute with whole numbers and decimals; and make recommendations for buying an aquarium for the class. Research the various materials needed for the aquarium and make plans based on their findings. Solve the problem while working within a budget.</li> <li>In small groups, assume the role of business owners. Carefully, choose the products to sell, location to rent, and prepare advertising materials; to gain experience of the thrill to sell and spend from a set budget and stores' merchandise(s). Experience real-world applications of adding and subtracting decimals while learning what it means to be a smart consumer.</li> <li>In small and/or large groups, promote problem solving and reasoning with fractions to investigate the relationships between various parts and wholes. Focus on representation given multiple opportunities to investigate the relative value of fractions. Use communication skills in working with pairs to articulate and clarify understanding of fraction relationships.</li> </ul>	Fraction	Picture	Decimal	$\frac{36}{100}$		0.36	<ul style="list-style-type: none"> <li>List</li> <li>Illustrate</li> <li>Measure</li> <li>Tabulate</li> <li>Calculate</li> <li>Collect and display</li> <li>Organize</li> <li>Construct</li> <li>Estimate</li> <li>Modify</li> <li>Make observations</li> <li>Draw conclusions</li> <li>Show</li> <li>Assess</li> <li>Share and compare</li> <li>Investigate</li> <li>Research</li> <li>Formulate</li> <li>Critique</li> <li>Analyze</li> <li>Create</li> <li>Design</li> </ul>	<p>Accurately complete worksheets</p> <p>Completed aquaria</p> <p>Evaluation of activities using appropriate rubric</p> <p>Items selected are within budget.</p> <p>Accurate calculations of decimals/fractions involving the four operations.</p> <p>Active participation in group discussions and activities.</p> <p>Problem solving situations including the solving of money</p> <p>Conversion from improper fractions to mixed numbers and vice versa accurately illustrated and explained</p> <p>Solution methods and processes accurately explained</p>
Fraction	Picture	Decimal						
$\frac{36}{100}$		0.36						

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment
<ul style="list-style-type: none"> <li>• In groups, engage in a hands-on approach to converting improper fractions to mixed numbers. In addition, locate improper fractions on a number line. Use number cards and counters as manipulative while exploring the relationship between improper fractions and mixed numbers.</li> <li>• In pairs, be provided with number cards, counters, and toothpicks. Explain to the class that in this lesson they will convert improper fractions to mixed numbers. Define the terms <i>improper fraction</i> and <i>mixed number</i>. Explain that an improper fraction is a fraction with a numerator that is greater than its denominator <math>\left( e.g. \frac{8}{3} \right)</math>, and a mixed number is a number that includes both a whole number and a proper fraction <math>\left( 2 \frac{2}{3} \right)</math>.</li> <li>• Be guided to take out the “9” and the “4” number cards. Ask them to create a fraction with the numbers by placing a toothpick horizontally on the table. Tell them to place the 9 above the toothpick to represent the numerator, and the 4 below the toothpick to represent the denominator. Write <math>\frac{9}{4}</math> on the board. Ask students, “What kind of fraction is this and how do you know?” [It is an improper fraction; the numerator is greater than the denominator]. Point to the numerator, and ask what a <i>numerator</i> represents. [The numerator tells how many parts of the whole are in the problem.] Point to the <i>denominator</i>, and ask what the denominator represents. [The denominator tells how many parts are in, or represent, the whole.] Ask students how many parts represent a whole in the fraction <math>\frac{9}{4}</math>. [4].</li> <li>• Take out take out the number of counters that represent the number of individual parts in <math>\frac{9}{4}</math> (9 counters should be taken out). Observe and make an informal</li> </ul>		

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment
<p>assessment of the students who comprehend and the students who don't comprehend the parts to a fraction. Model counting out nine counters and explain that these counters represent the numerator, the individual parts, in <math>\frac{9}{4}</math>. Say to students, "I am going to divide these nine parts into groups of four." Ask students to explain why the nine counters need to be placed into groups of four. [The denominator is four, in this case, a whole is made up of four parts.]</p> <ul style="list-style-type: none"> <li>Follow demonstrated activity done by teacher: moving nine counters into groups of four. Say to students, "Instead of nine individual parts, I now have two groups of four with one counter left over. How many wholes do we have?" [2.] "How do you know?" [There are two groups of counters that each represents a whole, each group has four parts in a set of four, <math>\frac{4}{4}</math>].</li> <li>Identify how many individual pieces are left. [1.] Ask students what part of the whole this one piece represents. <math>\left[\frac{1}{4}\right]</math>. On the board write <math>\frac{4}{4} + \frac{4}{4} + \frac{1}{4}</math>. Say to students, "Since <math>\frac{4}{4}</math> represents one whole, I can simplify the equation." On the board write <math>1 + 1 + \frac{1}{4}</math>. Explain that the expression can be further simplified. The whole numbers can be added together for a sum of two and the proper fraction can be added to the whole number for a sum of <math>2\frac{1}{4}</math>.</li> </ul> $\frac{9}{4} = \frac{4}{4} + \frac{4}{4} + \frac{1}{4} = 1 + 1 + \frac{1}{4} = 2\frac{1}{4}$ <ul style="list-style-type: none"> <li>Explain procedures used to convert from an improper fraction to a mixed number.</li> <li>Reinforce their skills while playing a modified version of Calculation Nation's "Dig It".</li> </ul>		

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Cooperatively complete Internet-generated worksheets;</li> <li>✓ Design, create and display completed aquaria/business plan/model;</li> <li>✓ Complete evaluation of activities using appropriate rubric;</li> <li>✓ Collectively make oral and written presentations of budgets;</li> <li>✓ Correctly demonstrate the calculations of decimals involving the four operations;</li> <li>✓ Actively participate in group discussions and activities;</li> <li>✓ Problem-solve situations with decimal numbers including money.</li> </ul>		
<p><b>Points to Note</b></p> <p>Converting from Mixed Number to Improper Fractions</p> <ul style="list-style-type: none"> <li>• When students seem to have a solid grasp on converting from improper fractions to mixed numbers, write a mixed number on the board. Have students convert it to an improper fraction. Encourage students to work backward. For example: With the mixed number <math>2\frac{1}{4}</math>, ask students how many parts are in a set. [4.] Explain that there are two whole groups, as you place two groups of four counters on the table. Then, place one counter in its own group to represent one of four counters in the fraction. Model counting the counters. Write a nine in the numerator position to represent the nine parts. Write a four in the denominator position to represent that there are four parts in a set.</li> </ul> <p><b>Example:</b></p> $\frac{\boxed{9}}{\boxed{4}} = \frac{\begin{array}{c} \frac{4}{4} + \frac{4}{4} + \frac{1}{4} \\ 1 + 1 + \frac{1}{4} \\ 2 + \frac{1}{4} \end{array}}{\boxed{4}} = \boxed{2} \frac{\boxed{1}}{\boxed{4}}$  <ul style="list-style-type: none"> <li>• Explain that to find an improper fraction on a number line, one strategy you can use is to convert the improper fraction to a mixed number. Demonstrate moving to the two on the number line.</li> </ul>	<p><b>Extended Learning</b></p> <ul style="list-style-type: none"> <li>• Allow students to use pattern blocks to create designs seen in nature.</li> <li>• Challenge students to determine the fraction of each set of pattern blocks taken to create their designs.</li> <li>• Challenge students to represent each fraction as a decimal.</li> <li>• Allow students to create and locate both proper and improper fractions on a number line.</li> </ul>	

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment
<p>Say to students, “The denominator tells us that a whole is divided into four parts.” Demonstrate dividing the space between the 2 and 3 into fourths. Say to students, “The numerator tells us how many fourths we move on the number line. We are at one of the fourths on the number line. Demonstrate placing a dot on <math>2\frac{1}{4}</math>. Have students find <math>2\frac{1}{4}</math> on their number line.</p> <ul style="list-style-type: none"> <li>• While students work, check for understanding. Ask for a student volunteer to share the steps needed to convert the improper fraction to a mixed number and show how to locate the number on the number line.</li> <li>• At the end of the lesson, have students explain how to convert improper fractions to mixed numbers. Listen for terms like <i>numerator</i>, <i>denominator</i>, <i>whole</i>, <i>part</i>, <i>improper fraction</i>, and <i>mixed number</i>. Discuss strategies students used to convert improper fractions to mixed number and vice versa.</li> <li>• A fraction can be expressed as a decimal number and vice versa.</li> <li>• Ensure that students know that Base ten is used in our counting and monetary systems. It is important that students develop an understanding of the increase/decrease in the value of digit as it is being moved to the left or right on a place value chart. It is the digit that moves and not the decimal point.</li> </ul>		
<p><b>Resources:</b> Websites:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.fishchannel.com/setups/freshwater/treasures-in-glass-boxes.aspx">http://www.fishchannel.com/setups/freshwater/treasures-in-glass-boxes.aspx</a></li> <li>• <a href="http://www.petsintheclassroom.org/consider-an-aquarium-with-pets-in-the-classroom/">http://www.petsintheclassroom.org/consider-an-aquarium-with-pets-in-the-classroom/</a></li> <li>• <a href="#">Welcome to the Aquarium Activity Sheet</a></li> <li>• <a href="#">Aquarium Supplies Catalog Activity Sheet</a></li> <li>• <a href="#">Welcome to the Aquarium Rubric</a></li> <li>• <a href="#">Planning Guide Activity Sheet</a></li> <li>• Optional: calculators</li> <li>• Optional: computers with internet access</li> <li>• Optional: poster board and markers</li> </ul> <p>Websites:</p>		<p><b>Key vocabulary:</b> Decimals Fractions Decimal fractions Fractional numbers Tenths Hundredths Money Dollars Cents Mixed numbers Improper fractions Common fractions</p>

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment
<p> <a href="http://content.moneyinstructor.com/664/kids-starting-business.html">http://content.moneyinstructor.com/664/kids-starting-business.html</a>  <a href="http://www.wikihow.com/Start-a-Business-%28for-Kids%29">http://www.wikihow.com/Start-a-Business-%28for-Kids%29</a>  <a href="http://www.teachingkidsbusiness.com/how-to-start-your-own-business.htm">http://www.teachingkidsbusiness.com/how-to-start-your-own-business.htm</a> </p> <ul style="list-style-type: none"> <li>• Poster Materials (optional)</li> <li>• <a href="#">Savvy Sellers Activity Sheet</a></li> <li>• <a href="#">My Debit Card Activity Sheet</a></li> <li>• <a href="#">Were you a Money Maker? Activity Sheet</a></li> <li>• <a href="#">Savvy Sellers Assessment Form</a> (optional)</li> </ul> <p>Websites:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.tessellations.org/tessellations-all-around-us.shtml">http://www.tessellations.org/tessellations-all-around-us.shtml</a></li> <li>• <a href="http://mathartfun.com/shopsite_sc/store/html/Tessellations/NatureTess.html">http://mathartfun.com/shopsite_sc/store/html/Tessellations/NatureTess.html</a></li> <li>• Pattern blocks</li> <li>• <a href="#">Region Relationships 1 Activity Sheet</a></li> <li>• Number cards, 0-9</li> <li>• Counters</li> <li>• Toothpicks</li> <li>• <a href="#">Digging Up Improper Fractions Activity Sheet</a></li> <li>• Computers with Internet access</li> </ul>		<p>           Decimal point            Decimal place(s)            Aquarium            Budget            Price            Cost            Taxes            Business            Profit            Loss            Entrepreneurship         </p> <p><b>Link to other Subject areas:</b></p> <p>           Visual Arts            Language Arts            Science            Social Studies            Business Basics            Information Technology            Technical Vocational         </p>

## **UNIT OF WORK GRADE 4 TERM 2 Unit 2**

### **Strand: Measurement**

**Suggested Time: 2 weeks**

### **About the Unit**



In this unit, students will:

- estimate and measure distance and area using standard metric units

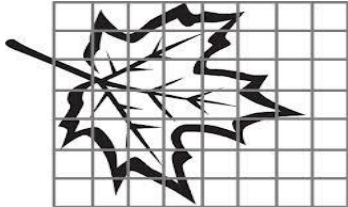
### **Prior Learning**

**Check that students can:-**

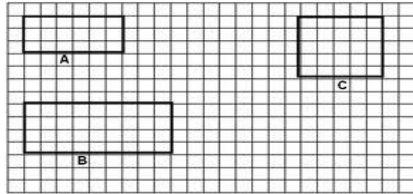
- Explain and use the term perimeter.
- Measure perimeter of polygons and various objects.

<p><b>Focus Question:</b> What is the difference between length and area and how are they measured?</p> <p><b>Attainment Target:</b> Explain and carry out the processes of estimation and measurement, including the selection of appropriately precise units.</p>	<p><b>Benchmark:</b> Estimate and measure distance and area using standard metric units.</p>
<p><b>Standard: Measurement</b> Use the correct units, tools and attributes to estimate, compare and carry out the processes of measurement to given degree of accuracy.</p> <p><b>Sub-title:</b> Comparing length and area</p> <p>ICT Attainment Target</p> <ul style="list-style-type: none"><li> <b>COMMUNICATION AND COLLABORATION</b> – Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.</li><li> <b>DESIGNING AND PRODUCING</b> – Students use digital tools to design and produce creative multimedia products to demonstrate their learning and understanding of basic technology operations.</li></ul>	<p><b>Objective(s):</b></p> <ul style="list-style-type: none"><li>• Compute the perimeter of regular and irregular polygon using units of measurement for length.</li><li>• Find the area of various objects and figures.</li><li>• Demonstrate an understanding of the difference between units of length and units of area.</li><li>• Compare and contrast units of length and units of area.</li><li>• Use unit squares or a centimetre grid to cover regions so as to determine their area.</li><li>• Use a square grid (1 cm<sup>2</sup> squares) to find the area of any shape.</li></ul>



Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Discuss professions/careers that use perimeter and area in carrying out their daily activities.</li> <li>• Estimate the areas of irregular shapes by using grids and tracing paper, counting whole squares and making whole squares out of the remaining pieces. Examples of such activities are: <ul style="list-style-type: none"> <li>○ Draw outlines of circular lids and other odd-shaped objects on squared paper and count the squares. Compare the sizes.</li> <li>○ Trace around one hand with fingers together. Guess how many peas it would take to cover the shape. Guess how many 1cm squares it will take to cover the shape; then check accuracy thereafter using 1 cm square grid.</li> <li>○ Trace leaves on square centimetre paper. Estimate the area of each by counting the number of full squares that are covered; count the number of partially covered squares and divide by two; add both.</li> </ul> </li> </ul>  <ul style="list-style-type: none"> <li>○ Trace all six faces of a box on square centimetre paper. Find the area of each face and add them in order to find the surface area.</li> </ul> <ul style="list-style-type: none"> <li>• Use string and scale on map to compare the perimeter of parish boundaries in kilometres.</li> <li>• Do research to find places in the community which are one kilometre apart or use a web map or offline electronic resources to complete the activity.</li> <li>• Record measurements as (i) kilometres, (ii) metres, (iii) kilometres and metres.</li> <li>• Draw a 3cm x 2cm rectangle/create rectangle using spreadsheet. Find out what</li> </ul>	<ul style="list-style-type: none"> <li>• estimate area</li> <li>• construct geo-board</li> <li>• measure and record length</li> <li>• locate places on a map</li> <li>• compare length and areas</li> <li>• research</li> <li>• investigate relationships between shapes of same perimeter but different areas</li> <li>• calculate surface area</li> <li>• draw conclusion about area</li> <li>• operate electronic devices</li> <li>• work in groups</li> <li>• solve real-life situations</li> <li>• insert illustrations</li> <li>• Sketch designs on grid paper</li> </ul>	<ul style="list-style-type: none"> <li>• Estimation of lengths and areas are approximately equal to actual measurements.</li> <li>• Suitable processes used for counting whole and partially covered squares resulting in reasonable judgements.</li> <li>• Suitable explanations and accurate solutions identified for problems involving distance/length, perimeter and area.</li> <li>• Correctly use (written and oral) names of symbols used in area and perimeter.</li> <li>• Work cooperatively in groups.</li> </ul>

happens to the area when; the length only, width only or both length and width is/are doubled. Do the same using a 4 x 5 rectangle and a 6 x 6 square.



- Make a geo-board.



- In groups, use their geo-boards to make figures having various perimeters and areas. (e. g. area 4 square units and perimeter 8 units could be a square of side 2 units; area 4 square units and perimeter 10 units could be a rectangle measuring 4 units by 1 unit). Teacher needs to emphasize the use of the terms perimeter and area. Or use geometric software such as Geometer Sketch Pad or Goegebra to perform the task.
- Find the perimeter of figures on the geo-board or objects found in their school and home environment with slant line segments by measuring with a ruler or piece of string.
- In pairs, on centimetre graph paper, draw a shape representing a cookie with an area of 14 square centimetres. Find its perimeter. Draw a different cookie with the same area: Does it have the same perimeter as the first cookie? Can other cookies be made with the same area but different perimeter? Give other problems of similar nature.
- After discovering the area (number of enclosed square units) of object, demonstrate how to find the area of one face of a drink box, cereal box, etc. Without using square centimetre paper, geo-board or grid paper. (Students should be given the dimension of each edge).

**Learning Outcomes**

Students will be able to:

- ✓ estimate and measure length and area
- ✓ construct geo-board
- ✓ use the terms perimeter and area correctly
- ✓ differentiate between length and area
- ✓ calculate surface area
- ✓ calculate area?
- ✓ participate in group activities
- ✓ solve real-life problems
- ✓ Use existing technology to develop geometric concepts.

**Points to Note**

- A regular polygon has sides of equal length and angles with the same measurement. To find the perimeter of a regular polygon multiply the regular length of one side of the polygon by the number of sides.
- When using unit grid or the geo board, combine partial units to create a whole.
- Areas of regular and irregular shapes can be determined by counting square units.
- Establish connection between topics of measurement (distance, perimeter and area and the real world. Many careers such as Tiling, Architect, Engineers and Graphic Designers use these topics on a regular basis.

**Introduction – Blueprint**



- If you have ever watched a house being built, or if you have ever had an addition to an existing house, you know that the standard method of communication is a big piece of paper called a blueprint. Blueprinting is the standard method used to copy large architectural and construction drawings. The term "blueprint" is usually used to describe two printing methods, the blueprint and the diazotype. Blueprints consist of white lines on a blue background; more recent process uses blue lines on a white background.
- Invite an architect to class as a Resource Person. Bring blueprints of projects on which he /she has worked; and, if possible, bring blueprints of buildings that the students might have seen.
- Have students create drawings on 1cm grid paper of a building of their choice e.g. dog house, doll house, play

**Extended Learning**

- Encourage students to use tracing paper to copy the map of Jamaica or their parish. Then have students write their estimation of the area of land in their square. Have students compare their maps and strategies.
- Have students discuss situations in which the area and perimeter of a square or rectangle are used (interior design, farming, sports etc.)
- Have students research the subjects

<p>house, etc, use the blueprints to help children identify architectural symbols for structures such as doors, windows, and walls. Work with the students to develop architectural criteria that must be met in constructing their building of choice.</p> <ul style="list-style-type: none"> <li>• Have students understand that in real life some of the criteria are necessary to keep costs reasonable, such as limiting the area; others are necessary due to human factors, such as the height of the ceiling.</li> <li>• Have students find the perimeter and area of the design made on the grid paper as well as the actual dimensions.</li> </ul>	<p>needed to study to become an architect.</p>
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Board</li> <li>• Nails</li> <li>• Hammer</li> <li>• Elastic rubber bands</li> <li>• String</li> <li>• Grid paper (centimetres)</li> <li>• Dotted paper</li> <li>• Computer / Internet</li> <li>• Web map of Jamaica</li> <li>• Geometric software</li> <li>• Architect (Resource Person)</li> </ul> <p><b>Website for Blueprint Information</b>  <a href="http://science.howstuffworks.com/engineering/structural/question321.htm">http://science.howstuffworks.com/engineering/structural/question321.htm</a></p>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Area</li> <li>• Exact</li> <li>• Approximate</li> <li>• Appropriate</li> <li>• Surface</li> <li>• Dimensions</li> <li>• Length</li> <li>• Perimeter</li> <li>• Square centimetre (cm<sup>2</sup>)</li> <li>• Square metre (m<sup>2</sup>)</li> <li>• Kilometre</li> <li>• Grid</li> <li>• Architect</li> <li>• Dimension</li> <li>• Blueprint</li> </ul>
<p><b>Links to other Subjects</b>  Visual Arts  Science  Social Studies  Business Basics  Information Technology  Technical Vocational</p>	

**UNIT OF WORK GRADE 4 TERM 2 Unit 3**

**STRAND: GEOMETRY**

**Suggested Time: 2 Weeks**

**About the Unit**


In this unit, students will:

- Explore the ideas of symmetry in geometric figures and shapes.

Prior Learning:

Check if students can:

- Divide an object in two equal parts;
- Identify the circle, polygons and 3D shapes;
- Identify the diameter of a circle.

<p><b>Focus Question 1:</b> What are the things around us that have lines of symmetry?</p> <p><b>Attainment Target:</b> Identify, describe, compare and classify geometric figures and their properties.</p>	<p><b>Benchmark:</b> Explore the ideas of symmetry in geometric figures and shapes.</p>
<p><b>Mathematics AT 3:</b> Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment.</p> <p><b>ICT Attainment Target(s):</b>   <b>DESIGNING AND PRODUCING</b> – Students use digital tools to design and produce creative multimedia products to demonstrate their learning and understanding of basic technology operations.</p> <p><b>Sub-theme:</b> Symmetry</p>	<p><b>Objective(s):</b></p> <ul style="list-style-type: none"> <li>• Associate symmetry with reflection;</li> <li>• Identify the mirror line of a reflection;</li> <li>• Identify the mirror line as being a line of symmetry;</li> <li>• Show the diameter of a circle as a line of symmetry;</li> <li>• Identify the possible lines of symmetry in geometric shapes and objects.</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Be given one geoboard strung with rubber bands (one for each student). Ask students to use one rubber band to create a figure and use a second rubber band to divide it into two equal parts</li> <li>• Work in pairs with cut out shapes. Fold each shape in half so that one side</li> </ul>	<ul style="list-style-type: none"> <li>• Fold paper</li> <li>• Share and Compare</li> <li>• Do blobbing</li> <li>• Identify</li> <li>• Investigate</li> </ul>	<ul style="list-style-type: none"> <li>• Fold shapes appropriately so that one side fits exactly onto the other.</li> <li>• Mirror lines correctly identified in plane shapes and noted as lines of</li> </ul>

<p>will fit exactly on the other side. <b>(NOTE: Some will not fit while others will be able to be folded along more than one line).</b> With teacher's guidance, discuss that these are called lines of symmetry or mirror lines. Further discussions will be held on why some shapes will not have a mirror line.</p> <ul style="list-style-type: none"> <li>• Explore pictures of objects in the environment. Use presentation software or web image search, such as butterfly, skeleton of the human body, starfish, leaf; to determine whether or not objects are symmetrical and if they are, the number of lines of symmetry. In groups, use image capturing devices to make a digital story depicting lines of symmetry.</li> <li>• Use mirrors, paint blobbing and paper folding to construct figures having several lines of symmetry. Further, discuss the congruency of the two parts separated by the line of symmetry.</li> <li>• Investigate the letters of the alphabet (<b>upper case and appropriate font</b>) to determine those which have 0, 1 or 2 lines of symmetry. Present this information in a table.</li> <li>• Draw shapes, including the circle, with any given number of lines of symmetry. With teacher's guidance, note that the diameter is a line of symmetry and hence this shape has an infinite number of lines of symmetry. Create a symmetry museum in the classroom using the figures created.</li> <li>• Complete worksheet which requires them to complete a shape given a half of the shape and the line of symmetry.</li> </ul>	<ul style="list-style-type: none"> <li>• Manipulate objects</li> <li>• Operate electronic devices</li> <li>• Work in groups</li> <li>• Problem-solve</li> <li>• Think critically</li> <li>• Deduce information</li> <li>• Capture images, audio and video</li> </ul>	<p>symmetry.</p> <ul style="list-style-type: none"> <li>• Line of symmetry correctly drawn for letters of the alphabet.</li> <li>• Accurately complete worksheet showing completion of figures using attributes of line of symmetry.</li> <li>• Work cooperatively in groups.</li> <li>• Solution found to identified problems</li> </ul>
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Identify lines of symmetry in shapes;</li> <li>✓ Recognize shapes with no line of symmetry;</li> <li>✓ Recognize the circle as a shape with infinite lines of symmetry;</li> <li>✓ Complete shapes given a half the shape and the line of symmetry;</li> </ul>		



<ul style="list-style-type: none"> <li>✓ Engage in problem solving situations involving deduction and critical thinking;</li> <li>✓ Participate actively in group discussions and activities.</li> <li>✓ Use ICT tools effectively to create multimedia which include text, images, shapes, narration and video to explore lines of symmetry</li> </ul>		
<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• Ensure that lines of symmetry and symmetrical figures are located in the environment and different works of art.</li> <li>• A line of symmetry divides shapes exactly in two.</li> <li>• A line of symmetry is also known as a mirror line of reflection.</li> <li>• Lines of symmetry can run vertically, horizontally or diagonally.</li> <li>• Each line of symmetry in a circle is the diameter of that circle. The diameter is a straight line that passes through the centre and touches two points on the circumference (boundary).</li> <li>• Have students compare their figure with those of a partner and discuss how the figures are the same and how they are different. They should be alike because they are equally divided and one side is the reflection of the other.</li> </ul>	<p><b>Extending Learning</b></p> <ul style="list-style-type: none"> <li>• Identify shapes in the environment which are symmetrical.</li> <li>• Find in the numerals 0 – 9 those which have lines of symmetry.</li> <li>• Identify objects in the environment that have lines of symmetry.</li> </ul>	
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Cut out shapes</li> <li>• Mirrors</li> <li>• Worksheets</li> <li>• Computer</li> <li>• Multimedia projector</li> <li>• Image capturing device</li> <li>• Movie creation software</li> <li>• Geoboard</li> <li>• Elastic bands</li> </ul>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Mirror line</li> <li>• Line of symmetry</li> <li>• Congruent</li> </ul> <p><b>Link to other subjects</b></p> <ul style="list-style-type: none"> <li>• Visual Arts</li> <li>• Social Studies</li> <li>• Language Arts</li> <li>• Business Basics</li> </ul>	



**Prior Learning**

Check that students can:

- Identify rows and columns
- Trace the path of an object
- Manipulate concrete objects, flip or slide.

**About the Unit**

In this unit, students will:

- Describe the location and properties of geometric shapes after a slide, flip or turn.

<p><b>Focus Question 2:</b> What are the characteristics of geometric shapes in different orientations?</p> <p><b>Attainment Target:</b> Identify, describe, compare and classify geometric figures and their properties.</p>	<p><b>Benchmark:</b> Describe the location and properties of geometric shapes after a slide, flip or turn.</p>
<p><b>StandardGeometry:</b> Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment.</p> <p><b>Sub-theme:</b> Location and movement</p> <p><b>ICT Attainment Target (s):</b> DESIGNING AND PRODUCING - use digital tools to design and produce creative multimedia products to demonstrate their learning and understanding of basic technology operations.</p> <p>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING - recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</p>	<p><b>Mathematics Objectives:</b></p> <ul style="list-style-type: none"><li>• Describe locations on a grid using columns and rows.</li><li>• Make inferences about congruency when a shape or design is flipped, turned or slid.</li><li>• Identify details in shapes and designs from different orientations and perspective.</li></ul>

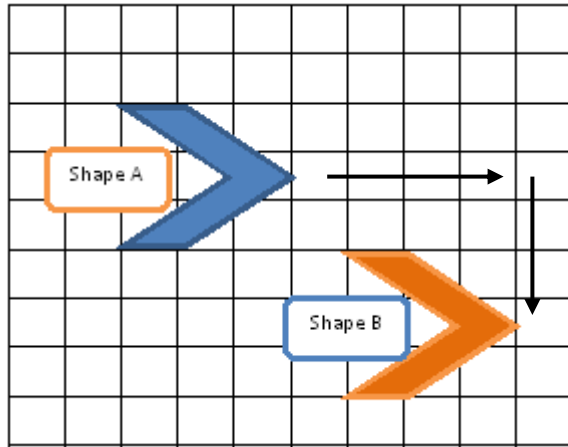
Suggested Teaching and Learning Activities – Focus Question 1														Key Skills	Assessment																																																																																																																									
<b>Students will:</b> <ul style="list-style-type: none"> <li>Identify the numbers in the following locations on the hundred chart.</li> </ul>																																																																																																																																								
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<ul style="list-style-type: none"> <li>Design games</li> <li>Organize group work</li> <li>Work cooperatively in groups</li> <li>Compare shapes</li> <li>Investigate congruency</li> <li>Identify locations</li> <li>Paper folding</li> <li>Discuss finding</li> <li>Use selected ICT tools</li> </ul>														<ul style="list-style-type: none"> <li>Suitable games created using columns, rows and transformations.</li> <li>Appropriate scrapbooks design depicting transformational scenes in real life.</li> <li>Locations/cells identified correctly.</li> <li>Columns and rows accurately identified and ordered.</li> <li>Appropriate similarities and differences identified correctly between geometric shapes.</li> <li>Suitable explanations given for congruency.</li> <li>Paper folded neatly with images accurately drawn.</li> </ul>																																																																																																																										

**Suggested Teaching and Learning Activities – Focus Question 1**

**Key Skills**

**Assessment**

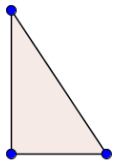
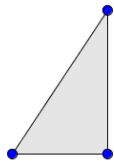
- Trace the path of an object to its image by identifying the number of units travelled horizontally then the number of units travelled vertically.



**Guiding Questions:**

- What do you notice about the size and shape of shapes A and B?
- How many units were moved horizontally between corresponding points of Shape A to Shape B?
- How many units were moved vertically between corresponding points of Shape A to Shape B?
- Did all vertices of Shape A move the same number of units horizontally then vertically to Shape B?
- Use paper folding activity to identify the image of a shape formed by a flip in a line segment.

- Work cooperatively in groups.

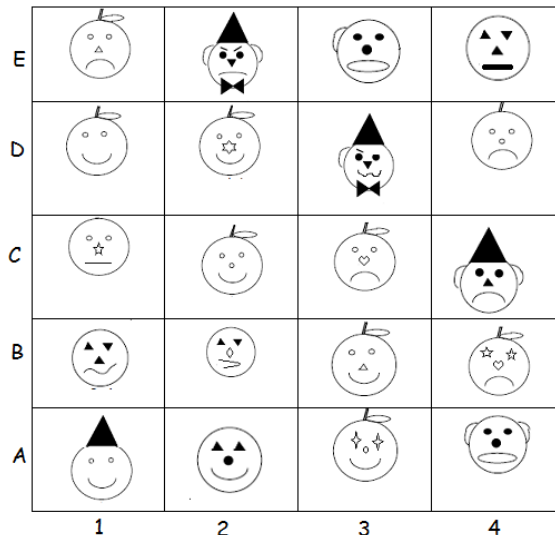
Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p><b>Source Object</b></p>  </div> <div style="text-align: center;"> <p><b>Flipped Image</b></p>  </div> </div> <ul style="list-style-type: none"> <li>• Guiding Questions: <ul style="list-style-type: none"> <li>• What do you notice about the size of both the source object and the flipped image?</li> <li>• What do you notice about the shape of both the source object and the flipped image?</li> <li>• What do you notice about the orientation of both the source object and the flipped image?</li> </ul> </li> <li>• Design games in groups showing flip, slide and turn e.g. Hop-scotch, draught, checkers etc.</li> <li>• Organize group scrapbooks of designs depicting each transformation being explored in real life.</li> </ul>		
<p><b>Learning Outcomes</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe locations using columns and rows on a grid.</li> <li>• Identify properties that make shapes congruent.</li> <li>• Complete tasks cooperatively in groups.</li> <li>• Complete task using paper folding activities.</li> <li>• Describe shapes from varying orientations.</li> <li>• Engaged in real life problem situations</li> <li>• Design games using transformations.</li> <li>• Organize group work.</li> </ul>		

**Points to Note**

- Elements on a grid or a hundred board can be located using columns and rows.
- When an object changes location, its size and shape remains the same. The object and its image are said to be congruent.
- For a slid, the change in location of an object and its image is determined by the number of units moved horizontally followed by the number of units moved vertically.
- For a flip, the change in location of an object and its image is determined by a flip in a line segment.
- For a flip or a turn, the orientation of the object and its image are different.

**Extended Learning**

- Allow students to make entries in their journals on experiences gained as they explore each concept of transformation.
- Encourage students to create portfolios of designs of their favourite games.
- Encourage students to research on the various transformations being explored and explain how each is used in everyday life.
- Students will use the clues given to play the game entitled “Where Am I?” They will locate the object by stating the column followed by the row.



Clues:

1. I have a triangular shaped nose.  
I am wearing a frown.  
I wear a hat.  
Where am I?

2. I am wearing a bow tie.  
I have a triangular shaped nose.  
I have a crooked smile.  
Where am I?

	<p>3. My eyes are triangular shaped. I have a circular nose. I am wearing a smile. Where am I?</p>	<p>4. I have 2 circular eyes. My nose is triangular shaped. I have a leaf. I am wearing a frown. Where am I?</p>	
	<p>5. I am wearing a frown. My nose is heart shaped. I have a leaf. My eyes are stars. Where am I?</p>		
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Plain paper</li> <li>• Hundred board</li> <li>• Grid paper</li> <li>• Paint</li> <li>• Game board</li> <li>• Website: <a href="http://www.geogebra.com">www.geogebra.com</a></li> <li>• Internet-generated devices</li> </ul>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Rows, Columns, Location, Congruent</li> <li>• Flip, Slide, Object, Orientation</li> <li>• Image, Size, Shape</li> <li>• Horizontal, Vertical</li> </ul>		
<p><b>Links to other subjects:</b></p> <ul style="list-style-type: none"> <li>• Social Studies</li> <li>• Physical Education</li> <li>• Visual Arts</li> <li>• Science</li> </ul>			

**UNIT OF WORK GRADE 4 TERM 2 UNIT 4**

**Strand: Algebra**

**Suggested Time: 2 weeks**

**About the Unit**

In this unit, students will:

- Generate and describe patterns and develop rules associated with them.

**Prior Learning**

Check that students can:

- Can describe number patterns using terms such as, “one less” and “one more”.

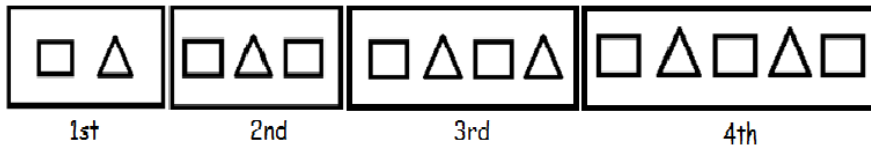
<p><b>Focus Question 1:</b> How do I make sense of different patterns?</p> <p><b>Attainment Target:</b> Use open sentence to express relationships among quantities, model and explain the solution of simple equations, using diagrams and concrete materials.</p>	<p><b>Benchmark:</b> Generate and describe patterns and develop rules associated with them.</p>
<p><b>Standard Algebra:</b> Employ algebraic reasoning through the use of expressions, equations and formulae to interpret, model and solve problems involving unknown quantities.</p> <p><b>Sub-theme: Patterns</b></p>	<p><b>Mathematics Objectives:</b></p> <ul style="list-style-type: none"> <li>● Design and describe geometric patterns.</li> <li>● From a patterning rule expressed in words, develop number patterns using any of the four arithmetic operations.</li> <li>● Associate each term in a pattern with its position in the sequence and express this information in a tabular form.</li> <li>● Make predictions for geometric and numerical patterns.</li> </ul>
<p><b>ICT Attainment Target (s):</b> RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING - recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour.</p>	



**Suggested Teaching and Learning Activities – Focus Question 1**

**Students will:**

- Be given the following pattern to describe.



**Guided Questions:**

1. What is the total number of shapes in each of the four groups (rectangles)?
2. Draw the design for the 5<sup>th</sup> group.
3. How many shapes are in the 5<sup>th</sup> and 6<sup>th</sup> group altogether?
4. How many shapes are in the 8<sup>th</sup> group?
5. How many triangles are in the 8<sup>th</sup> group?
6. How many squares are in the 7<sup>th</sup> group?

- Create a table using the following headings:

Group	Number of rectangles	Number of triangles	Total
1 <sup>st</sup>	1	1	2
2 <sup>nd</sup>	2	1	3
3 <sup>rd</sup>	2	2	4
4 <sup>th</sup>	3	2	5
5 <sup>th</sup>			
6 <sup>th</sup>			
7 <sup>th</sup>			
8 <sup>th</sup>			

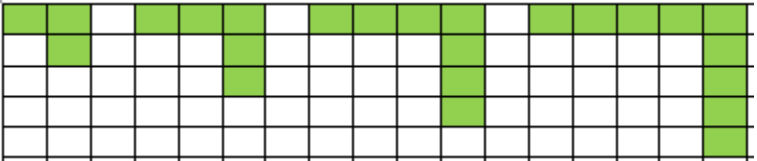
- Use information as seen in table to arrive at a numerical pattern.
- Be placed in groups to create and describe their own geometric patterns.

**Key Skills**

- Infer
- Draw
- Communicate
- Analyse
- Problem solve
- Observe
- Make generalizations
- Identify patterns
- Work cooperatively
- Illustrate
- Make observations
- Investigate
- Design
- Create items
- Establish patterns

**Assessment**

- Oral responses accurately stated
- Written responses accurately presented and analysed.
- Patterns correctly identified and created.
- Work cooperatively in groups.
- Shapes correctly identified and appropriate
- Patterns describe appropriately and rules identified correctly. Finished products created accurately from given pattern.
- Patterns from designs in the environs accurately identified and justified.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
<ul style="list-style-type: none"> <li>Develop at least one expression/formula to form a generalization. For example, from the pattern below students could be asked to give a description.</li> </ul>  <p>(The following statements and questions could be used to extend understanding)</p> <ol style="list-style-type: none"> <li>Describe the pattern.</li> <li>How many rectangles are in each shape?</li> <li>Predict the 5<sup>th</sup> shape.</li> <li>Can you predict the 9<sup>th</sup> shape and the number of rectangles it has?</li> </ol> <ul style="list-style-type: none"> <li>Create a table to reflect each shape and the number of rectangles used to design each</li> <li>In their own words give a general rule for finding the number of rectangles in any group in the series?</li> <li>Observe the geometric patterns used to design buildings within their immediate environs and make a suggestion as to what will happen when an alteration is made to the original design.</li> </ul>		
<p><b>Learning Outcomes</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>Model geometric patterns</li> <li>Write number patterns</li> <li>Represent patterns in tabular form</li> <li>Identify the terms in a pattern</li> <li>Make predictions from a pattern</li> <li>Design geometric motifs</li> <li>Create useable items</li> <li></li> </ul>		

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment						
<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>The pattern identified must be applicable to each term of the sequence.</li> <li>Pictorial representation should be used to generate other terms of the sequence.</li> <li>Discuss the importance of patterns when designing objects in real life. For example, tiling of the floor, grills on a house, designs of articles of clothing, furniture, cars, etc.</li> </ul>	<p><b>Extended Learning</b></p> <ul style="list-style-type: none"> <li>Students can create their own geometric and numeric patterns, and give their own general rules for the patterns.</li> <li>Design a floor plan for a classroom. Determine which shape(s) would be most suitable to use for furniture and give reasons for your response.</li> <li>Complete the table below for the number of coloured circles used in the geometric pattern:</li> </ul> <div style="text-align: center;"> </div> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;">Number of coloured circles</td> <td style="width: 12.5%;">1</td> <td style="width: 12.5%;">4</td> <td style="width: 12.5%;">9</td> <td style="width: 12.5%;">16</td> <td style="width: 12.5%;"></td> </tr> </table>		Number of coloured circles	1	4	9	16	
Number of coloured circles	1	4	9	16				
<p><b>Resources:</b></p> <p>Websites:</p> <p><a href="http://en.wikipedia.org/wiki/Patterns_in_nature">http://en.wikipedia.org/wiki/Patterns_in_nature</a></p> <p><a href="http://photography.nationalgeographic.com/photography/patterns-in-nature/">http://photography.nationalgeographic.com/photography/patterns-in-nature/</a></p> <ul style="list-style-type: none"> <li>Pattern Blocks (squares and triangles)</li> <li>Computer and Internet connection</li> <li><a href="#">Chairs Around a Table Interactive</a></li> <li>Pattern blocks: triangles, rhombuses, and trapezoids (30 per group, 10 of each shape) (If you do not have a classroom set, pattern blocks can be designed and printed using the <a href="#">Dynamic Paper Tool</a>)</li> <li><a href="#">Polygons, Perimeter, and Patterns Activity Sheet</a></li> <li><a href="#">Polygons, Perimeter, and Patterns Answer Key</a></li> </ul>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>Design</li> <li>Expressions</li> <li>Patterns</li> <li>Positions</li> <li>Prediction</li> <li>Operations</li> <li>Sequence</li> <li>Tabular form</li> </ul>							

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
<p><b>Links to other Subjects:</b></p> <ul style="list-style-type: none"> <li>• Sciences</li> <li>• Visual Arts: tessellation</li> <li>• Information Technology</li> <li>• Language Arts</li> <li>• Social Studies</li> </ul>		

### About the Unit



In this unit, students will:

- Represent and analyse algebraic expressions and equations.

### Prior Learning

Check that students can:

- Write number sentences in words.
- Use symbols to represent unknown numbers.
- Can describe number patterns using terms such as, “one less” and “one more”.

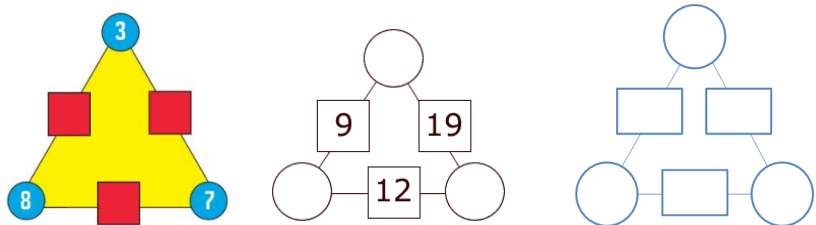
<p><b>Focus Question 2:</b> How do I use variables to represent unknown numbers?</p> <p><b>Attainment Target:</b> Explain the meaning and use of simple formulae.</p>	<p><b>Benchmark:</b> Represent and analyse algebraic expressions and equations</p>
<p><b>Standard Algebra :</b> Employ algebraic reasoning through the use of expressions, equations and formulae to interpret, model and solve problems involving unknown quantities.</p> <p><b>Sub-theme:</b> Using variables</p> <p><b>ICT Attainment Target(s):</b></p> <p> <b>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING –</b> Students use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</p> <p> <b>COMMUNICATION AND COLLABORATION –</b> Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.</p>	<p><b>Objective(s):</b></p> <ul style="list-style-type: none"> <li>• Write algebraic sentences for problems.</li> <li>• Write one- or two- step problems based on information given in a story; then write the correct algebraic sentence and solve the problem.</li> <li>• Express simple sentences and word problems as algebraic expressions.</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Be placed in groups and given a set of Jamaican coins, \$1, \$5, \$10 and \$20. Discuss with students the purchasing power of each coin. Allow students to calculate and express the total value of the coins? Use combinations of coins to model sum that will result in odd or even numbers. Have further dialogue with students to elicit responses to the following questions: Is <math>\\$1 + \\$5 + \\$10 + \\$20</math> the same as or different</li> </ul>	<ul style="list-style-type: none"> <li>• Interpret, create and model algebraic statements</li> <li>• Distinguish between the four operations</li> <li>• Identify and apply key terms</li> <li>• Solving simple equations</li> <li>• Explaining algebraic</li> </ul>	<ul style="list-style-type: none"> <li>• Oral responses accurately stated.</li> <li>• Accurate combinatio</li> </ul>

**Suggested Teaching and Learning Activities – Focus Question 2**

from  $\$20 + \$10 + \$5 + \$1$ ? Can you make  $\$27$ ? Why not? How many different ways can you make  $\$25$  using only  $\$1, \$5, \$10$  coins? Ask students to make  $\$50$  using their own selection of coins.

- Use arithmagons to completing number sentences. In the arithmagons below, the number in each rectangle is the sum of the numbers in the adjoining circles.



- Discuss algebraic expressions and their verbal phrases. For example:

Verbal Phrases	Algebraic Expressions
The product of 7 and $p$	$7p$
Two less than a number $n$	$n - 2$

- Write equations from worded problems/stories. For example, John has  $x$  number of marbles; his friend then gives him 6 marbles on what he already has. If John now has 13 marbles in all, how many marbles did he have to begin with?
- Write an algebraic sentence using the given information.
- Complete algebraic expressions and sentences given its corresponding word problem. For example, Five times a number added to 7.  $\longrightarrow$   $\_\_ \times \_\_ + \_\_$
- Play a game “Algebra on a Ladder” from interactive presentation software to reinforce the concept of greater than, lesser than, and times.
- Match the algebraic sentence to its corresponding worded problem written on cards. For example,

**Key Skills**

- statements
- Work in groups
- Solve problems
- operate electronic devices
- communicate information using productivity tools

**Assessment**

- ns used for sum.
- Written responses accurately presented and analysed.
- Arithmagon accurately designed and completed.
- Accurate solutions identified for algebraic sentences.
- Work cooperatively in groups.

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment		
<table border="1"> <tr> <td>One more than the product of two and <math>p</math> gives thirteen</td> <td><math>2p + 1 = 13</math></td> </tr> </table> <ul style="list-style-type: none"> <li>Play “Algebra I have who has” game. <div style="display: flex; align-items: center; justify-content: center; margin: 10px 0;"> <div style="border: 1px solid black; padding: 5px; width: 150px;"> I have: .....  Who has: Five less than the product of three and a number <math>n</math>? </div> <div style="margin: 0 10px;">→</div> <div style="border: 1px solid black; padding: 5px; width: 150px;"> I have: <math>3n - 5</math>  Who has: seven more than a number <math>m</math> divided by two? </div> <div style="margin: 0 10px;">→</div> <div style="border: 1px solid black; padding: 5px; width: 150px;"> I have: <math>m \div 2 + 7</math>  Who has: .....? </div> </div> </li> <li>Solve the following problem. After school James studies each subject for 10 minutes, while his sister Maria studies each subject for 15 minutes. If James studies 4 subjects and Maria studies 3 subjects, who spent more time studying? Write an algebraic expression to represent: a) the time each person spent studying; b) the total time both students spent studying.</li> </ul>	One more than the product of two and $p$ gives thirteen	$2p + 1 = 13$		
One more than the product of two and $p$ gives thirteen	$2p + 1 = 13$			
<b>Learning Outcomes</b> Students will be able to: <ul style="list-style-type: none"> <li>✓ Interpret given algebraic sentences</li> <li>✓ Decide which operation to use in a given situation.</li> <li>✓ Match algebraic sentences to corresponding wording correctly</li> <li>✓ Solve worded problems</li> <li>✓ Work cooperatively in groups</li> <li>✓ Use ICT tools to analyse, structure and evaluate information in aid of solving problems</li> </ul>				

Points to Note	Extending Learning
<ul style="list-style-type: none"> <li>Describe real world situation in which algebraic sentences are used. Give examples of algebraic sentences matching the particular situation.</li> <li>Students should have knowledge of inverse operations.</li> <li>Establish connections with properties of addition, multiplication,</li> </ul>	<ul style="list-style-type: none"> <li>Research to find out the materials used to make both coins as well as paper notes.</li> <li>Find out where our Jamaican money is minted.</li> <li>Visit the Bank of Jamaica Money Museum and view their</li> </ul>



<p>subtraction and division.</p> <ul style="list-style-type: none"> <li>• An arithmagon is made up of circles and rectangles arranged on straight lines.</li> <li>• Use models to differentiate between expressions and equations.</li> <li>• An equation should be demonstrated as a balance to students.</li> </ul> <p>Establish the relationship between variables and coefficients as factors of products.</p>	<p>money collection. Write a letter to a friend describing their visit.</p> <ul style="list-style-type: none"> <li>• Allow students to generate their own arithmagon.</li> <li>• Students can work in groups with manipulatives or sketches to solve one or two step problems leading to an algebraic sentence; giving reasons to justify their methods and results.</li> <li>• Students can solve each other word problems by applying equations.</li> <li>• Allow students to generate their own algebraic equation and create an algorithm.</li> </ul>
<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Worksheets</li> <li>• Flashcards</li> <li>• game software</li> <li>• presentation tool e. g. multimedia projector</li> <li>• computer</li> </ul>	<p><b>Key vocabulary</b></p> <ul style="list-style-type: none"> <li>• Coefficient</li> <li>• Variables</li> <li>• Number sentence</li> <li>• Solution</li> <li>• Less</li> <li>• More</li> </ul>
<p><b>Links to Other Subjects</b></p> <p>Business Basics Information Technology Language Arts</p>	

## UNIT OF WORK GRADE 4 TERM 2 UNIT 5

### Strand: STATISTICS & PROBABILITY

**Suggested Time: 3 weeks**

#### About the Unit


In this unit students will:

- Find and interpret the mean, mode and median of a set of discrete data
- Interpret data presented in bar graphs, line graphs, pictographs and pie charts.

#### Prior Learning

Check that students can:-

- Interpret a graph
- Compute using mathematical operations: addition and division

<p><b>Focus Question 1:</b> What do I need to do to find the mean of a set of data?</p> <p><b>Attainment Target:</b> Identify and apply the mean, mode and median averages as measures of central tendency.</p>	<p><b>Benchmark:</b> Find and interpret the mean, mode and median of a set of discrete data.</p>
<p><b>Standard_Statistics and Probability:</b> Collect, organise, interpret and represent data and make inferences by applying knowledge of statistics and probability.</p> <p><b>ICT Attainment Target(s):</b></p> <p> <b>COMMUNICATION AND COLLABORATION</b> – Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.</p> <p><b>Sub-theme:</b> Measures of central tendencies - mean and median</p>	<p><b>Objective(s):</b></p> <ul style="list-style-type: none"> <li>• Calculate the mean, mode and median of a set of data.</li> <li>• Calculate the total set given the mean average and the number of addends.</li> <li>• Solve problems based on the mean.</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
<p><b>Students will</b></p> <ul style="list-style-type: none"> <li>• Be placed in groups and given a branch with leaves. Students will count the number of leaves on the branch within their group and report their findings.</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss data</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct surveys to collect data</li> <li>• Demonstrate appropriately</li> </ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment												
<p>Teacher will use information to introduce and determine mean, mode and median.</p> <ul style="list-style-type: none"> <li>Brainstorm to elicit the instances where the term mean, mode and median is used.</li> <li>Be presented with situations in which they must select one number to represent a set of numbers. For example; Peters' scores on 5 different spelling test are shown below:</li> </ul> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <table style="width: 100%; text-align: center;"> <tr> <td style="padding: 5px;">8</td> <td style="padding: 5px;">7</td> <td style="padding: 5px;">8</td> </tr> <tr> <td style="padding: 5px;">9</td> <td></td> <td style="padding: 5px;">8</td> </tr> </table> </div> <ul style="list-style-type: none"> <li>Discuss the following: <ul style="list-style-type: none"> <li>Which number best represents Peter's 5 scores?</li> <li>Would it be correct to say that 'Peter usually scores about ____ in his spelling test'</li> <li>Which of the following do you think would be Peter's score in the 6<sup>th</sup> spelling test? Why or why not? (a) 9            (b) 6            (c) 7</li> </ul> </li> <li>Make representations of phone cards bought each day, using wooden cubes stacked as shown below.</li> </ul> <div style="text-align: center; margin: 10px 0;"> <table style="margin: 0 auto; border-collapse: collapse;"> <tr> <td style="border: none; padding: 5px 10px;">Monday</td> <td style="border: none; padding: 5px 10px;">Tuesday</td> <td style="border: none; padding: 5px 10px;">Wednesday</td> <td style="border: none; padding: 5px 10px;">Thursday</td> <td style="border: none; padding: 5px 10px;">Friday</td> <td style="border: none; padding: 5px 10px;">Saturday</td> </tr> </table> </div> <ul style="list-style-type: none"> <li>Discuss with teacher how to manipulate the cubes to determine the mean. Guide them to move cubes from one stack to another so that there is equal</li> </ul>	8	7	8	9		8	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	<ul style="list-style-type: none"> <li>Solve problems</li> <li>Explain the concept of 'mean', median, mode</li> <li>Conduct surveys</li> <li>Calculate mean, mode and median from a set of data</li> <li>Work in groups</li> <li>operate electronic devices</li> <li>communicate information using ICT tools</li> </ul>	<p>methods of finding the mean, mode and median of a set of quantities.</p> <ul style="list-style-type: none"> <li>Correctly identify situations where mean, mode and median are applicable in real life situations.</li> <li>Utilize appropriate data to make informed decisions.</li> <li>Work cooperatively in groups</li> </ul>
8	7	8												
9		8												
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday									

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
<p>number of cubes in each stack. Explain the significance of the mean value in relation to the given situation. They will determine what other methods could be used to find the mean of the given set numbers.</p> <ul style="list-style-type: none"> <li>• Take surveys of the class in groups to find the greatest, least, mean, mode and median of the following: foot sizes, height, weight, age, width of smile, test score and any other attributes.</li> <li>• Calculate the mean, mode and median of a given set of numbers in a problem setting, where the numbers represent certain physical quantities. Explain the significance of each value.</li> <li>• In groups, solve problems that involve finding the mean from one of the following scenarios: number of students who attended class last week; weight of students in their group; number of cars in the school car park during the mathematics lesson over the course of a week; number of siblings (brothers and sisters) in their group.</li> <li>• In groups, take turns tossing a die ten times; as a class use suitable online random generator software to represent multiple die roll. Record each number rolled in tabular form. Calculate the mean of each set of ten die rolls by adding the numbers together and dividing by 10 (i.e. <math>1 + 1 + 2 + 2 + 2 + 3 + 4 + 4 + 5 + 5 + 6/10 = 35/10 = 3.5</math>). NOTE: The student with the largest mean score is awarded a point. The game is over when one or more students reach a total of 3 points.</li> <li>• Measure and collect the heights of all the students in their class. Display data collected in a large table on a poster. Work out the mean of the total set of data. Ask and discuss questions such as:             <ol style="list-style-type: none"> <li>1. What is the difference between the greatest height and the least height?</li> <li>2. What is the most common height (if there is one)?</li> </ol>             Use any data sets for calculating mean, mode and median averages. Apply real-life contexts, for example: prices in a supermarket advertisement; ages of a group of students; masses of a collection of objects; cricket scores; running times;           </li> </ul>		

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
daily temperatures.		
<b>Learning Outcomes</b> Students will be able to: <ul style="list-style-type: none"> <li>✓ Conduct surveys</li> <li>✓ Calculate mean averages and median (where applicable)</li> <li>✓ Solve related problems</li> <li>✓ Participate in group activities cooperatively</li> <li>✓ Use ICT tools to explore probability</li> </ul>		

Points to Note	Extended Learning
<ul style="list-style-type: none"> <li>• “<i>Descriptive Statistics</i>” is a general term used to refer to the collection, organization, presentation, and interpretation of data. “<i>Descriptive Statistics</i>” is a general term used to refer to the collection, organization, presentation, and interpretation of data.</li> <li>• Mean, mode and median are measures of “<b>Central Tendency</b>” which attempt to describe what is “<i>typical</i>” or “<i>average</i>” in a set of data.</li> <li>• The “<b>mode</b>” is the most frequently occurring value in a set of data.</li> <li>• The “<b>median</b>” is the middle number in a set of numbers, when arranged in ascending or descending order.</li> <li>• The “<b>mean</b>” is the arithmetic average of a set of data. It is found by dividing the sum of a set of numbers by the number of numbers in the set.</li> </ul>	<ul style="list-style-type: none"> <li>• Give students sets of data, asking them to find the smallest, greatest mean, mode and median values for each data set. Data sets should be made up of whole numbers only, and the total value of each set should be a multiple of the number of terms in that set (i.e. the mean of each set should be a whole number).</li> <li>• In small groups of 2 or 3, allow students to draw 7 cards from a deck of cards and sort them in order from least to greatest or vice versa. [Let face cards equal 10 and aces equal 1. Remove jokers from the deck]. Allow students to find:               <ol style="list-style-type: none"> <li>(1) the mean: find the sum of the 7 cards and divide the result by 7.</li> <li>(2) the median: flip over cards on opposite ends until you reach the middle value. [Challenge students to draw 8 cards instead of 7]. This will require students to find the average of the two middlemost numbers.</li> <li>(3) the mode (if there is one). Find the most common value. ents how they might divide the heights into three height ranges i.e. under 1.3m, 1.3 to 1.4m and 1.4m and over. Draw up a table to summarising the heights using these ranges.</li> </ol> </li> </ul>

<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Discarded phone cards</li> <li>• Wooden cubes</li> <li>• Cartridge paper</li> <li>• Markers of different colours</li> <li>• Price lists</li> <li>• Newspapers/magazines</li> <li>• Stop watch / Thermometer</li> <li>• Scale/balance</li> <li>• Objects of varying sizes and weight / Computer / Internet</li> <li>• Multimedia Projector</li> </ul>	<p><b>Key vocabulary</b></p> <ul style="list-style-type: none"> <li>• Statistics</li> <li>• Central tendency</li> <li>• Mean</li> <li>• Mode</li> <li>• Median</li> <li>• Data</li> <li>• Information</li> <li>• Sample</li> <li>• Population</li> <li>• Survey</li> </ul>
<p><b>Link to other subjects</b></p> <ul style="list-style-type: none"> <li>• Statistics is linked to Science, Social Studies, Languages, and Religious Education etc. when collecting and presenting data (i.e. Census Taking, Data for Scientific Investigations/Experiments, parishes and their sizes, population by parishes.</li> </ul>	

**Prior Learning**

**Check that students can:-**

- Collect and record data.
- Recognize number patterns
- Differentiate between sample and population.

**Focus Question 2:**

How do I collect, organise, display and interpret information?

**Attainment Target:**

Collect, organize, graph, describe and interpret data in a problem-solving context.


**Benchmark:**


Interpret data presented in bar graphs, line graphs, pictographs and pie charts.


**Standard\_Statistics and Probability:**

Collect, organise, interpret and represent data and make inferences by applying knowledge of statistics and probability.

ICT Attainment Target

 **COMMUNICATION AND COLLABORATION** – Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.

 **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING** – Students use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.

 **DIGITAL CITIZENSHIP** – Students recognise the human, ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour.

**Sub-title:** Sample

**Objectives:**

- Read and interpret bar graph, line graph, picture graphs and pie charts.
- Present data using pictographs and bar graphs.
- Convert a pictograph into bar graph or vice versa.



Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Conduct interviews to ascertain how many boys and girls are in the different houses and how many of them participate in the various sporting activities e.g. track and field, relay, long jump.</li> <li>• Present their findings for discussions.</li> <li>• View video tutorial on “Types of Graphs” then discuss the properties of each.</li> <li>• Observe presentation software on types of graphs used in data presentation. Discuss with teacher the appropriate use of each graph (i.e. bar, picture, circle, line) in presenting sets of data. Make journal entry on the use of graphs in presenting data in real-life situations.</li> <li>• Create a table or graph showing an aspect of the data collected by the interview/questionnaire (e.g. favourite subjects or methods of travelling to school). Show data for the whole class.</li> <li>• Collect data by carrying out interviews e.g. at break time or at lunchtime. Use data collected to estimate the total number of students at school who like to play football. Present data in table and bar graph.</li> <li>• Display samples of bar graphs showing a variety of data in both vertical and horizontal orientations, line graphs, pictographs and pie charts. Practise answering oral questions about the data presented on bar graphs, line graphs, pictographs and pie charts with teacher’s guidance.</li> <li>• Search for samples of bar graphs, line graphs, pictographs and pie charts in books, newspapers, magazines and on the internet. Be guided by teacher in the interpreting of data seen on these graphs. Write questions about bar graphs, line graphs, pictographs and pie charts. Then exchange with partner for them to answer.</li> <li>• Collect data needed in order to answer chosen questions using random sampling. Example: Students could interview 5 or 10 Grade 4 students in their class/school to find out the number of years they have been attending the institution. Record data and then present</li> </ul>	<ul style="list-style-type: none"> <li>• Solve problem</li> <li>• Classify and sort data</li> <li>• Collect data</li> <li>• Interview</li> <li>• Observe</li> <li>• Use questionnaire</li> <li>• Identify population</li> <li>• Use a sampling technique</li> <li>• Distinguish between samples</li> <li>• Name ways of collecting data</li> <li>• Explain ideas/terms</li> <li>• Read and interpret data</li> <li>• Present data</li> <li>• Convert data</li> <li>• Work in groups</li> <li>• operate electronic devices</li> <li>• design and produce</li> <li>• Communicate ideas, stories, and events using graphics</li> <li>• Observe moral principles when using digital materials</li> </ul>	<p>Methods of collecting numeric data accurately identified.</p> <p>Tally charts, tables and graphs accurately presents data collected.</p> <p>Statements accurately written about statistical terms.</p> <p>Statistical terms defined and used appropriately.</p> <p>Suitable interpretations made based on data collected.</p> <p>Work cooperatively in groups.</p>

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment
<p>information in table and bar graph. Discuss the effect of random sampling on data collected. Compare data collected by each group. Use data collected from their sample to answer questions about the population. Present data in table and bar graph.</p> <ul style="list-style-type: none"> <li>• Collect data about their classmates. Present data collected in table and pictograph. For example, data could be collected to answer one of the following questions: Which is the most popular day of the school week? What time do students go to bed on a school night? or What is the most popular school subject?</li> <li>• Set up thermometer in a particular place in the classroom (out of direct sunlight). Take and record temperature readings at regular intervals throughout the school day. Then present data on a line graph. Display and share with the entire class.</li> <li>• Collect data on the sales of various foods during the school week (e.g. patties, cheese bread, meat loaf, cinnamon rolls, bun and cheese etc.) Draw table to present data. Then show data on a line graph. Use questions to guide students in comparing data in the line graph on types of foods sold at school with the line graph on temperature readings at regular intervals throughout the school day.</li> <li>• Be given samples of circle graphs with all the sectors fully labelled, be guided by questions to read and interpret information in the graphs. For example, estimate the fractional proportions.</li> <li>• Collect data on the rest of the class i.e. heights of students, favourite subject, colours of teachers’ cars etc. Show data in tabular form. Then present data in a graph of their choice (i.e. bar or picture graph). Formulate own questions for the class to answer and interpret information in graphs. Display and share with the entire class or use a spreadsheet software to enter data collected and use in generating various types of graphs as necessary for comparison e.g. pie, bar, line graphs.</li> </ul>		
<p><b>Learning Outcomes</b> Students will be able to:</p>		

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment
<ul style="list-style-type: none"> <li>• Collect data based on population sampling.</li> <li>• Complete interviews among their peers in data collecting.</li> <li>• Complete questionnaires in data collecting.</li> <li>• Explain terms involving data collecting and presenting.</li> <li>• Present data using appropriate graphs.</li> <li>• Interpret data accurately.</li> <li>• Participate in group activities cooperatively.</li> <li>• Use ICT tools to explore and reinforce the concept of Statistic</li> </ul>		

<p><b>Points to Note</b></p> <ul style="list-style-type: none"> <li>• Data interpretation is part of daily life for most people. Interpretation is the process of making sense of numerical data that has been collected, analyzed, and presented. People interpret data when they turn on the television and hear the news anchor reporting on a poll, when they read advertisements claiming that one product is better than another, or when they choose grocery store items that claim they are more effective than other leading brands.</li> <li>• Collecting and organizing data is a practical way of getting students involved in real-life scenarios and contributes ownership, interest and reality to their experience.</li> <li>• There are three main means of data collecting namely: interviews, questionnaires and observation.</li> <li>• Graphs summarize data in a concise and pictorial form.</li> <li>• Some of the commonly used graphs are bar, picture, line and circle.</li> </ul>	<p><b>Extended Learning</b></p> <ul style="list-style-type: none"> <li>• Peruse a variety of articles showing ways in which data is presented i.e. newspapers, magazines etc.</li> <li>• Give students a series of tallies to read and discuss with peers. Use tallies to sort raw data.</li> <li>• Encourage students to cut and paste, in their scrapbook, an array of graphs used in data presentation. Label each graph with its correct name. Write brief explanations of each graph in their journals.</li> <li>• Give students samples of circle graphs with incomplete labels and challenge them to work out the missing data.</li> </ul>
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Computer</li> <li>• Software</li> <li>• Magazines/newspapers</li> <li>• Samples of graphs (i.e. bar, picture, line, circle etc.)</li> <li>• Journals</li> <li>• Scrapbooks</li> <li>• Cartridge paper</li> </ul>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Data</li> <li>• Interviewing</li> <li>• Questionnaire</li> <li>• Observation</li> <li>• Graph</li> <li>• Survey</li> <li>• Sample</li> </ul>

<ul style="list-style-type: none"> <li>• Markers of various colours</li> <li>• Blocks/cubes</li> <li>• Internet</li> <li>• Multimedia projector.</li> <li>• Youtube link : <a href="https://www.youtube.com/watch?v=mOgKU5KY-ZQ">https://www.youtube.com/watch?v=mOgKU5KY-ZQ</a></li> </ul>	<ul style="list-style-type: none"> <li>• Population</li> <li>• Information</li> <li>• Sampling techniques</li> <li>• Interpret</li> <li>• Presentation</li> </ul>
<p><b>Link to other subjects:</b></p> <ul style="list-style-type: none"> <li>• Knowledge and understanding of data collection and presentation is linked to all subject areas and is integral to a number of Science Process Skills such as: collecting data, classifying, interpreting, presenting etc.</li> </ul>	

**UNIT OF WORK GRADE 4 TERM 3 Unit 1**

**STRAND: Number**

**Suggested Time: 4 weeks**

**About the unit**

In this unit, students will

- Compute with whole numbers accurately and fluently; use these skills to find answers in realistic problem situations.
- Use mathematical tools to reinforce proof and aid computation.

**Prior Learning**

**Check that students:-**

- Differentiate between the uses of the various operations in problem situations.
- Write pairs of multiplication and division facts from an array or given product and factors.
- Write story problem and solve.
- Use estimation in problem solving.

<p><b>Focus Question:</b> How do I use my calculator to determine and prove results?</p> <p><b>Attainment Target:</b> Operate with numbers and number patterns.</p>	<p><b>Benchmark:</b></p> <ul style="list-style-type: none"><li>• Compute with whole numbers accurately and fluently; use these skills to find answers in realistic problem situations.<ul style="list-style-type: none"><li>- <i>Model the number operations: division of five digit numbers by up to two digit numbers.</i></li></ul></li><li>• Use mathematical tools to reinforce proof and aid computation.</li></ul>
<p><b>Standard_Number Operation and Application:</b> Use the basic operations, number relationships, patterns, number facts, calculators and appropriate software to compute and estimate in order to solve real world problems involving fractions, percentages and decimals.</p> <p><b>Sub-theme: Number Ideas</b></p> <p><b>ICT ATT</b> <b>RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING</b> – Students use appropriate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decisions.</p> <p><b>DIGITAL CITIZENSHIP</b> – Students recognise the human,</p>	<p><b>Objectives:</b></p> <ul style="list-style-type: none"><li>• Define and use the terms dividend, quotient, divisor, remainder in sentences requiring division.</li><li>• Divide numbers of up to five digits by numbers up to two digits, with or without remainder.</li><li>• Divide a 3, 4, or 5 digit number so that zero is a digit in the tens and/or hundreds place in the quotient.</li><li>• Test for divisibility by 2, 3 or 4.</li><li>• Express, as a mixed number, the answer to a division problem with a remainder.</li><li>• Identify and correct wrong answers in problems involving division.</li><li>• Discover, memorize and recall all division facts up to at least <math>100 \div 10 = 10</math>.</li><li>• Identify and use the keys on a pocket calculator.</li><li>• Use the calculator to check answers.</li></ul>

ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour.

- Investigate number patterns using the calculator.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate how a set of objects is shared among members of a group. Determine the shared amount (dividend, how much each member would have received (quotient), number of persons (divisor) and how much is left if any (remainder). Make cards with definition of terms.</li> <li>• In pairs, use sets of cards numbered from 1-10 to create division sentences including dividends of up to five (5) digits and divisors up to two (2) digits. (Start students with dividends of less than 5 digits.) Each student should take turns creating the division sentences as well as answers i.e. quotient. At each stage increase speed to develop competence.</li> <li>• Work the answer to division sentences given on cards in teams. Allow teams at least a minute to work the answer on each card. E.g. <math>3\ 696 \div 12</math>. Exchange cards with other teams. Critique teams methods of working. Play online game to reinforce the concept of division sentences.</li> <li>• Discuss with peers how many group(s) can be formed from a group of objects i.e. 4242 candies to be shared among a class of 21 students. Further explore the answers in division problems where zero is in the tens or/hundreds place of the quotient.</li> <li>• Revise division facts by playing “Round Robin” card game. Play game twice and time the second round. Increase the level and time taken for the game as it progresses.</li> <li>• Write, as mixed numbers, answers to division that have a quotient and a remainder. E.g. <math>567 \div 8 = 70 \frac{7}{8}</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify key terms</li> <li>• Define terms</li> <li>• Create division sentences</li> <li>• Critique students work</li> <li>• Revise facts</li> <li>• Write answers as mixed/decimal numbers</li> <li>• Model operations</li> <li>• Estimate answers</li> <li>• Use calculator</li> <li>• Record and compare results</li> <li>• Predict outcomes</li> <li>• Observe moral principles when using digital material</li> <li>• Navigate digital content</li> <li>• Investigate patterns and relationships</li> <li>• Solve problems</li> <li>• Develop logical argument</li> <li>• Analyze</li> <li>• Apply concepts</li> <li>• Prove</li> <li>• Make observations</li> <li>• Draw conclusions</li> <li>• Connect</li> <li>• Summarize</li> <li>• Cite evidence</li> </ul>	<ul style="list-style-type: none"> <li>• Correctly associate definitions with key terms.</li> <li>• Checklist appropriately used to evaluate students work</li> <li>• Mixed numbers/ decimal numbers written correctly</li> <li>• Results recorded correctly</li> <li>• Suitable Descriptions (oral or written) given of patterns/ relationships.</li> <li>• Illustration of division procedures correctly reflects divisibility rules.</li> <li>• Numbers computed correctly using division operation.</li> <li>• Calculators used appropriately to investigate number patterns and check accuracy of problems solved.</li> </ul>



<ul style="list-style-type: none"> <li>• Discuss the various functions of the basic keys on simple calculator. As a whole class, model series of operations on calculator.</li> <li>• In pairs/groups, estimate first,- then use calculator to arrive at the actual answer.</li> <li>• Work in groups/pairs. Assign a calculator to each group. Agree on a particular number, and then circle it. Enter any number into calculator, and then press the multiplication key. Within 5 seconds enter another that will give a product close to the target number, and then press the equal (=) key. Play at least ten more rounds. Repeat the procedure using the division (<math>\div</math>) key.</li> <li>• In groups, develop a deep conceptual understanding between remainders and the decimal part of quotients. Additionally, learn how remainders and group size work together to influence the results that are displayed on a calculator. Manipulate objects to physically represent quotients that have remainders, and then compare remainders written as fractions of whole groups to the results obtained with a calculator.</li> <li>• Estimate the number of Grade four students that will be as heavy as a cow weighing 270 kg.</li> </ul>		
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ Identify and define key terms accurately.</li> <li>✓ Utilize checklist properly.</li> <li>✓ Write quotients as mix numbers.</li> <li>✓ Compare and record results effectively.</li> <li>✓ Explain patterns and relationships based on their investigations.</li> <li>✓ Apply knowledge of division and multiplication to problem solving</li> <li>✓ Use digital contents to aid in the teaching and learning of the strand numbers</li> </ul>		
<p><b>Points to Note</b></p>	<p><b>Extended Learning</b></p>	
<ul style="list-style-type: none"> <li>• The whole number in a quotient represents the whole number or total equal</li> </ul>	<ul style="list-style-type: none"> <li>• Challenge students to perform long division with 5</li> </ul>	



<p>number of groups in a mixed number, while the remainder or left over expressed a proper fraction.</p> <ul style="list-style-type: none"> <li>• Establish connection between division and repeated subtraction.</li> <li>• Division is the inverse operation of multiplication.</li> <li>• A divisibility rule tells us whether one number can be divided by another without leaving a remainder.</li> <li>• If the number is an even number (i.e. the last digit is a 0, 2, 4, 6 or 8), then it's divisible by 2.</li> <li>• If the sum of the digits in a number is divisible by 3. The number itself is divisible by 3. For example, 345 is divisible by 3, since <math>3 + 4 + 5 = 12</math>, which is also divisible by three.</li> <li>• If the last two digits of a number are divisible by 4, then the number is divisible by 4. For example, 8312 is divisible by 4 since the last two digits, 12, is divisible by 4.</li> </ul>	<p>and/ or 6-digit dividends, two-digit divisors and remainders.</p> <ul style="list-style-type: none"> <li>• Give students more practice dividing smaller numbers by larger numbers practically, using objects to help them and recording the answers in the form "0 remainder x".</li> <li>• Encourage students to express quotients as mixed fractions (mixed numbers).</li> <li>• Challenge students to create their own puzzles (including number patterns/relationships) that encourage the use of the calculator.</li> </ul>
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Ima's Dilemma Activity Sheet</a></li> <li>• Dry beans (or any countable object like cubes or pennies)</li> <li>• Calculators</li> <li>• <a href="#">Splitting Beans Activity Sheet</a></li> <li>• <a href="#">Splitting Beans Overhead</a></li> <li>• <a href="#">Leftovers Activity Sheet</a></li> <li>• Calculator</li> <li>• "Round Robin" cards</li> <li>• Flash cards</li> <li>• Objects from the environment</li> </ul>	<p><b>Key vocabulary:</b></p> <p>Dividend  Quotient  Calculator  Remainder  Patterns  Relationships  Divisor  Leftovers  Mixed number</p>
<p><b>Links to other Subjects:</b></p> <ul style="list-style-type: none"> <li>• Sciences</li> <li>• Social Studies</li> <li>• Business Basics</li> <li>• Information Technology</li> <li>• Language Arts</li> </ul>	

**UNIT OF WORK GRADE 4 TERM 3 Unit 2**

**STRAND: GEOMETRY**

**Suggested Time: 2 weeks**

**About the Unit**



In this unit, students will:

- Identify, describe, compare, classify and explore prisms (cubes and cuboids) using their properties in real life situations.

**Prior Learning**

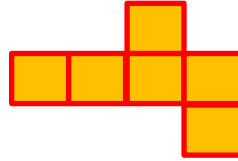
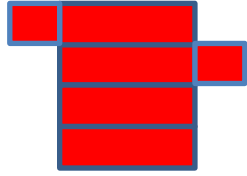
Check that students can:  
Identify and name plane shapes

<p><b>Focus Question 1:</b> What are the properties of prisms?</p> <p><b>Attainment Target:</b> Identify, describe, compare and classify geometric figures and their properties.</p>	<p><b>Benchmark:</b> Model and explore prism (cubes and cuboid) by noting their properties and nets.</p>
<p><b>Standard_Geometry:</b> Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment.</p> <p><b>Sub-theme:</b> Prisms: Cubes and Cuboids</p> <p><b>ICT Attainment Target (s):</b> COMMUNICATION AND COLLABORATION - use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.</p> <p>DESIGNING AND PRODUCING - use digital tools to design and produce creative multimedia products to demonstrate their learning and understanding of basic technology operations.</p>	<p><b>Mathematics Objectives:</b></p> <ul style="list-style-type: none"><li>• Develop/create skeletons/frames of solid shapes using a variety of tools.</li><li>• Draw and describe nets of prisms: cubes and cuboids.</li><li>• Construct solids from given nets (prisms: cubes and cuboids)</li><li>• Identify and explore the properties of prisms: cubes and cuboids.</li><li>• Identify prisms from their nets: cubes and cuboids.</li></ul>

Suggested Teaching and Learning Activities – Focus Question 1						Key Skills	Assessment				
<b>Students will:</b> <ul style="list-style-type: none"> <li>• Be presented with cubes, cuboids and their nets. They will identify the similarities and differences of both, using the following categories;</li> <li>• Number of edges</li> <li>• Number of vertices</li> <li>• Number of faces</li> <li>• Shape of faces</li> <li>• Shape of cross section</li> </ul>						<ul style="list-style-type: none"> <li>• Make observations</li> <li>• Create 3-D models</li> <li>• Critique</li> <li>• Identify faces, edges, vertices and cross-section of cube and cuboids</li> <li>• Compare</li> <li>• Draw and make representations of cube and cuboids</li> <li>• Measure angles</li> <li>• Estimate</li> <li>• Discuss</li> <li>• Investigate</li> <li>• Classify</li> <li>• Examine prisms: cubes and cuboids</li> <li>• Sketch designs</li> <li>• Construct solids</li> <li>• Examine pyramids:</li> </ul>	<ul style="list-style-type: none"> <li>• Properties of prisms: cubes and cuboids identified correctly.</li> <li>• Number of faces, edges, vertices and cross-section counted accurately.</li> <li>• Accurately constructed prisms: cubes and cuboids.</li> <li>• Suitable designs created.</li> <li>• Models of buildings with geometric solids appropriately created</li> <li>• Work cooperatively in groups.</li> </ul>				
<b>Prism</b>	<b>Nets</b>	<b>Number of edges</b>	<b>Number of vertices</b>	<b>Number of faces</b>	<b>Shape of faces</b>						
 Cube											
 Cuboid											
<ul style="list-style-type: none"> <li>• Create a table listing the similarities and differences between the cube and the cuboid.</li> </ul>											
<table border="1"> <thead> <tr> <th>What is similar? Similarities</th> <th>What is different? Differences</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>			What is similar? Similarities	What is different? Differences							
What is similar? Similarities	What is different? Differences										

**Suggested Teaching and Learning Activities – Focus Question 1**

- Be given nets of a cube and cuboid to trace, then to cut and fold along edges.

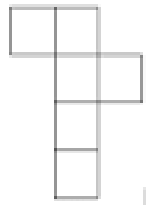
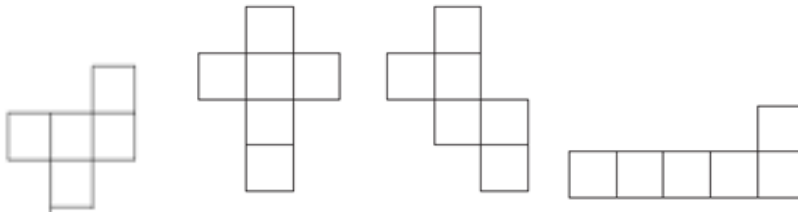


- Create the frames of solids using match sticks, fudge sticks, pipe cleaners or tooth picks along with other materials.



- Be engaged in a discussion about the following statement.  
**“All nets made with six squares can be made into a cube.” Do you agree? Explain your response.**

- Identify and explain which of the nets below can be folded to make a cube.

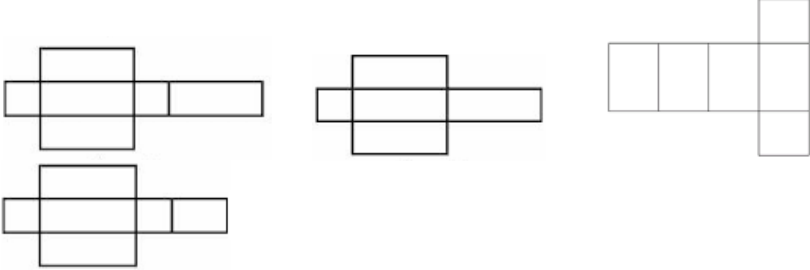


- Identify and explain which of the nets below can be folded to make a cuboid.

**Key Skills**

- triangular and square base
- Explore geometric properties
- Identify geometric properties
- Participate in groups

**Assessment**

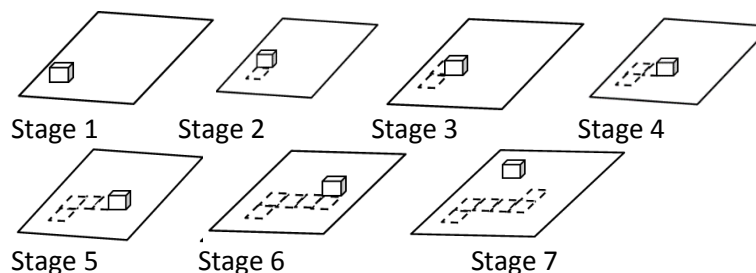
Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment
 <ul style="list-style-type: none"> <li>• Identify representations of cubes and cuboids within the environment and provide justifications for their selection.</li> <li>• Explore the school and home environment and identify objects that best match the properties of the cube and cuboid.</li> <li>• Cut and paste design of buildings depicting geometric solids (cubes and cuboids) being explored.</li> <li>• Create models of buildings using geometric shapes.</li> <li>• Sketch designs of models of buildings on cartridge paper.</li> <li>• Organize group portfolios of designs sketched.</li> </ul>		
<p><b>Learning Outcomes</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Identify the differences between cubes and cuboids and their respective nets.</li> <li>• State the similarities between cubes and cuboids and their respective nets.</li> <li>• Construct, draw and model cubes and cuboids.</li> <li>• Identify edges, faces and cross-sections.</li> <li>• Create models of buildings using solids</li> <li>• Sketch designs of models</li> </ul>		

### Points to Note

- A net is a two dimensional representation of a three dimensional shape. It can be folded or put together to produce the shape.
- In constructing the skeleton models of solids students can be assisted by showing them the actual solid. This will aid the accuracy of their construction and their mental picture of the solid.
- There should be integration of the topic with Visual Arts; to demonstrate the idea of solids, 3D shapes and designs.
- Both cubes and cuboids have 6 faces, 8 vertices and 12 edges.
- The lengths of the edges of the cube are identical.
- The cross-section of the cube has the shape of a square.
- The cross-section of the cuboid has the shape of a rectangle. The shape of the cross-section can also be a square.

### Extended Learning

- Have students roll and trace cubes and cuboids on paper to create different nets of the same solids. Each face of the solid is to be numbered from 1-6 so that students can accurately track their rolls. Ask students to describe the nets they produce, stating why the nets may look different but produce the same solid.



- Provide students with examples and non-examples of cubes and cuboids. Allow them to discuss and categorize the shapes or objects based their observations.

Cubes and Cuboids	Non- Examples of Cubes and Cuboids

- Encourage students to research on the most effective designs to model the construction of buildings in the near future. Bear in mind

	<p>safety, protection and sustainability of the environment and natural hazards.</p> <ul style="list-style-type: none"> <li>• Have students present their designs of models of buildings as prospective architects.</li> <li>• Allow students to superimpose their building designs on computer soft wares for editing.</li> <li>• Challenge students to sell their ideas to the Ministry with responsibility for Education in the construction of school plants in the near future.</li> <li>• Have students make journal entries based on experiences gained from each of the activities being explored.</li> </ul>
<p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Nets of solids</li> <li>• Solids (cubes and cuboids)</li> <li>• Match sticks/Fudge sticks</li> <li>• Plain paper</li> <li>• Multi-media projector</li> <li>• Tables/charts</li> <li>• Internet-generated device</li> <li>• Materials for making geometric solids</li> <li>• Scrapbooks</li> <li>• Portfolios</li> <li>• Math journal</li> </ul>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Prism</li> <li>• Cube</li> <li>• Cuboid</li> <li>• Net</li> <li>• Edge</li> <li>• Cross section</li> <li>• Face</li> <li>• vertex</li> </ul>
<p><b>Links to other subjects</b> This may be linked to science, religious education and visual arts.</p>	



**UNIT OF WORK GRADE 4 TERM 3 Unit 3**

**STRAND: Algebra**

**Suggested Time: 2 weeks**

**About the Unit**

In this unit, students will:

- Find the number that the symbol (a letter of the English alphabet or other pictures) represents to make a mathematical sentence true.
- Understand the principles of substitution in mathematical sentences.

**Prior Learning**

Check that students can:

- Write number sentences in words.
- Know how to use the four basic operations.
- Use symbols to represent unknown numbers.




<p><b>Focus Question:</b> How do I use variables when solving real world problems?</p> <p><b>Attainment Target:</b> Use open sentence to express relationships among quantities, model and explain the solution of simple equations, using diagrams and concrete materials.</p>	<p><b>Benchmark:</b></p> <ul style="list-style-type: none"><li>• Find the number that the symbol (a letter of the English alphabet or other pictures) represents to make a mathematical sentence true.</li></ul>
<p><b>Standard_Algebra:</b> Employ algebraic reasoning through the use of expressions, equations and formulae to interpret, model and solve problems involving unknown quantities.</p> <p><b>Sub-theme: Using variables</b></p>	<p><b>Objective(s):</b></p> <ul style="list-style-type: none"><li>• Identify the correct operation to be used in solving a problem.</li><li>• Solve word problems using algebraic expressions.</li><li>• Demonstrate the principle of substitution in simple formulae.</li></ul>

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment												
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>In pairs, use pattern blocks to create polygon "chains" and calculate the perimeter of the trains as they get longer. Recognize and create patterns based on adding the same shape repeatedly to the train. Write algebraic expressions to describe the patterns.</li> <li>In groups, investigate the number of items that can be placed around an arrangement of square figures. Further engage in problem solving, reasoning and critical thinking situations to yield different linear relationships, algebraic patterns, expressions and equations through meaningful discovery.</li> <li>Write the term associated to its operation to complete a table.</li> </ul> <table border="1"> <tr> <td style="text-align: center;"><b>+</b></td> <td style="text-align: center;"><b>-</b></td> <td style="text-align: center;"><b>×</b></td> <td style="text-align: center;"><b>÷</b></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p> <b>plus   add   decrease by   product   quotient   total   sum</b>  <b>less than   more than   times   increase by   all together</b>  <b>twice   divide   multiply</b> </p> <ul style="list-style-type: none"> <li>Substitute missing numbers into an algebraic equation to make it true. For example,</li> </ul> $5 + \text{●} = 8$ $\text{■} + \text{▲} = \text{◇}$ $3 + \text{▲} - \text{◆} = 6$	<b>+</b>	<b>-</b>	<b>×</b>	<b>÷</b>									<ul style="list-style-type: none"> <li>Interpret, create and model algebraic statements</li> <li>Solve algebraic equations</li> <li>Substitute values</li> <li>Make generalizations</li> <li>Write algebraic expressions</li> <li>Identify patterns</li> <li>Work cooperatively</li> <li>Illustrate</li> <li>Match</li> <li>Share and compare</li> <li>Make observations</li> <li>Draw conclusions</li> <li>Critique</li> <li>Analyze</li> <li>Formulate</li> <li>Create</li> <li>Construct</li> <li>Show</li> <li>Cite evidence</li> <li>Investigate</li> </ul>	<ul style="list-style-type: none"> <li>Oral responses accurately stated</li> <li>Students' task accurately evaluated.</li> <li>Accurate solution identified for algebraic sentences.</li> <li>Work cooperatively in groups.</li> <li>Correct operations identified and used for substitution problems.</li> <li>Values substituted accurately.</li> <li>Models of algebraic expressions</li> </ul>
<b>+</b>	<b>-</b>	<b>×</b>	<b>÷</b>											

- Play a game to substitute values in an algebraic expression:

**Game 1**

Place students in groups based on the number of animals. Students will pick an animal, and the values of the variables a, b and c be randomly pick from a bag. They will then substitute the values in the expression to get a value for each animal's characteristic. The student with the highest value from the card below each give characteristics of each dinosaur, **if a = 3, b = 4 & c = 2**

<u>Raptor</u>	<u>Giganotosaurus</u>	<u>Stygi</u>
		
<p>Strength: <math>2a</math>            Speed: <math>a(b - c)</math>            Size: <math>4a + d</math>            Intelligence: <math>cd</math></p>	<p>Strength: <math>4(a + 1)</math>            Speed: <math>b + c</math>            Size: <math>5(b - a)</math>            Intelligence: <math>a + 1</math></p>	<p>Strength: <math>b</math>            Speed: <math>3a + d</math>            Size: <math>3a - 2</math>            Intelligence: <math>2d + c</math></p>

<http://www.tes.co.uk/teaching-resource/Substitution-Game-Algebra-6027440/>

**Game 2**

Another example is the game "What's in my bag."  
 Students will solve clues based on the variable chart given. They will use the numbers obtained from the clues to find the letters they represent and then unscramble to find the name of an object.

suitably represented.

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>j</i>	<i>k</i>	<i>l</i>	<i>m</i>
50	48	45	42	40	36	35	32	30	28	25	1	21
<i>n</i>	<i>o</i>	<i>p</i>	<i>q</i>	<i>r</i>	<i>s</i>	<i>t</i>	<i>u</i>	<i>v</i>	<i>w</i>	<i>x</i>	<i>y</i>	<i>z</i>
20	18	16	15	12	10	8	7	6	5	4	3	2

<i>Clue 1 : f + x</i>	<i>Clue 2 : 4x</i>	<i>Clue 3 : k - w</i>
$f + x = 36 + 4$ = 40 = e	$4x = 4 \times 4$ = 16 = p	$k - w = 25 - 5$ = 20 = n

When unscrambled we get "pen."

- Create one-step or two-step algebraic story problems. Give other students to solve and discuss the solutions.  
For example,  
**1 step:** Joan has some animal stickers. She gave 45 to Pam and now has 120 left. How many stickers did she have at first?  
**2 steps:** Joan has some animal stickers. She gave 45 to her best friend Pam and 20 to her Cousin Paul. She now has 185 left. How many stickers did she have at first?

### Learning Outcomes

Students will be able to:

- Interpret given algebraic sentences
- Decide which operation to use in a given algebraic situation.
- Match algebraic sentences to corresponding wording correctly.
- Solve word problems using algebraic expression.
- Write one or two step problems based on given information.

Points to Note	Extended Learning
<ul style="list-style-type: none"> <li>• The pattern identified must be applicable to each term of the sequence.</li> <li>• Pictorial representation should be used to generate other terms of the sequence.</li> <li>• Integrate the other Content Strands: Number, Statistics and Probability, Measurement and Geometry when teaching the objectives of the Algebra Strand.</li> <li>• The Process Strands should not be ignored when teaching from the Algebra Strand. Activities designed from the Algebra Strand should not be limited to Representation but incorporate skills of communication, problem solving and making connections with real life experiences.</li> <li>• Substitution in Algebra means replacing numbers with letters in an expression. The mathematical operation(s) is/are done thereafter.</li> </ul>	<ul style="list-style-type: none"> <li>• Students can create their own activities to reinforce principles of substitution and solving algebraic equations. Consider this activity: assign a value to each letter of the English Alphabet, such that <math>a = 1, b = 2, c = 3, \dots, z = 26</math>. Allow students to write scenarios using mathematical operations and use methods of substitution to determine their solutions. For example, what letter represented the sum of <math>b</math> and <math>f</math>? With <math>b</math> having assigned the value of 2 and <math>f</math> the value of 6, their sum of 8 would be represented by the letter <math>h</math>.</li> </ul>
<p><b>Resources:</b></p> <p>Websites:  <a href="http://en.wikipedia.org/wiki/Longest_trains">http://en.wikipedia.org/wiki/Longest_trains</a>  <a href="https://www.youtube.com/watch?v=9LsuNWjRaAo">https://www.youtube.com/watch?v=9LsuNWjRaAo</a>  <a href="http://www.meddybemps.com/funwithtrains.html">http://www.meddybemps.com/funwithtrains.html</a></p>	<p><b>Key vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Expression</li> <li>• Algebraic</li> <li>• Constant</li> <li>• Variable</li> <li>• Solution</li> <li>• Formulae</li> <li>• Substitution</li> <li>• Patterns</li> <li>• Operations</li> <li>• Compute</li> </ul>

**Links to other Subjects:**

- Sciences
- Visual Arts
- Information Technology
- Language Arts
- Social Studies

**UNIT OF WORK GRADE 4 TERM 3 UNIT 4**

**Strand: STATISTICS AND PROBABILITY**

**Suggested Time: 2 weeks**


**About the Unit**

- In this unit students will
- apply probability concepts when making predictions

**Prior Learning**

Check that students can:-

- Use probability terms accurately.

<p><b>Focus Question1?:</b> How can I determine the possible outcomes of an event?</p> <p><b>Attainment Target:</b> Explore the concept of chance.</p>	<p><b>Benchmark:</b> Understand and apply probability concepts when making predictions.</p>	
<p><b>Standard_ Statistics and Probability:</b> Collect, organise, interpret and represent data and make inferences by applying knowledge of statistics and probability. <b>Sub-theme:</b> probability</p> <p><b>ICT Attainment Target</b></p> <p> <b>COMMUNICATION AND COLLABORATION</b> – Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others.</p>	<p><b>Objective(s):</b></p> <ul style="list-style-type: none"> <li>• Make predictions regarding the outcomes of experiments and record the results explaining any differences.</li> <li>• Predict and record the likely outcome of an experiment.</li> </ul>	
<p><b>Suggested Teaching and Learning Activities – Focus Question 1</b></p>		
<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• In groups, engage in playing a game to learn about the four forces of flight: lift, drag, thrust, and weight. Conduct a probability experiment with spinners and record results in tally tables. Then use findings to select the force with the greatest number of outcomes as the winner of the game.</li> <li>• Determine the sample space for items such as coin, deck of cards, die and spinner</li> </ul>	<p><b>Key Skills</b></p> <p>Predict outcomes Collect data Represent data Interpret data</p> <p>Conduct experiment</p>	<p><b>Assessment</b></p> <p>Tally chart and table accurately presents data collected.</p> <p>Outcomes of experiments accurately recorded.</p> <p>Sample space correctly</p>



<p>after observation. Students should be guided to discover that the sample space is the total number of possible outcomes for each item – coin (two: head, tail); die (six: 1, 2, 3, 4, 5, 6); cards (52) etc.</p> <ul style="list-style-type: none"> <li>• Conduct simple experiments where they would initially predict the outcome and then record such using tally marks. For example, <ul style="list-style-type: none"> <li>(i) Flip a coin twenty times and record the number of heads and the number of tails.</li> <li>(ii) Throw a die twenty times and record the number of times each number from 1 to 6 appears. Match the prediction to the actual outcome in each case.</li> </ul> </li> <li>• Conduct simple experiment where ten counters of three different colours (6 red, 3 blue and 1 yellow) are placed in an opaque container. Allow at least 10 students to take turns at choosing a counter from the bag, identify which colour they have and replace it after each turn. Make a tally of the colours chosen. Without showing the contents of the bag, discuss: “which colour they think is represented (i) most and (ii) least in the bag?” Allow students to guess the exact number of each colour in the bag then reveal the actual number of each colour to the class.</li> <li>• Explore activities of similar nature to the one above online or otherwise.</li> <li>• Work in groups to make observations of events which occur in their community. For example, for every ten cars observed at different times/places, how many are white?</li> </ul>	<p>Recording Investigate Make observations Draw conclusions Share and compare Show Design Construct Create Critique Analyze Prove Hypothesize Graph Relate Cite evidence</p> <p>communicate ideas</p>	<p>determined</p> <p>Investigation carried out and outcomes of events explicitly identified.</p> <p>Work cooperatively in groups.</p>
<p><b>Learning Outcomes</b> Students will be able to:</p> <ul style="list-style-type: none"> <li>✓ conduct simple experiments</li> <li>✓ make realistic predictions</li> <li>✓ tally events</li> <li>✓ record outcomes</li> <li>✓ Use online resources to explore the concept of probability</li> </ul>		

Points to Note	Extended Learning
<ul style="list-style-type: none"> <li>• The spinner should be designed to reflect the four forces of flight with each having an equal chance.</li> <li>• Teacher should use questioning techniques to enhance critical thinking skills.</li> <li>• Students should be engaged in activities using Jamaican coins, die, deck of cards and spinners created by them with the guidance of the teacher.</li> <li>• Students should be allowed to compare and contrast results of experiments with predictions.</li> <li>• The results of probability experiments range from zero (0) to one (1).</li> </ul>	<ul style="list-style-type: none"> <li>• Plan and design concept map on probability.</li> <li>• Make a new board game that favours other spinners. Let students record and examine their findings for each spinner after at least twenty trials. The event/player with the most favourable outcome is the winner.</li> <li>• Allow students to create bar graphs and pie charts to reflect findings of experiments.</li> <li>• Encourage students to discuss the advantages and disadvantages of gambling and taking risk.</li> </ul>
<p><b>Resources:</b> Websites:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.explainthatstuff.com/howplaneswork.html">http://www.explainthatstuff.com/howplaneswork.html</a></li> <li>• <a href="https://www.grc.nasa.gov/www/k-12/UEET/StudentSite/dynamicsofflight.html">https://www.grc.nasa.gov/www/k-12/UEET/StudentSite/dynamicsofflight.html</a></li> <li>• <a href="https://www.youtube.com/watch?v=CAtNu_8NBhs">https://www.youtube.com/watch?v=CAtNu_8NBhs</a></li> <li>• <a href="https://www.youtube.com/watch?v=5ltjFEei3AI">https://www.youtube.com/watch?v=5ltjFEei3AI</a></li> </ul> <ul style="list-style-type: none"> <li>• <a href="#">Rescue Mission Game Activity Sheet</a></li> <li>• Crayons</li> <li>• Paper clips and pencils (to use as "pointers" for the spinners)</li> <li>• <a href="#">Graph paper</a> Simple recording forms, spinners, dice, coins, cards</li> </ul>	<p><b>Key vocabulary:</b> Sample space, possible outcome, chance, prediction, probability, experience, flight, push, pull, drag, thrust, resistance,</p>
<p><b>Links to other Subjects:</b></p> <ul style="list-style-type: none"> <li>• Sciences</li> <li>• Information Technology</li> <li>• Language Arts Integrate with Social Studies to predict the weather</li> <li>• Integrate with Physical Education to predict the outcome of a game</li> </ul>	

# APPENDICES

## The 5Es Overview: “The 5E Learning Cycle”

### What is a 5E Learning Cycle?

*This model describes an approach for facilitating learning that can be used for entire programmes, specific units and individual lessons. The NSC supports the 5E constructivist learning cycle, as it places emphasis on the processes that may be used to help students to be personally involved in the learning situation as they are guided to build their own understandings from experiences and new ideas.*

#### 5E Instructional Model



**Figure 1. Illustrating one version of the 5E model that conveys the role of evaluation as an interconnecting process that is at the core of the learning experience.**



Figure 2, illustrating a cyclical perspective of the model with each process being given similar emphasis in contributing to the learning experience on a whole

#### EXPLANATION OF THE INSTRUCTIONAL MODEL

##### What are the 5Es?

The 5Es represent five key interrelated processes that provide the kind of learning experiences for learners to experience the curriculum or planned learning episodes: **Engage, Explore, Explain, Extend (or Elaborate), and Evaluate.**

**ENGAGE:** The purpose of the **ENGAGEMENT** dimension is to help students to be ready intellectually, socially, emotionally etc. for the session. Attention is given to the students' interests and to getting them personally involved in the lesson, while pre-assessing prior understandings, attitudes and/or skills. During the experience, students first encounter and identify the instructional task and their roles and responsibilities. During the **ENGAGEMENT activity**, students make connections between past and present learning

experiences, setting the organizational groundwork for upcoming activities. The engagement activity may be used to (a) help student unearth prior knowledge (b) arouse their curiosity (c) encourage students to ask questions as a sign that they have wonderments or are puzzled.

**EXPLORE:** The purpose of the **EXPLORATION dimension** is to get students involved in solving a real problem that is based on a selected context. **EXPLORATION** provides them with a chance to build their own understanding of the phenomenon being investigated and the attitude and skills involved for arriving at a workable solution. In **exploring** the students have the opportunity to get directly involved with the phenomenon and materials. As they work together in learning teams or independently, the need to share and communicate becomes necessary from the experiences. The teacher functions as a facilitator, providing materials, guarding against obstacles to learning and guiding the students to operate based on agreements. The students become inquirers and co-owners of the learning process. In exploring, they also ask questions, formulate hypothesis, search for answers or information/data, reflect with others, test their own predictions and draw conclusions.

**EXPLAIN:** The purpose of the **EXPLANATORY dimension** is to provide students with an opportunity to assess their thinking and to use intellectual standards as critical thinkers to communicate their perspectives and/or the meaning of the experiences. They rely on communication tools and their skills as Language users to: (a) organize their thoughts so that they are clear, relevant, significant, fair, accurate etc. (b) validate or affirm others (c) self-motivate. Reflection also occurs during the process and may cause students to adjust their perspective or justify their claims and summarise the lessons being learned. Providing explanations contributes to vocabulary building and self-corrective actions to deal with misconceptions that they become aware of from feedback of their peers and/or their facilitator.

**EXTEND:** The purpose of this dimension is to allow students to use their new knowledge and continue to explore its significance and implications. Students work independently or with others to expand on the concepts and principles they have learned, make connections to other related concepts and principles within and/or across disciplines, and apply their understandings in new ways to unfamiliar situations.

**EVALUATE:** The purpose of the EVALUATION dimension is for both students and facilitator to determine progress being made or the extent to which learning has taken place based on the stated objectives or emergent objectives. EVALUATION is treated primarily as an on-going diagnostic and developmental process that allows the learner to become aware of gaps to be treated and progress made from their efforts to acquire the competencies that were the focus of the session. Examples of competencies include understanding of concepts, principles and processes and demonstrating various skills. Evaluation and assessment can occur at different points during the learning episode. Some of the tools that assist in this diagnostic and formative process include rubrics, teacher observation log, self-inventories, peer critique, student interviews, reflective presentations, displays/expositions, portfolios, performances, project and problem-based learning products. Analysis of reflections, video recordings are useful in helping students to determine the depth of their thinking and understanding and the objectives they have or have not achieved.

### **Who developed the 5E model?**

The Biological Science Curriculum Study (BSCS), a team led by Principal Investigator Roger Bybee, developed the instructional model for constructivism, called the "Five Es".

### **The Link between the 5E model and Types of Learning Activities**

The five (5) types of Learning Activities purported by Yelon (1996) can be integrated with the 5E's so as to enrich the teaching and learning process. He noted that every instructional plan should include the following learning activities



1. Motivation Activities: Intended to help learners to be ready for the session
2. Orientation Activities: Inform students of their roles and responsibilities based the purpose or objectives of a learning episode.
3. Information Activities: Allow students to manipulate current knowledge, access/retrieve and generate new ideas
4. Application Activities: Allow for the use of knowledge and skills in novel situations
5. Evaluation Activities: Allow for reflection, corrective actions and sourcing of evidence to confirm/refute claims about learning.

These activities can be planned to serve one of the purposes of each dimension of the 5E model. For example, ENGAGEMENT may be comprised a Motivation Activity and an Orientation Activity. EXPLORATION and EXPLANATION require an Information Activity, while EXTEND requires an Application Activity. EVALUATION requires the kind of activity that will contribute to the collection of data for assessing and arriving at a conclusion about performance based on stated or expected purpose for which learning is being facilitated.

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## **PERSPECTIVES OF SCIENCE, TECHNOLOGY, ENGINEERING, MATHEMATICS & THE AESTHETICS (STEM/STEAM) IN RELATION TO THE NATIONAL STANDARD CURRICULUM (NSC)**

### **INTRODUCTION & BACKGROUND**

The integration of theoretical principles that relate to STEM/STEAM Education in the NSC began in June 2014. This move was influenced by recommendations of the STEM Steering Committee that emphasized the need to develop learners who are not just productive, but who would also be innovative Jamaicans. STEM integration was also regarded as one of the strategic long term means of addressing the economic challenges being faced by Jamaica using education as a primary vehicle for the implied transformational change to happen, beginning from short term efforts.

Initial discussions and deliberations promoted an emphasis on STEM rather than STEAM Education. However, critical analysis of the conversations conveyed the perspective of STEM as a collection of related disciplines that all learners should have the opportunity of pursuing, to develop the competencies they offer and as a consequence be able to gain employment or become employers in STEM related areas. As stakeholders from different backgrounds processed their understanding of STEM, new meanings of the concept emerged from the discussions. One was the perspective of STEM as a methodology. There was, however, concern about the exclusion of “A” in STEM. This “A” component however, brought to the discussion, multiple meanings. In some instances, “A” was taken to mean a focus on affective development or affectivity. In other cases, it was used in reference to the Aesthetics as a field and was considered an important component to be included if educators are serious about issues of discrimination, holistic learning and current research on the iterative function of the brain that warrants attention to brain based learning and the role of the Arts in promoting knowledge integration to cater to multiple domains of learning. There was also discontent about neglecting the Performing Arts when related creative industries contribute significantly to economic development. The concern was that the role of the Arts to economic development was being trivialized.

The call for the integration of the Aesthetics or Art forms became more pronounced as STEM took on more national significance. This was supported by research that indicates the importance of the Aesthetics in developing values and attitudes, in promoting holistic learning and in serving as drivers of innovations. By integrating principles from STEM with those from the Arts/Aesthetics, the approach to problem solving would

encourage greater appreciation for and reliance on the interdependent nature of knowledge when science and arts intersect. Additionally, STEAM as a methodology encourages the harmonizing of the cognitive and the emotional domains in the problem-solving process.

The concept of STEAM was adopted in 2015, as an integrative approach to education and a methodology that pays attention to the benefits to be derived from the inclusion of the Arts or Aesthetics with STEM related principles. These collective benefits are supported by Jolly (2014), Sousa and Pilecki (2013) and include divergent thinking; differentiated learning; Arts integration; focus on intrinsic motivation and informed decision-making.

### **PERSPECTIVES OF STEM/STEAM IN THE CONTEXT OF THE NSC**

In the context of the NSC, STEM/STEAM is used in a number of ways. These include:

**STEM/STEAM as an integrative learning approach and methodology** in facilitating learning. This perspective places emphasis on STEM/STEAM as a means of helping learners become creative or innovative problem solvers and lifelong learners who rely on scientific principles (laws and theories) to address issues/concerns or to deal with observed phenomenon that are puzzling for them or that inspire interest. As an approach, the focus is on solving problems based on principles. As methodology, the focus is on the system of practical procedures to be used to translate principles into the problem-solving processes or to choose from available problem-solving models.

**STEM/STEAM as an Experiential-Vocational Learning Framework** that is based on problem solving through the project-based approach. Emphasis is placed on solving real life problems in a context that requires learners and their facilitators to observe work-based principles. The primary purpose for this focus is for learners to: (i) become employable (ii) prepare for further education and/or for occupational or work readiness.

**STEM as types of institutions** in which learning is organized as a **meta-discipline** as described by Morrison and Bartlet (2009). Based on this perspective, STEM facilitates the demonstration of knowledge in a manner that removes the boundaries of each discipline for application to problem as would be practised in the real world.

## IMPLICATIONS OF PERSPECTIVES OF STEM/STEAM IN LIGHT OF THE NSC

*Since the NSC is based on Constructivism principles, STEM/STEAM as an approach and methodology, has to be established on post-positivistic thinking.* From this position, STEM/STEAM influences the kind of practice that promotes collaboration, negotiation of meaning and openness to scrutiny.

The NSC developers selected a Constructivist approach that included the **deliberation, designing and development** stages of the curriculum process. Evidence of the influence of Constructivism can be seen the NSC Framework Document that conveys the following emphasis:

- (i) **The element of objectives** is presented in two forms; firstly as **Learning Objectives** to focus attention on process and experience rather than product. Secondly as **Learning Outcomes** that serve as some of the outputs of the process. They include the basic understandings, skills and dispositions anticipated from learners' engagement in the planned experiences.
- (ii) **The element of content** is treated as contexts for learners to think critically, solve problems creatively while developing their identity as Jamaicans. Content is not expected to be treated as disciplines to be mastered but as areas that contribute knowledge, skill sets and attitudes that form the composite of competencies to be acquired from their integration in the learning situations.
- (iii) **The element of learning experiences (method)** is presented as a set of learning activities that serves as a source of problems to be addressed as a part of the learning process. These real-life activities provide the scope of knowledge, skills and required dispositions or character traits for learners to make sense of that aspect of life or the world that they represent. They are the threads that connect all the other elements of the curriculum and allow for the integration of STEM/STEAM in the following ways:
  - Identification of activities that are presented as problems to be solved using the STEM/STEAM approach based on contextual factors that include the profile of the learner, the learning conditions and the anticipated impact.
  - Integrating activities to form a real problem to be solved as a short, medium or long term project to which the project based learning would be applied.

- The examination of learning activities by learners and teachers as co-learners through multiple lenses using content of science, technology, mathematics and the humanities that they have already explored to engage in the problem identification and definition processes.
  - Extending learning in the formal setting to the informal by connecting co-curricular initiatives that are STEM/STEAM based that learners are undertaking at the institutional level through clubs and societies, as whole school projects or in partnership with external stakeholders.
  - Using the learning activities to review STEM/STEAM initiatives that form a part of the informal curriculum to and for reflection on action.
  - Using activities as springboards for reflecting on career or occupational interest in STEM/STEAM related areas.
- (iv) **The element of evaluation** is communicated in two major ways; firstly as prior learning which serves diagnostic purpose and secondly as an on-going developmental process. This formative focus is indicated by the inclusion of explicitly stated assessment criteria that are to be used alongside the learning activities. The use of assessment criteria as counterparts of the learning activities also indicates that assessment is learner centred since it is serving developmental rather than promotional purpose and as a consequence, allows learners to self-correct as they use feedback to develop feed-forward capabilities. Evidence of learning, based on the learning outcomes, can be collected from various types of assessment methods that emphasize the learner centred constructivist orientation. This brings to the fore the need for serious consideration to be given to **differentiation in assessment** for fairness and credibility of claims about learners' capabilities and to inform decisions that will impact their educational journey.

In general, this integrated approach, which is the context of STEAM, is aimed at improving the quality of the educational experience for learners while influencing the achievement of the aims of education that relate to productivity and creativity as part of the profile of the Jamaican learner.

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## National Standards Curriculum

### Glossary of Terms

<b>TERMS</b>	<b>DEFINITIONS</b>
Range of Content	Provides an overview of the concepts, knowledge, skills and attitudes that will be developed in a unit of study.
About the Unit	Gives a brief overview of the content, skills that are covered in the unit and the methodologies that are used as well as the attitudes to be developed.
Standards	Statements that explain what all students are expected to know and be able to do in different content areas by the end of a course of study e.g. by the end of period spanning grades 4 – 9.
Attainment Targets	An attainment target is a desired or expected level of performance at the end of a course of work, within a given/specified teaching-learning period. Attainment targets identify the knowledge, skills and understanding which students of different abilities and maturities are expected to have by the end of each Grade. It is the standard that we expect the majority of children to achieve by the end of the grade.
Benchmarks	Behaviours students are expected to exhibit at different stages of development and age/grade levels.
Theme/Strands	Unifying idea that recurs throughout a course of study and around



	which content, concepts and skills are developed.
Prior Learning	It is what students are expected to already know through learning and experience about a topic or a kind of text.
Specific Objectives	Specific objectives state what the student is expected to know or understand as a result of the learning experience. The specific objective is usually framed in the areas of the knowledge, skills and attitudes that the students are expected to achieve. Specific objectives tell us what the children will learn or will be taught.
Suggested Teaching/Learning Activities	A teaching/learning activity is an organised doing of things towards achieving the stated objectives. They are suggested activities that are crafted in a way to be an efficient vehicle which can move the student between what is to be learnt (objective) and what the student is to become (outcome).
Key Skills	Indicate the important skills that students should develop during the course of a unit. Key skills are aligned to the suggested teaching and learning activities in the unit which are intended to develop the skill to which it is aligned. Included in the key skills are the 21 <sup>st</sup> century skills such as critical thinking and problem solving, collaboration, communication and ICT.

Assessment	<p>An assessment is a determination of whether intended results have been achieved. This section of the curriculum speaks to both the product that will be judged as well as the criteria against which it will be judged. It must be noted that this section does not introduce new activities. Instead, it speaks to the judging of the suggested teaching and learning activities</p> <p>Formal assessment may be conducted with the aid of instruments (e.g. via written test, portfolio) or by requiring students to complete assigned tasks (e.g. performance), and is usually recorded against a predetermined scale of grading. Informal assessment (e.g. via observation or spontaneous student expression) may also reveal important evidence of learning.</p>
Points to Note	<p>This section provides technical information that must be considered in delivering the unit. It may also include information that provides additional explanation of key concepts that may be unfamiliar to the teacher as well as suggestions for infusion within the unit</p>
Extended Learning	<p>These are opportunities for students to utilise the knowledge and skills they would have acquired in the unit in authentic</p>

	situations/experiences.
Learning Outcomes	A learning outcome is a demonstration/ behavioural evidence that an intended result has been achieved at the end of a course of study. The learning outcome tells us if pupils have understood and grasped what they have been learning.
Links to other Subjects	Suggests opportunities for integration and transfer of learning across and within different subject areas.
Key Vocabulary	This section consists of a number of words/phrases that addresses the skills, topics and content that must be covered in the unit.

## Glossary of Science Terms

Analyse	to examine in order to explain and interpret data.
Assess	to evaluate or make judgements to determine value or importance.
Classify	to use observable characteristics to form groups
Compare	to state similarities and differences between two or more items
Conclusion	findings obtained through experimenting or research.
Constraints	conditions that limit or restrict.
Construct	to make or draw using data or material provided
Control (constant) variable	the variable that is not changed during the investigation
Criteria	pre-determined principles used to make decisions or judgements.
Deduce	use information presented to reach a conclusion
Engineering Design Process	a problem solving method that consists of a series of steps used to design a product to meet certain criteria.

Evaluate	to make judgements based on analysis.
Evidence	data obtained during an investigation.
Fair test	a scientific investigation in which one variable is changed while all other variables remain the same.
Formulate	to develop a plan or strategy.
Findings	the results of a scientific investigation
Hypothesis	a part of the Scientific method in which a proposed explanation is given for an observed phenomenon. It is also a testable answer to a scientific question.
Identify	name or point out specific features or structures.
Illustrate	explain using examples or diagrams.
Infer	make deductions based on observations.
Inferences	a conclusion that is based on observation and reasoning.
Investigate	to use a systematic inquiry to find answers.
Investigation	the process of research and experimentation to find answers
Justify	provide reasons or an acceptable explanation of a phenomenon.
KWL approach/ chart	determines what I Know, what I Want to learn and what I did Learn.

Laboratory report	a record of the steps in an experiment.
Manipulate	a scientific process skill that describes handling and control of scientific apparatus.
Manipulating variable	the independent variable in an investigation that is changed by the scientist.
Model	a 3-D representation of an object done on a smaller scale.
Observe	to gather information in a scientific investigation through all the senses.
Observations	information obtained through the use of all senses
Operationally define	use a given scenario (what is observed or measured) to derive the meaning of a term.
Plot	to mark a point on a chart or graph to show the relationship between two variables.
Predict	suggest a possible outcome based on information given
Problem statement	the statement that outlines the problem to be investigated.
Prototype	a small-scale model or example of the object to be built.
Prove	to show using evidence or arguments.
Responding variable	the dependent variable in an investigation that responds to changes and is measured or observed.
Scientific drawings	line drawings done in pencil with no shading
Scientific method	a series of steps used to answer questions through observation, formulating and testing hypotheses and

	drawing conclusions.
Suggest	to offer an explanation for observations
Test	to find out by investigating
Variable	a factor or condition that can be changed or manipulated in an experiment.



# **SAMPLE LESSON PLANS**

**Subject:** Language Arts  
**Grade:** 4  
**Duration:** 1 hour  
**Theme:** Jamaican Landscape  
**Language Strands:** Listening & Speaking and Comprehension  
**Language Topic:** Listen and Communicate Understanding and Explicit & Implicit Ideas  
**Language Objectives:** By the end of the lesson, students will:

- Listen to and communicate understanding of intended information
- Differentiate between explicit and implicit ideas in text.

**Resources:** Speakers and laptop, class computers, Science textbook, online articles

**Engage:** Students and teacher will engage in a brainstorming activity focused on identifying and explaining behaviours/activities necessary before, during and after listening (e.g. asking/writing questions about the topic to be heard, listening for key words, noting repetitive/reinforced ideas). Then discuss tips to guide organization of the information for sharing (e.g. share the main ideas and at least 2 supporting details, use examples or explanations).

**Explore and Extend:** Students will listen to an audio clip which uses a DJ piece to define explicit and implicit ideas/information. They will then engage in a discussion to communicate their understanding of the information heard (paying attention to the behaviours discussed earlier). Then observe as teacher models, identifying ideas that are explicitly stated in the text and ideas that are implicitly communicated.

**Explain:** Students will work in groups to review the terms 'explicit' and 'implicit' ideas in text and state their understanding of the process modeled by the teacher. Then share their information with the whole class for discussion (paying attention to the behaviours/activities and tips from the engagement activity).

**Explore:** Students will work in pairs to read grade level text about the Jamaican landscape. Use sticky note pads to identify sections of the text that contain explicit and implicit ideas.

**Extend/Elaborate:** Students will individually select one implicit and one explicit idea from those identified in the group and complete the table below.

The Ideas from Text	Category (Implicit or Explicit)	Reason (What makes the idea implicit or explicit?)

**Evaluate:** students will work in teams to engage in a competitive game of search and find that will require that they locate and categorize ideas (implicit and explicit) on sentence strips hidden in the classroom (sentences will be extracted from text previously read). Work to ensure that their team finds and accurately categorize the most ideas.

**Assessment Criteria:**

- Listening behaviours/activities and tips to guide organization of information for sharing identified and explained.
- Discussion focuses on developing understanding of the terms implicit and explicit ideas based on the information from the audio.
- Teacher model accurately demonstrates the process of identifying explicit and implicit ideas.
- Information/explanations shared by students are accurate and relate specifically to their understanding of the terms implicit and explicit ideas in text and how they appear in text.
- Sticky note pads used to accurately identify the sections of the text that contains explicit and implicit ideas
- Table completed with ideas accurately categorized and justifications given for each classification.
- Explicit and implicit ideas accurately categorized / differentiated

<b>SUBJECT:</b> Science
<b>GRADE:</b> 4
<b>DATE:</b>
<b>DURATION:</b> 60 minutes
<b>TOPIC:</b> Unit – Sense Organs Sub-topic: Extending the Senses
<b>ATTAINMENT TARGET:</b> <ul style="list-style-type: none"> <li>○ Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans.</li> <li>○ Gain an understanding of and apply the engineering design process.</li> </ul>
<b>BENCHMARKS:</b> <ul style="list-style-type: none"> <li>• Know the basic functions of the sense organs in humans and other animals.</li> <li>• Display curiosity, objectivity and perseverance in their approach to activities</li> </ul>
<b>SPECIFIC OBJECTIVES:</b> <ul style="list-style-type: none"> <li>• Analyse situations in which the sense organs can mislead us</li> <li>• Explain ways in which technology can extend the senses</li> <li>• Create a simple device to extend the senses</li> <li>• Show interest in the outcomes of investigations on the senses</li> </ul>
<b>KEY SKILLS:</b> Collaborate, create, communicate, analyse, interpret, plan and design, justify
<b>KEY VOCABULARY:</b> sense organ, limitation, extend, senses,
<b>MATERIALS/RESOURCES:</b> Powerpoint presentation, images, pictures, different sized objects, worksheet, pictures of instruments that extend the senses, magnifying glass, microscope, spectacles, hearing aid, headphones, instructions to make periscope/ telescope, scissors, cartridge paper, straw, plastic wrap, piece of glass, tape

**CONTENT OUTLINE:** Information about our surroundings is processed through our senses. However, when compared to some animals, human senses are limited in some respects. Technology, such as special instruments, has been used to extend the human senses. These include binoculars, microscopes, periscope, hearing aids etc. These help the sense organs to gather information they would not normally be able to process based on distance and details required.

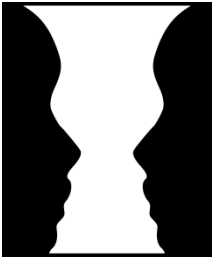
**PRIOR LEARNING:** Check that students can:  
Relate the senses to the particular sense organs

**LEARNING OUTCOME:** Students who demonstrate understanding can:

1. Cite instances where the sense organs become limited
2. Create and use instruments (technology) to extend the senses

**ASSESSMENT CRITERIA:**

- Logical explanations given
- Images are correctly identified
- Instrument works as intended
- Use and transfer of knowledge evident in design



Cup or faces



old or young woman

## PROCEDURES/ACTIVITIES

**Engage** - *How can I get students interested in this?* Use of an interesting picture/video/etc. (5 min)

- Students will view images showing different perceptions. For example, those shown below. Observations and interpretations will be recorded and discussed.

**Explore** - *What tasks/questions can I offer to help students puzzle through this?* Use of a simple investigation. (10 min)

- Students will be carried through a series of eye exercises, placing objects (differing in sizes) at different distances apart or on charts. Have students record on a sheet what they see
- In groups, students will engage in a discussion to determine what was seen and what difficulties they encountered.

**Explain** - *How can I help students make sense of their observations?* Class presentation and discussions. (10 min)

- Each group will present their findings and explanations as to the images seen and the reasons for the differences. Limitations of senses will be discussed. Students will suggest how the limitations of the senses can be corrected. Instruments (technology) that can extend the senses will be recorded by students in a table (or worksheet).

**Elaborate** - *How can my students apply their new knowledge to other situations?* Application of what they learned. (10 min)

Given a scenario where a person's eye is unable to see far objects or objects underwater, students will plan and design an instrument which can be used to extend their sense of sight. Instructions on how to make a periscope or telescope will be provided. Using the materials provided, students will plan and design their instrument.

**Evaluate** - *How can I help my students self-evaluate and reflect on the teaching and learning, and how can I evaluate the students learning of concepts and skills.* Assessment (10 min)

- Students will explain how the instrument works, materials used, and how the senses will be extended. This will be assessed using an Engineering Design Rubric. Students will peer-assess the designs and suggest improvements. An Exit Slip will be used to check for understanding.

**EXTENDED LEARNING:** Research different animals which have extraordinary sense of sight.

**LINKS TO OTHER SUBJECTS:**

- Mathematics, Resource and Technology

**POST-LESSON REFLECTION:**

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