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

NATIONAL STANDARDS CURRICULUM

EXPLORATORY CORE

GRADE 6

LANGUAGE ARTS | SCIENCE | SOCIAL STUDIES | MATHEMATICS

NATIONAL STANDARDS CURRICULUM GUIDE

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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

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

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

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)[1] 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

TABLE OF CONTENTS

MINISTRY OF EDUCATION, YOUTH & INFORMATION

NATIONAL STANDARDS CURRICULUM

LANGUAGE ARTS

GRADE 6

UNITS OF WORK

PHILOSOPHICAL STATEMENT

The Language Arts/English Language 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 21st 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 21st 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 21st 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 21st 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 6 SCOPE AND SEQUENCE OF CONTENT

STRAND: LISTENING AND SPEAKING

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	UNIT 2	UNIT 1	UNIT 2	UNIT 1
• Listen and speak with sensitivity to the feelings of others	• Show respect for the opinions of their peers during oral discussions	• Reflect on their own use of listening and speaking skills previously learnt and apply accordingly to suit the context	• Reflect on their own use of listening and speaking skills previously learnt and apply accordingly to suit the context	• Demonstrate an awareness of active listening while participating in discussions and oral presentations
• Listen to and retell different genres of audio/audio visual stories • Listen to extract main ideas from a range of sources	• Formulate oral and written responses evaluating what has been heard or viewed.	• Listen to respond to implicit and explicit information • Generate and answer questions from implicit or explicit information received	• Apply listening skills previously learnt to present context • Share Interpretations of words used in context	• Code-switch to suit a variety of purposes
• Listen in order to draw inferences from different forms of oral language: storytelling, speeches, interview		• identify and paraphrase important points in oral presentations	• Listen to determine the purpose of presentations	• Summarise and synthesize the content of information heard
• Comment on phrasing and intonation in recorded speech		• Determine diction and appropriate persuasive techniques (rhetorical questions, repitition) for oral presentations	• Select language to suit purpose and audience • Code-switch to suit a variety of purposes	• Critique the use of verbal and non-verbal communication cues during oral presentations
	• Present on information viewed or heard in a concise manner	• Apply rules of SJE in making oral presentations		• Organize thoughts and ideas and execute planned and impromptu presentations
	• Evaluate the appropriate use of SJE/JC in oral presentations and apply corrections where necessary		• Use body language to enhance oral presentation and create desired impact	• Express a range of emotions when making oral presentations • Demonstrate appropriate use of SJE/JC in persuasive arguments

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
• Identify and reflect on word recognition strategies found most helpful before, during and after reading	• Apply word recognition strategies found most helpful before, during and after reading	• Work cooperatively with their peers to examine strategies used to decode and decipher pronunciation and meaning of unknown words	• Explain choice of strategies used to decode and decipher pronunciation and meaning of unknown words	• Apply strategies to decode and decipher pronunciation and meaning of unknown words
• Select and use appropriate strategies to pronounce technical words • Use prefixes and suffixes to change word meaning •	• • Select and use appropriate strategies to pronounce technical words	• Use mnemonics and other spelling techniques to improve encoding and decoding skills	• Self-select and use spelling techniques to improve encoding and decoding skills	• Apply rules of syllabication and knowledge of root words in encoding and decoding unfamiliar vocabulary
• Review and practice dictionary skills previously learnt	• Use dictionary to aid in pronunciation and in identifying parts of speech	• Use dictionary skills to decipher the meanings of words used in isolation/in context	• Use different reference source to decipher the meanings of words used in isolation/in context	• Consult a variety of reference sources to find/ verify pronunciation and clarify the meaning of technical vocabulary
• Use context clues to determine word meanings	• Apply context clues to determine word meanings	• Identify analogies and other word relationships, including synonyms and antonyms, to determine the meaning of words	• Use analogies and other word relationships, including synonyms and antonyms, to determine the meaning of words	• Examine the connotative and denotative meaning of grade level words • Examine analogies and other word relationships, including synonyms and antonyms, to determine the meaning of words

STRAND: READING FOR MEANING AND ENJOYMENT (COMPREHENSION)

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	UNIT 2	UNIT 1	UNIT 2	UNIT 1
• Self-select reading materials and share their reading interests • Read for enjoyment		• Compare and contrast setting and plot in different stories read • Read for enjoyment and information	• Interact with peers during shared reading to express interpretations and clarify misconceptions/misinformation	• Apply various reading strategies to sustain engagement with longer texts
• Predict story outcomes before and during the reading task	• Use text information to confirm or modify predictions made during reading	• Discuss explicit information and share personal views • Distinguish facts from opinions/reality from fiction during reading discussions	• Respond to different levels of questioning i.e., literal, inferential and critical	• Use evidence from text to deduce implicit information • Analyse setting, character and plot using evidence from across a text to infer the outcome of the story
• Interpret punctuation marks to ensure fluency and accuracy in the information/meaning gained from text.	• Read with expression and fluency to understand/interpret text information	• Set and answer questions before, during and after reading to guide understanding of text information	• Distinguish facts from opinions	• Infer writers' perspectives from what is written and what is implied
• Identify main idea/important details in text • Summarize main findings in a text	• Use main ideas/ important points to identify theme(s) in texts	• Interpret messages, moods, feelings and attitudes conveyed in stories, poetry and prose	• Analyse how messages, moods, feelings and attitudes are conveyed in stories, poetry and prose using inference and deduction in reference to the text	• Identify and comment on the use of elements of poetry – e.g. rhyme, figurative language

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	**UNIT 2**	**UNIT 1**	**UNIT 2**	**UNIT 1**
• Identify and discuss connections with texts (text-to-self, text-to-text)	• Use Text Sets to make connection with texts (Text –to-text, text-to-self)	Use Text Sets to make connection with texts (Text –to-text, text-to-self and text-to-world)	• Recognize signal words used and make connection to different text structures	• Infer writers' perspectives from what is stated and what is implied
• Identify and discuss the linguistic devices (imagery, connotation and denotation) used to sway the reader	• Discuss the linguistic devices (imagery, connotation and denotation) used to argue, persuade, mislead and sway the reader in selected texts	• Respond critically to the linguistic devices (imagery, connotation and denotation) used in literature/text		• Evaluate linguistic techniques (imagery, connotation and denotation) used by writers and poets noting the effective use of these techniques
• Identify and discuss point of views in narratives	• Make distinctions between the points of view of the characters and the author	• Cite biases in point of views between authors and characters in selected narratives/texts	• Cite evidence in text which identifies the author's viewpoint	• Critique biases in viewpoints between authors and characters in selected narratives/texts

STRAND: READING FOR INFORMATION (RESEARCH AND STUDY SKILLS)

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	UNIT 2	UNIT 1	UNIT 2	UNIT 1
• Review and use internal text features previously learnt– headings, sub-headings, bullets, text-boxes, underlined words, illustrations, italics, bold text.	• Use table of contents and index to locate information in texts • Use graphs, maps and charts to summarise and present information with greater efficiency and accuracy	• Use glossaries to support the comprehension of fiction and non-fiction texts • Compile own glossaries of terms specific to areas of study / information communicated in projects	• Use a variety of external text features in preparing projects and different types of texts	Use a variety of internal and external text features to prepare and analyse a variety of texts • employ different internal text structures (cause and effect, comparison and contrast, time sequence) – to present research information
• Use dictionaries with greater degree of accuracy to support different oral and written tasks	• Use a range of non-fiction sources, including online sources, to locate information	• organise and synthesize information gathered from various sources	• organise and synthesize information gathered from various sources	• synthesize and present information located from various sources
• Skim and scan to decipher main ideas	• Scan to extract specific information			

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
• utilise different parts of speech: conjunctions, nouns, prepositions to construct more complex sentences review and use adverbs • Apply the rules of relative pronouns (that, which, whom)and Subject/verb agreement to oral and written sentences	• Utilise different parts of speech: conjunctions, nouns, prepositions to construct more complex sentences	• Distinguish between declarative, exclamatory, and interrogative sentences.		• Use negative and interrogative sentences
• Distinguish between abstract and concrete nouns • Use abstract nouns to express ideas orally and in writing	• Use singular and plural nouns in different contexts	• Use demonstrative pronouns appropriately in written and oral sentences	• Construct questions using interrogative pronouns within the appropriate context	• Use singular and plural reflexive pronouns appropriately to construct sentences
• Extend ideas using subordinate and main clauses	• Use connectives to show the relationships between ideas	• apply the past perfect tense appropriately to regular and irregular verb forms)	• Practice using various tenses (present, past, future, continuous, past perfect) to create vibrant and engaging texts	
• Use punctuation marks to create varying effects (comma, full stop, question marks) • Apply knowledge of the basic rules of punctuation and Capitalization when writing	• Use, speech marks, exclamation signs, semi colons, and colon accurately • Apply knowledge of the basic rules of punctuation and Capitalization when writing	• Place commas and quotation marks correctly in written dialogue/direct speech	Use punctuation marks (brackets, colons, ellipses, dashes) appropriately	Critique the use of various punctuation marks in different texts

STRAND: COMMUNICATION (WRITING)

TERM ONE (1)		TERM TWO (2)		TERM THREE (3)
UNIT 1	UNIT 2	UNIT 1	UNIT 2	UNIT 1
• dentify and discuss the importance of key phrases (explain, describe, state, three ways) in writing prompts		• Analyse and differentiate between the statement and instruction in writing prompts		• Analyse and differentiate between the statement and instruction in writing prompts
• Review the stages of the writing process (pre-writing, drafting, revising, editing, (and publishing)	• Use the stages of the writing process to compose narrative and expository pieces	• Develop and use editing checklists to evaluate their own writing	• Apply stages of the writing process in producing a range of written pieces	
• Identify and use various writing techniques in responding to narrative writing prompts (sensory details, , dialogue etc.)		• use adjectives, adverbs and descriptive phrases to create different effects in writing		
• identify and use topic sentences, supporting details and concluding sentences	• Write paragraphs in which topic sentences, supporting details and concluding sentences can be clearly identified • Use link/transitional words and phrases to connect paragraphs	• Organize paragraphs to reflect different internal text structures (compare & contrast, cause & effect) • Use a range of signal words to indicate transitioning in writing		• Compose narrative and expository pieces to satisfy a variety of text structures
• review and extract figures of speech (metaphor, similes, onomatopoeia) from a variety of texts	• Use figures of speech (metaphor, similes, onomatopoeia) to add impact to their writing	• identify and use figures of speech (personification and alliteration) to add impact to their writing	• Use figures of speech to write different types of texts including poems	

GRADE 6 LANGUAGE ARTS UNITS

TERM 1 UNIT 1

INTRODUCTION TO THE UNIT

This unit seeks to build on the skills taught in Grade 5 via the theme 'Our Common Heritage", sub-theme 'Culture and Heritage' and the focus question, 'What was Jamaica's road to independence?' It facilitates the development of active listening and speaking skills through discussion of pre-independence history, culture and heritage. It also aims to develop reading fluency through the application of grade-appropriate word recognition strategies regarding sight words, phonics and structural elements such as affixes. Text Sets are used to reinforce and extend students' knowledge of main ideas, and their ability to summarise information and make inferences. Students are also given the opportunity to study the meanings of words and conduct basic research by effectively using books and a range of other sources, including online sources. In this unit, they also continue to practise using the stages of the writing process.

As well as the above mentioned materials, the unit also allows children to interact with content area texts and newspaper articles. Materials created by the teacher are also featured. Additionally, the unit makes use of resources within the community through the sharing of historical events relating to Jamaica's independence.

Most of the activities give students an opportunity to practise specific language skills. In some cases, the teacher may need to explicitly teach rules, structures and strategies prior to these activities. The content outline for Grade 5 must therefore be consulted for details on the scope of content/skills to be delivered.

Prior Learning

Check that students:

- Have awareness of basic conventions of listening and speaking
- 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 recognising 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
- Are able to write to narrate, persuade and inform

Focus Question: What was Jamaica's road to independence?		
LISTENING & SPEAKING		

ATTAINMENT TARGET(S):	OBJECTIVES	
• 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 creatively	Students will:: • Listen and speak with sensitivity to the feelings of others • Listen to and retell different genres of audio/audio visual stories • Listen in order to draw inferences from different forms of oral language: storytelling, speeches, interviews • Listen to extract main ideas from a range of sources • Comment on phrasing and intonation in recorded speech	

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT CRITERIA
Listen to read aloud and view audio visuals to gain knowledge on culture and heritage. Make note of new information in journals.	• Listen and take notes • Identify and discuss main ideas	Journal notes are accurate and consistent with what was heard/seen

Share inferences drawn from what was heard. Discuss these inferences based on the main ideas/theme of the presentation. Retell the main ideas of the story/information/documentary heard.	• Draw inferences	Inferences support the main ideas/themes presented Main ideas identified are accurate and consistent with what was heard
Host a sharing session entitled: "Pieces from the Past". Invite elderly persons or other resource persons from the community to share, in the form of a story, their experiences before Jamaica gained independence. Ask questions for clarification and for information. After seeking the speaker's permission and with assistance, use recording devices to capture the sharing session. Story can be played back for class discussion. After the storytelling, distinguish between targeted SJE vocabulary and evidence of use of JC. In groups, listen to the recorded sessions and discuss ideas for organising a skit/play to recreate episodes of "Pieces from the Past". Make decisions about the characters, roles and settings. Share ideas with the class to get feedback on how to improve the skit/play. Present skit/play to the class for evaluation and feedback.	• Ask questions • Communicate using SJE and JC	Questions asked are clearly stated to achieve responses Questions posed and ideas articulated demonstrate distinctions between SJE and JC (as evident in self-correction techniques used) Skits/plays accurately reflect the details shared in "Pieces from the Past" activity Use of SJE and JC are appropriate to context presented.
Invite a parent/student/member of the community to read aloud a newspaper or magazine article related to the theme. Listen and take note of the main ideas presented. Pay careful attention to phrasing and pronunciation and discuss the use of intonation in the presentation of the main ideas. Listen and ask questions related to the presentation. Use polite words and be courteous to the presenter when asking and responding to questions/ comments.	• Model phrasing, intonation and pronunciation • Extract main ideas • Ask and answer questions	Discussions include the effect intonation and pronunciation have on meaning/understanding Notes taken accurately capture the main ideas presented Questions asked are sensitive to the feeling of the presenter

Focus Question: What was Jamaica's road to independence?	
READING WITH FLUENCY & RECOGNITION (WORD RECOGNITION & VOCABULARY DEVELOPMENT)	

ATTAINMENT TARGET(S):	OBJECTIVES:
• Use a range of word recognition clues to identify new words • Automatically recognise words (including basic sight word lists) through repeated exposure and mnemonic devices • Use a range of approaches to learn and spell irregular words • Build vocabulary through various strategies • Demonstrate correct usage and spelling of different homophones	Students will:: • Identify and reflect on (or use) word recognition strategies found most helpful before, during and after reading • Identify and use appropriate strategies (e.g. blends, clusters, endings, structural analysis and such conventions.) to pronounce technical words • Use prefixes and suffixes to change word meaning • Review and practice dictionary skills previously learned • Use context clue techniques to determine word meanings

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT CRITERIA
Read episodes/segments about Jamaica's road to independence from given texts. Use syntactic/word order clues and picture clues to identify unfamiliar words. Discuss with a peer the parts of speech of unfamiliar words in an attempt to identify the meaning of the word in context. In journals, write sentences using the unfamiliar words identified. In groups, create and record a chain story about an aspect of Jamaican culture. Use story prompts and semantic/meaning clues discussed in previous lessons to generate ideas for their stories. Use the dictionary to assist with word meaning and spelling where necessary. (Emphasis should be placed on verifying the meaning of new or unfamiliar words by consulting the dictionary.)	• Apply strategies • Recognise and pronounce technical words • Use dictionary	Sentences in journal reflect an accurate application of the meaning of unfamiliar words Chain story uses words that are accurately and appropriately pronounced Meanings of unfamiliar words correctly verified with dictionary

Read given passages and use context clues to correct false or misused homophones. **Example of Passage** I love my <u>too</u> <u>Ants</u>. <u>Dey</u> came over to <u>hour</u> <u>manner</u> and brought <u>dear</u> dog. I got <u>too</u> baby-sit <u>de</u> dog, <u>scents</u> <u>dey</u> were flying on a <u>plain</u> to a mountain <u>peek</u> for a ski trip. I got along well with <u>dear</u> dog while it stayed with me, and he had a good time, even though he was scratching and trying <u>two</u> <u>flea</u> from his <u>flees</u>. My mom was angry, <u>dough</u>, when he stuck his <u>knows</u> and <u>pause</u> into the <u>desert</u> bowl, then left <u>read</u> paw prints on the carpet. He wags his <u>tale</u> every <u>mourning</u> when he wakes up to show <u>dat</u> he is happy. He stayed a <u>hole</u> <u>weak</u>, and he didn't even <u>brake</u> a thing. (Similar passages can be given to groups or whole class for additional practice.)	• Use context clues • Decode and determine word meanings	False or misused homophones effectively corrected using context clues
In pairs or small groups, underline unfamiliar words in self-selected/grade level texts. Identify a digraph, letter blend or consonant cluster that is familiar in the underlined word. Use the familiar part of the word to help in identifying and pronouncing the word correctly.	• Decode/identify words • Apply various word recognition strategies	Diagraph, letter blend and consonant cluster correctly identified Unfamiliar words accurately identified and pronounced
Establish the purpose/relevance of prefixes and suffixes to the reading process. Differentiate between prefixes and suffixes and make a prefix and suffix chart to figure out the meanings of words linked to independence. For example: 	Prefix	Meaning	Word Example	Word Meaning
---	---	---	---
pre-	before	Pre-independence	Before independence | Search websites for prefixes, suffixes and their meanings. Write sentences using prefixes and suffixes.	• Identify prefixes/suffixes • Define prefixes/suffixes • Conduct online searches	Chart correctly outlines prefixes and suffixes, along with their examples and meanings Sentences written reflect the accurate use of prefixes and suffixes

Use the DISSECT word recognition strategy to identify the meaning of unfamiliar words in selected passages about our national heroes. Write out the main ideas presented in the given passages.	• Apply word recognition strategies • Assess selected strategies	Main ideas and word meanings correctly identified in the passage (by use of the selected word recognition strategy) Journal entry outlines how the DISSECT Strategy aided comprehension of unfamiliar words and main ideas

DISSECT WORD RECOGNITION STRATEGY

D= Discover the context by skipping unknown word and reading to the end of the sentence to see if the word can be determined by the meaning of the sentence.

I= Isolate the prefix and box it off.

S= Separate the suffix and box it off.

S= Say the stem and then say the stem along with any prefixes or suffixes.

E= Examine the stem, if it cannot be named easily, by using one of three rules:

- If the stem or a part of the stem begins with a vowel, separate the first two letters. If the stem or part of the stem begins with a consonant, separate the first three letters.
- If rule number one does not work, isolate the first letter of the stem and then try to apply rule one.
- When two different vowels are together in the stem, pronounce both vowel sounds. If that doesn't "sound right", try again, saying each vowel sound in turn until the word is identified.

C= Check with someone else if the word is still unknown.

T= Try the dictionary if no help is available.

Taken from Building Literacy Knowledge for Education Professionals: Overview: Reading: Word Recognition: Sight Word Identification. (2017). Emstac.org. Retrieved from http://www.emstac.org/registered/topics/literacy/overview/sightword.htm		
Make a journal entry (write) outlining how the DISSECT strategy assisted understanding of the main ideas highlighted in the passage.		

Focus Question: What was Jamaica's road to independence?

Reading for Meaning and Enjoyment (Comprehension)

ATTAINMENT TARGET(S):	OBJECTIVES:
- 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	Students will:: - Self-select reading materials and share their reading interests - Read for enjoyment - Predict story outcomes before and during the reading task - Observe and read, interpreting punctuation marks to ensure fluency and accuracy in the information/meaning gained from text - Skim, scan and apply other reading strategies to locate main ideas and other specific information in text - Summarise main findings in a text - Identify and discuss connections with texts: text-to-self, text-to-text and text-to-world; interpret texts accurately and with expression - Identify and discuss the linguistic devices used to sway the reader - Identify viewpoints in narratives and make distinctions between those of the characters and those of the author

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT CRITERIA
Complete reading interest survey and talk about reading likes/dislikes, time spent on the activity, books read lately, number of books owned, favourite topics, favourite movies, favourite entertainers and movie stars.	- Complete surveys - Discuss experiences	Reading Interest Survey completed based on personal reading interests
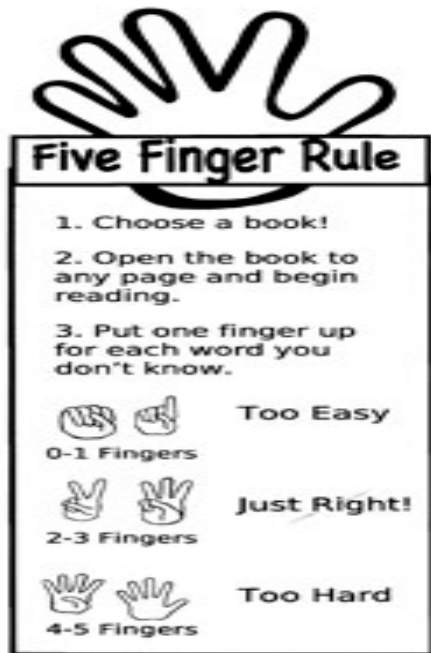
	• Analyse information • Select reading material	Discussions demonstrate the ability to talk freely about their reading interests and respond to all areas of the prompt
Five Finger Rule 1. Choose a book! 2. Open the book to any page and begin reading. 3. Put one finger up for each word you don't know. Too Easy — 0-1 Fingers Just Right! — 2-3 Fingers Too Hard — 4-5 Fingers Learn the steps for choosing 'just right' books appropriate to reading level and interest then read independently. The process will be modelled, followed by a whole class activity, before allowing students to choose books on their own from online or offline sources. View and respond to 'just right' books posters such as:		Books selected by students are based on the Five Finger Rule/Good-Fit Books posters

I PICK Good-Fit Books

I choose a book

Purpose – Why do I want to read it?

Interest – Does it interest me?

Comprehend – Do I understand what I am reading?

Know – Do I know most of the words?

Kelly Jordan 2011

Draw conclusions based on information heard/read. Use Think Aloud strategy to state the process of drawing conclusions. For example, 'If Indians were here when Columbus arrived, he couldn't truly have discovered Jamaica.'	• Listen/read for information • Draw conclusions	Conclusions drawn are based on the information in text and are in keeping with students' prior knowledge/experiences
Review main idea and signal words/phrases such as: mostly, theme, best title etc. Read a 'just right' nonfiction book from the Text Sets. Use a graphic organiser to show the main idea and supporting details.	• Extract main ideas and supporting details	Graphic organiser accurately depicts main ideas and supporting details
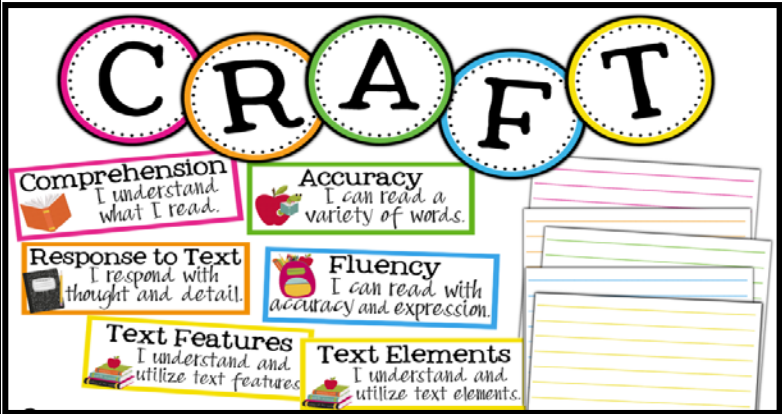
Use text features and text information presented in a story/article about one of Jamaica's cultural icons to make predictions before and during reading activity. Write predictions in journal and check predictions during reading activity. **See below sample prompts to help students predict:** • Look at the title of the story/article. Based on the title, what do you think is going to happen in this story? What do you think the main idea of the article will be? Share your prediction with the entire class or a small group. Which prediction do you think will be correct? • Read the first half of the story/article and confirm or change your predictions about the piece. • Complete your reading of the story of article. How did predicting the outcome help you to understand what you read?	• Predict story outcomes • Identify main ideas	Predictions in journals are reasonable and appropriate based on text features and information presented in text
In groups, re-punctuate Jamaica's National Pledge in order to modify and personalise its meaning. Perform the pledge revised by another group for the class.	• Use punctuation marks	Revised National Pledge applies punctuation accurately to provide an acceptable and alternative interpretation Performance/recital of the National Pledge reflects the intended interpretation based on punctuation used
Use a graphic organiser to connect information/details read about culture and heritage in three ways: • **Self to Text**: *What experience does this text remind me of?* • **Text to Text**: *How is this text similar to or different from other things I have read?* • **Text to World:** *How are the events in the text similar to or different from things that happen now in Jamaica?* **Use information in graphic organiser to create a one paragraph summary of the information presented.**	• Represent information graphically • Make connections with text	Graphic organiser accurately demonstrates how students connect to the text (self to text, text to text and text to world). Paragraph summary accurately reflects the main ideas and supporting details presented in the text. Standard rules relating to grammar and mechanics are observed
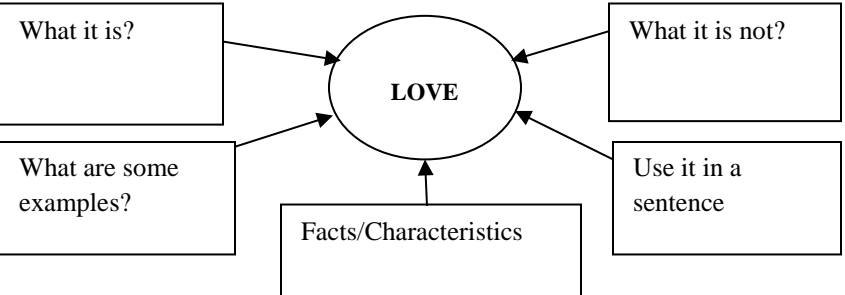
Examine the images, connotation and denotation used in a Jamaican Folktale or a story from Jamaican Folklore to get the reader to understand a particular perspective or main idea. In journals, respond to the following prompts: • What linguistic and literary devices were used in the folktale? (Identify at least three.) • Were the images and words which were used effective? How did they aid your understanding? • Would your understanding be different if you heard the story from the perspective of another writer/character? In groups, create a version of the story from the point of view of another character in the story for presentation to the entire class.	• Identify linguistic devices • Critique use of linguistic devices • Discuss point of view	Journal entries accurately identify and appropriately apply linguistic devices and narrative perspectives to meaning Re-created stories present a plausible and credible version of the original tale

Focus Question: What was Jamaica's road to independence?
READING FOR INFORMATION (RESEARCH & STUDY SKILLS)

ATTAINMENT TARGET(S):	OBJECTIVES:
• Research information 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 synthesising information gained from a range of sources.	Students will:: • Review and use external text features/structures previously learned – headings, sub-headings, bullets, text-boxes, underlined words, illustrations, italics, bold text. • Use dictionaries with greater degree of accuracy to support different oral and written tasks. • Skim passages for main ideas.

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT CRITERIA
Revise the Text Features chart, noting the different types of features and their purposes.	• Identify text features • Use text features	Charts reflect appropriate predications based on text features used

In small groups, read each text feature in a given text in the order that they appear and make predictions, ask questions and make connections about the expected learning from the piece. As each feature is read, students must think about and discuss how the information relates to the main idea of the text (group Think-Aloud). Share predictions about the text with the entire class on a chart. Read the assigned text. After reading text, use assigned checklist to rate the predictions made by each group.	• Make predictions	
Use text features (heading, subheadings, signal words and phrases, textbox information, etc.) to skim and scan information presented in non-fiction texts from Text Sets about Jamaican culture and heritage. Present findings in a creative format.	• Use text features • Skim and scan for information	Information presented is relevant to the topic and aligned to source documents
In small groups, use table of contents, index, dictionaries and encyclopaedia to find and understand information on Jamaica's culture and heritage. Use information located to create poster or pamphlet on topic. Use dictionaries to aid understanding of information presented. Make a reference list showing the books read, titles and authors (scaffolding activity)	• Use text features • Use dictionaries/ encyclopaedia • Compose reference list	Information presented on poster or pamphlet is accurate and adequate Reference list is accurate and correctly formatted
Select a book from the Text Sets on culture and heritage for independent reading. While reading, make notes on important details/events.	• Take notes	Notes accurately state the important details and events from the text

Focus Question: What was Jamaica's road to independence?		
LANGUAGE STRUCTURE (GRAMMAR & CONVENTIONS)		
ATTAINMENT TARGET(S):	**OBJECTIVES:**	
• Write sentences, paragraphs and extended pieces which are grammatically accurate and correctly punctuated using SJE and JC. • Use and adapt a range of sentence structures according to context, distinguishing between SJE and JC.	Students will:: • Apply the functions of parts of speech: conjunctions, nouns, prepositions • Identify and use adverbs • Apply the rules of relative pronouns (that, which, whom) and subject/verb agreement to oral and written sentences • Distinguish between abstract and concrete nouns • Extend ideas using subordinate and main clauses • Use punctuation marks to creatively vary effects (comma, full stop, question marks, colon, semi-colon) • Apply knowledge of the basic rules of punctuation and capitalisation when writing	
SUGGESTED TEACHING AND LEARNING ACTIVITIES **STUDENTS WILL:**	**KEY SKILLS**	**ASSESSMENT CRITERIA**
Use CRAFT strategy to self-monitor reading of texts. Read aloud with fluency, paying attention to punctuation marks, word accuracy and enunciation.	• Apply CRAFT strategy • Use punctuation marks	Independent reading (read aloud) demonstrates fluency and the use of self-monitoring strategies

Review paragraph writing (main ideas and supporting details), conjunctions to connect sentences and paragraphs and the use of linking/transitional words and phrases. Write a letter to a friend explaining the relationships among the Europeans, Africans and Asians (Chinese and East Indians) in the Caribbean in the post-emancipation era. Use simple and complex sentences in their writing. Make a linking word/phrase list for reference.	• Develop paragraphs • Use linking words/phrases • Use conjunctions	Transitional words/phrases accurately used in sentences and in developing paragraphs Letter correctly uses simple and complex sentences to present points on the topic List of linking words/phrases incorporates a variety of words and expressions organised in categories of purpose (e.g. words and phrases relating to sequence, emphasis, example, etc.)
Field Trip Activity – Visit the New Seville (St Ann's Bay) to learn about the history of Jamaica's first capital. (Alternative to field trip – view video on the History of New Seville.) Write a newspaper article that re-tells the history of New Seville (St Ann's Bay), the first capital of Jamaica.	• Apply language structure rules	Newspaper article demonstrates the correct use of relative pronouns, subject-verb agreement, tenses, punctuation and capitalisation. Language Checklist is correctly applied to evaluate the work of others

Review the work of a peer using the given language checklist. The checklist should evaluate the correct use of relative pronouns, subject-verb agreement, tenses, punctuation and capitalisation.		
Write complete sentences by supplying main clauses to complement given subordinate clauses (and vice versa). e.g. Form a complete sentence by attaching the main clause **We did not have our own flag** to the subordinate clause **before Jamaica gained independence.**	• Formulate main and subordinate clauses • Combine main and subordinate clauses	Sentences formed demonstrate meaningful and accurate combination of the main and subordinate clauses
Complete word concept map to show understanding of abstract nouns. What it is? What it is not? LOVE What are some examples? Use it in a sentence Facts/Characteristics	• Identify abstract nouns • Use abstract nouns	Completed concept map accurately and adequately defines and explains the abstract noun and gives acceptable examples of this noun
Make journal entries based on new information found in text on independence. Use sentence leads to respond to the text. For example: I wonder ... I began thinking of ... I suppose ... I noticed ... I was surprised when/about ... I thought ... Why did ... What if ... The text was ...	• Respond to texts • Complete sentence leads • Make journal entries	Journal responses are based on text about culture and heritage.

Focus Question: What was Jamaica's road to independence?

COMMUNICATION (WRITING)

ATTAINMENT TARGET(S):	OBJECTIVES:
• Develop approaches to the writing process to enable students to organise their ideas into a coherent structure, including layout, sections and paragraphs • Write paragraphs which have linking sentences	Students will:: • Identify and orally express the importance of key phrases (explain, describe, state, three ways, etc.) In writing prompts • Review the strategies of the writing process (pre-writing, drafting, revising, editing and publishing) • Identify and use various writing leads techniques in responding to narrative writing prompts: action, snapshot, sound, question, flashback, talking • Write paragraphs in which the topic sentence, supporting details and concluding sentence are easily identified • Review and extract figures of speech (metaphor, similes, onomatopoeia) from a variety of texts

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT CRITERIA
Revise common writing prompts and their meanings from previous lessons Examine sample prompts to identify and explain key terms. Engage in teacher led discussion focussing on the importance of understanding key terms in prompts. Whole Group Game – Students take turns selecting a sentence strip with a writing prompt. They will identify the key terms in the prompt then relate how they would use the key terms to respond to the prompt. Discuss why prompts are useful to writers	• Identify key terms • Discuss key terms	Strips with writing prompts correctly identified Discussions on usefulness of writing prompts highlight at least three reasons why writing prompts are important

Discuss the elements of narrative writing: entertaining beginning, description of setting, character or object, build suspense, climax, solution and extended ending. (Emphasise that narratives can be personal or eye witness account.)	• Discuss story elements and techniques	Discussions adequately explain all the elements of narrative writing
Develop a narrative writing prompt bank (various narrative writing topics) for the class based on pre-independence, culture and heritage. Create at least five narrative writing prompts and post them on class blog or wiki. Example: *Pretend you are a Spaniard who came to Jamaica with Christopher Columbus on a ship. One night some English soldiers wanted to capture you. Relate your experiences. Remember to write the chain of events in the order each occurred. Ensure that you give the story a title.*	• Develop narrative writing leads • Make blog post	Prompt banks are adequate and appropriate to the topic Prompts posted on blogs relate to the theme as well as accurately illustrate narrative text structure
Based on readings from Text Sets, write a story in which they compare and contrast **pre-independence** and **post-independence** lifestyles in Jamaica. Use the writing process checklist as they complete this activity. Start with the prompt, "The day after independence was…" Be sure to make good use of figurative and descriptive language in the story.	• Implement the writing process • Use checklist • Write paragraphs • Apply writing leads techniques	• Stories adequately and correctly apply sensory details, figurative devices, dialogue and narrative techniques to compare and contrast pre- and post-emancipation lifestyles.

ICT ATTAINMENT TARGET(S):

- 💻 **COMMUNICATION AND COLLABORATION – Use technology to communicate ideas, information and understanding for a variety of purposes.**

- 💻 **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING – Use technology to develop a logical process for decision making and problem solving.**

- 💻 **DIGITAL CITIZENSHIP – Recognise the ethical, social and legal responsibilities in the use of technology.**

Learning Outcomes

Students are able to:

- ✓ Extend vocabulary by using different structural elements – prefixes, suffixes, syllabication and other decoding strategies
- ✓ Improve the quality of their writing by applying stages of the writing process
- ✓ Demonstrate active listening and good 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
- ✓ Apply techniques of summarising and inference to determine meaning from texts
- ✓ Demonstrate competence in the use of the structures and conventions of Standard Jamaican English

Points to Note	Extended Learning
- 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. - Students should be carefully supervised as they use the Internet. - Students will discuss the debating process. If possible, allow students to view debates then relate their observations on the activity. - All strategies should be carefully modelled. - Check students' knowledge of phonics before embarking on teaching digraphs. - The unit includes links to: Civics (pride in Jamaica) Mathematics (Venn diagram) Social Studies (culture and heritage)	Students should practise the Communication Protocol at home and in the wider community. They should also practise the use of: language conventions, grammatical structures, listening and speaking skills, writing skills and processes, fluency and comprehension skills in the context of Text Sets appropriate to the Unit Theme and focus question.

Resources	Key vocabulary
• Social Studies text(s) • Text Sets: collection of resources from different genres, media and levels of reading difficulty • Supplementary reading materials – books related to the physical landscape, advertisements, pamphlets, posters • Communication Protocol Chart • Observation Checklist • Writing Process Checklist • Multimedia projector and laptop • Grade 6 Word List • Internet and any other available technologies	Communication Protocol Skim Scan Subordinate clause Abstract nouns Writing process Culture Heritage Independence

Links to other subjects:

The unit allows links to other subjects such as:

- Social Studies – Ethnic groups, culture and heritage
- Information Technology – Online resources and research

GRADE 6 LANGUAGE ARTS UNITS

TERM 1 UNIT 2

INTRODUCTION TO THE UNIT

This unit explores the theme 'The Physical Environment and its Impact', focussing on landforms. The activities explored lead to the growth of oral expression by using language in context. The unit also allows students to use the expressive modality of writing to respond to what they read, while ensuring that reading fluency is further developed through building various word attack skills while paying attention to punctuation and other grammar conventions. Students are asked to predict, skim for ideas, compare and contrast information and write complex sentences as they reinforce or respond to what they read. They will be allowed to evaluate the oral presentations of their peers and become more adept at paraphrasing and locating specific details from what they read or hear. The unit also focuses on the use of text features to improve understanding of materials read.

Aspects of the theme 'Landforms' are explored while students' language skills are improved as they use resources such as story boards, digital stories, recorded clips and class scripts, complemented by content area material from books and the Internet. The use of innovative ideas such as the 'Listening Focus Chart' and 'What's the Point Circle' are also suggested. Students are also given numerous opportunities to use technological devices and software such as Movie Maker to further enhance their learning and presentations.

Most of the activities give students opportunities to practise specific language skills. The teacher may need, in some cases, to explicitly teach rules, structures and strategies prior to these activities. The content outline for Grade 6 must therefore be consulted for details on the scope of content/skills to be delivered.

Focus Question: **How do we use our expression to show our understanding of land formations and their impact on the environment**?

LISTENING AND SPEAKING

ATTAINMENT TARGET(S):	OBJECTIVES:
 • 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 • Explain and comment on speakers' use of language, including use of SJE and JC, vocabulary, grammar and other features	Students will:: • Show respect for the opinions of their peers during oral discussions • Formulate oral and written responses evaluating what has been heard or viewed • Present information viewed or heard in a concise manner • Evaluate use of language and apply corrections where necessary

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT CRITERIA
Note in journals the similarities between facts and mountains (e.g. hard to change or move) and the similarities between opinions and small stones (e.g. they can be changed or moved more easily). Listen to or watch a brief report or documentary clip on land formations, how they were formed, their location or what they are used for. Identify facts and opinions from the clip and record these in notebooks. (This can be done in a fun way, e.g. Have a fact-o find game where students, boys vs. girls, compete to find facts and opinions in a short piece.)	• Listen to/view reports • Distinguish between fact and opinion	Journal entries appropriately describe how facts are similar to mountains and opinions are similar to stones Facts and opinions accurately identified and distinguished in notebooks.
Work in groups to list facts and opinions on the LFC (Listening Focus Chart), e.g. Valleys are low land forms found at the base of two slopes and are usually grassy. Valleys are formed when….	• Evaluate use of language.	Listening Focus Chart accurately and appropriately completed

In groups, listen to/watch a more extensive clip and form judgments using the LFC to assist.	• Categorise facts and opinions • Formulate written/oral responses	Judgments formed can be substantiated by details presented in clip	

What I Heard…	Fact	Opinion	Judgement
Valleys are low land formations found at the base of …	√		This is an objective piece since it has more facts than opinions.
They are usually grassy…		√	
	√		
Total	2	1	

*For another lesson, students can be asked to design their own LFC following instructions on brevity in writing. Focus questions will be used to guide them in this process.

Listen to simple content being read from class script. This information should be adapted from the text).

Create and record fact files using the information presented in audio or video on each land form (pretending each is a person). Choose a method of presentation from the following:
  o Student in role: One person from the group pretends to be the landform and answers prepared questions from a panel (the panel would act as if the questions are new to them). The student should give his/her opinion on why s/he believes this landform is superior to others
  o Chart/Presentation Software: Students design a multimedia presentation using the facts they have acquired
  o Digital Story: Students use video editing or creation software to place pictures, scanned drawings and narration together to make a short documentary about a particular land form
  o Vox-Pop: Students prepare members of their group to pretend to be part of the regular crowd and say what they
	• Formulate sentence types
	• Use SJE /JC conventions
	• Use verb tense
	• Create digital story
	• Respect the opinions of others
		Fact file created on leach land form is accurate
		
		Facts creatively conveyed to audience
		
		Evaluation instruments appropriately applied
		
		Suggested Scoring Rubric:
		• 4 marks for information accuracy
		• 3 marks for accurate use of SJE grammar
		• 2 marks for interaction of audience
		• 1 mark for overall presentation
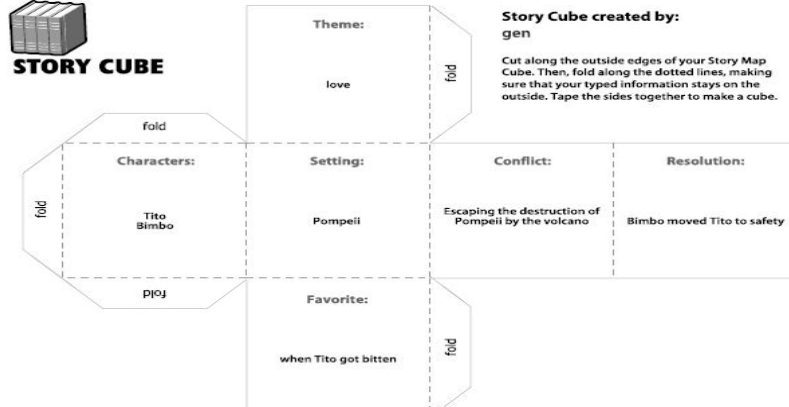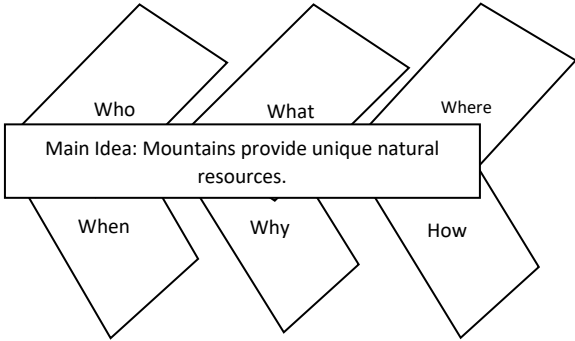
<table>
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know about specific landforms, using any language they choose to express themselves in
- o Panel Discussion: Members of the group act as resource person and give both opinions and information on landforms and how they impact society

(Some activities above can be recorded and later played back in class for discussion and enrichment.)

In groups, evaluate the presentation of other groups by:

- Listening for SJE and Jamaican Creole words that sound like English (false synonyms), e.g. at/hot – [at]; doze/those – [duoz]; dem/them – [dem]. (N.B. This builds on work done in another unit.)

- Listening for the use of correct subject verb agreement or another aspect of grammar being focussed on

- Listening for use of sensory words and phrases

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Listen to recorded vox pop on the impact of specific land formations in the local environment (e.g. sinkholes) and record statements on a checklist such as the one below. (Students can create their own vox pop recordings prior to the activity.)
Identify whether these statements use the SJE or JC.
Evaluate the appropriateness of the language used. (This is done as they identify areas for improvement.)
Write improved scripts, ensuring the ideas expressed in the vox pop do not change despite any changes to the language they are expressed in.

Sentence	SJE	JC	Appropriate	Not Appropriate	Unsure	Reason

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- Record audio
- Paraphrase statements
- Identify language forms
- Construct sentences

</td>
<td>

Checklist appropriately and correctly completed

Corrected sentences reflect SJE structure

</td>
</tr>
</table>

Focus Question: **How do we use our expression to show our understanding of land formations and their impact on the environment**?

READING WITH FLUENCY & RECOGNITION

(WORD RECOGNITION & VOCABULARY DEVELOPMENT)

ATTAINMENT TARGET(S):	OBJECTIVES:
• Automatically recognise words (including basic sight word lists) through repeated exposure and mnemonic devices • Use a range of word recognition clues to identify new words • Use a range of approaches to learn and spell irregular words • Build vocabulary through various strategies	Students will:: • Apply word recognition strategies found most helpful before, during and after reading • Use blends, clusters, endings and other such conventions to pronounce technical words • Use dictionary to aid in pronunciation and in identifying parts of speech • Apply context clue techniques to determine word meanings

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:		KEY SKILLS	ASSESSMENT CRITERIA
Create word journal in which they will select 5-10 roots to review each week. Rehearse the information on the roots chosen throughout the week and share the most interesting one with their classmates at a designated time. (Teacher can use activity to aid in determining word meaning as well as the spelling of targeted words.) e.g.<table><tr><td>Root</td><td>Meaning</td><td>Related Words</td></tr><tr><td>atmos</td><td>air</td><td></td></tr><tr><td>Sphere</td><td>circular</td><td></td></tr><tr><td>hydro, hydra</td><td>water</td><td>Hydrometer</td></tr></table> Search for unique words in the unit with blends and clusters from Find-a-Word Puzzle, e.g. mountains		• Identify and use root words • Spell words • Apply spelling rules • Use homophones • Identify antonyms • Use dictionary	Words added to journals are correctly spelled and used in context Words added to antonym dictionaries are correctly spelled and meanings are accurate Words used in the Homophone Game are correctly spelled and meanings are correctly stated

Add words to the journal that have peculiar spellings and are best learned by sight, e.g. plateau. Create an antonyms dictionary using appropriate software or traditional means. Support the development of the antonym dictionary by using traditional dictionaries to aid in pronunciation and determining the part of speech of each word included. Research list of at least ten (10) spelling rules and try to apply them in recalling the spelling of particular words, e.g. • Drop a silent *e* before adding a suffix that begins with a vowel/vowel sound – **shining, rising, breezy** • The suffix –*ful* never has two *l*s – powerful, harmful Play **a** Homophone Game online or offline. Work in pairs with word cards, each with a set of homophones. One student in the pair will read the homophones and the other will give the spelling for each word in the set, along with the matching meaning Examples of word sets *are: **rays/raise, weather/whether, poor/pour, wet/whet, there/their***		
Read Aloud Activity Find supplemental material to support the topic 'land formations' in set text. Read excerpts for the class, being careful to create a visual image for the listener of what is being explained in the passage/excerpt. (Read Aloud can be recorded on hand-held or mobile device and played for the class.) Prepare the reading and use context clues to determine the meaning of unfamiliar words. Check/confirm word meanings by consulting a dictionary.	• Apply context clues • Use dictionary • Read orally	Reading demonstrates accurate and appropriate use of punctuation and tone as well as the appropriate application of meaning

Focus Question: **How do we use our expression to show our understanding of land formations and their impact on the environment**?

READING FOR MEANING AND ENJOYMENT (COMPREHENSION)

ATTAINMENT TARGET(S):	OBJECTIVES:
- 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 - Identify and comment on the structure of texts and on the language choices, grammar and techniques writers use to create an impact - Reflect on and critically respond to literature and other texts on paper and on screen	Students will:: - Use text information to confirm or modify predictions made during reading - Read with expression and fluency to understand/interpret text information - Use texts' main ideas/ important points to identify theme(s) - Use Text Sets to make connection with texts: text-to-text, text-to-self and text-to-world - Discuss the linguistic devices used to argue, persuade, mislead and sway the reader in selected texts - Make distinctions between the points of view of the characters and the authors

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT CRITERIA
Read grade level text or supplemental material related to aspects of the earth's geology and land formations and use information presented to - Identify character traits - Deduce implicit information - Predict outcomes - Make judgements (An example of such a text is **The Dog of Pompeii** by author Louis Untermeyer, or '**After the Quake**', a collection of short stories by Japanese author Haruki Murakami) Analyse the title of the story and make predictions about it in journal. Review background information relating to the story (text, video or audio). Students will confirm predictions as they read the story.	- Deduce/predict outcomes - Make judgments	Predictions made in journals are plausible and based on review of background information
Select passage from set texts and take turns reading aloud in class. Read with expression to aid all students in understanding the story.	Read fluently	Readings demonstrate expression, grace and correct text interpretation

Use Question and Answer Pairs activity to analyse character in a given story. **(In Question and Answer Pairs, students form two circles, one inner and one outer. Students stand directly in pairs (facing each other). They are asked to respond to questions in pairs, changing their partner for each question – the outer circle remains stationary while those in the inner circle move clockwise after each question. Each question can be timed. Questions used in this activity are geared towards character analysis and distinguishing between points of view. Answers to each question are noted in notebooks.)**	• Compare characters • Make connections • Identify points of view	Appropriate comparisons are clearly outlined between experience of characters in the story and personal experience Appropriate connections made within texts: text-to-text, text-to-self and text-to-world Clear identification of the impact of point of view on character perception
Theme Analysis – Story Cube (Group Activity) In small groups, create a story cube that captures the main themes of a given story. Review the story cubes created by other groups. Hang them in the classroom. (Teacher/students can create cube templates from cartridge or stock paper. Template should have six sides. Each side should reflect the following questions: 1. CHARACTERS: Describe the main characters in the story. 2. SETTING: Describe the setting in which the story takes place. 3. CONFLICT: What is the main problem in the story? 4. RESOLUTION: How is the problem resolved? 5. THEME: What is the theme of the text? Cite words or phrases that develop the theme throughout the text. 6. FAVOURITE: What is your favourite part of the story?)	• Create story cubes • Identify themes	Story cubes accurately capture the main themes of the story

Read given fact cards and identify important details using the 5Ws analysis (who, what, where, when, why (the given, not the evaluative why) and how. Use details on fact card to identify main ideas. (A graphic organiser such as the herring bone chart shown below could be used to help lift details.) The Herring Bone graphic organiser: **Example of Fact Card**	• Identify main idea and details • Make predictions • Make inferences and judgements	Graphic organiser accurately identifies main idea and supporting details Predictions made reflect text context Plausible answers given to prediction-based questions

Landforms are valuable. Some, like mountains, provide valuable natural resources like bauxite, and are habitats for unique plant and animal species in the country. For example, some of the most unique orchids in the world, indigenous to Jamaica, grow there. These plants cannot survive outside of the Blue Mountains, and many tourists visit in order to view them. The country makes money from these visits. This revenue contributes to the building of important infrastructure, such as hospitals, roads and schools. **Take hints** from the pieces and use these to **predict** some challenges that could result from misuse of landforms or mistreatment of geological resources. (Questions may be provided to assist students to discover the hints from these fact cards). e.g. **How** can plate convergence lead to volcanoes forming (give the steps)? **What** happens to magma when it reaches the earth's surface? **Where** are volcanoes formed?		
Review a narrative text (short story or poem) related to the theme and discuss the literary and linguistic devices used by the writer to achieve his/her purpose for writing. Outline in journals the linguistic devices identified in the text and record the interpretation of the meaning of each device identified. Explain how the meaning of each device facilitates the writer's purpose.	• Identify linguistic devices • Justify use of devices • Identify writer's purpose	Journal entries include the following: • literary and linguistic devices correctly identified • Interpretation of the devices are substantiated by evidence from the text • Writer's purpose correctly identified

Focus Question: **How do we use our expression to show our understanding of land formations and their impact on the environment**?

THEME: The Physical Environment and its Impact
SUB-THEME: Landforms

READING FOR INFORMATION (RESEARCH & STUDY SKILLS)

ATTAINMENT TARGET(S):	OBJECTIVES:
• 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 and retrieving and synthesising information gained from a range of sources	• Use table of contents and index to locate information in texts • Use graphs, maps and charts with greater efficiency and accuracy • Use a range of non-fiction sources, including online sources, to locate information • Scan for specific information

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT CRITERIA
Pre-reading activity Review an informational passage based on the theme and engage in a **text features walk** – table of contents, index, headings, sub-headings, text boxes, paragraphs, signal words and phrases, etc. – to skim for main ideas and to scan for details in Social Studies text(s). Link details to main ideas and record these in journal. Use the information from the text features walk to make predictions about what to expect in the text. Record the predictions in journal.	• Use text features • Scan text • Identify main ideas • Make predictions	Main idea correctly identified Details given adequately support main idea Predictions made in journal are plausible based on the features analysed
Text Features Chart In groups, create a text features chart based on the informational passage given. On the chart, make predictions about main ideas of passage. <table><tr><td>Text Feature</td><td>Information Provided</td><td>Predictions</td></tr><tr><td>Table of Contents</td><td></td><td></td></tr><tr><td>Index</td><td></td><td></td></tr><tr><td>Headings</td><td></td><td></td></tr></table>	• Use text features • Make predictions	Predictions on text features chart are plausible based on information presented in each feature
Use information presented in the form of text, maps, charts and graphs to create pamphlets (using appropriate software or traditional means) that will summarise for readers the value of landforms and make recommendations on how to ensure people use them well.	• Summarise information • Design and create pamphlets • Locate information	Pamphlets convey accurate information

Focus Question: **How do we use our expression to show our understanding of land formations and their impact on the environment**?

LANGUAGE STRUCTURE (GRAMMAR & CONVENTIONS)

ATTAINMENT TARGET(S):	OBJECTIVES:
- Use and adapt a range of sentence structures according to context, distinguishing between SJE and JC - Write sentences, paragraphs and extended pieces which are grammatically accurate and correctly punctuated, using SJE and JC - Use a range of punctuation correctly	- Apply knowledge of the basic rules of punctuation and capitalisation when writing - Use different parts of speech (conjunctions, nouns, prepositions, etc.) to construct more complex sentences - Use singular and plural nouns in different contexts - Use connectives to show the relationships between ideas - Use speech marks, exclamation signs, semi colons and question marks accurately

SUGGESTED TEACHING AND LEARNING ACTIVITIES STUDENTS WILL:	KEY SKILLS	ASSESSMENT CRITERIA
Use suitable methods to review information on the functions of words in contexts – verb, noun, adjective, interjection, prepositions, etc.	Use parts of speech	Oral and written statements reflect accurate use of parts of speech
View and interpret a graph showing: - the seismographic activity of a major earthquake - the rainfall on a mountain contrasted against the rainfall over a plain over a given period Extrapolate information from the graph and present observations in writing, giving attention to sentence structure, capitalisation and punctuation. Presentations should focus on the use of interjections, verbs, prepositions, adjectives (including superlatives and comparatives such as 'least', 'greatest', 'highest', 'lowest', 'different from', etc.) and nouns.	- Use different parts of speech - Use adjectives of comparison - Apply punctuation rules	Presentations include appropriate use of: - Parts of speech - Adjectives of comparison - Punctuation - Capitalisation
Categorise nouns from the content area (set texts) into singular and plural nouns in a table. **Some nouns from the content area:** <table><tr><td>**Singular**</td><td>**Plural**</td></tr><tr><td>**Cay** **Hill**</td><td>**Mountains** **Volcanoes**</td></tr></table>	- Identify and use singular and plural nouns - Evaluate worksheets - Use checklist	Table accurately categorises singular and plural nouns Worksheet demonstrates the correct word form for each word given Presentations demonstrate correct and appropriate use of singular and plural nouns

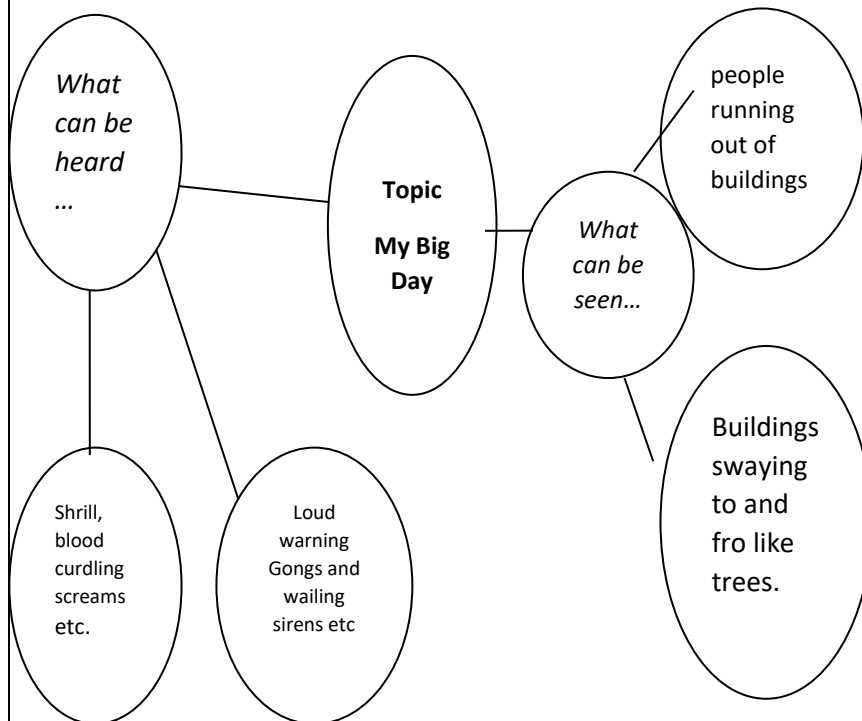|		
Write the singular or plural form of each word presented on given worksheet. Words are drawn from set texts used in Science or Social Studies. Use given checklist to evaluate the work done by at least one classmate. Attention should be given to the application of relevant spelling rules. Select words from given worksheet and use selected words to create an informational piece outlining various land formations and their impact on the environment. Be sure to use a mixture of singular and plural nouns.		
In groups, create connectives charts based on given categories (e.g. adding, cause and effect, sequencing, contrasting, etc.) and mount in the classroom In groups, use given connectives cards to link jumbled sentences strips so that the sentences make sense. Complete given worksheet by applying the most appropriate connective in each pair of sentence.	• Identify connectives • Connect sentences using linking words	Connective charts display linking words aligned to given category Sentences are combined using appropriate connectives

Focus Question: **How do we use our expression to show our understanding of land formations and their impact on the environment**?		
COMMUNICATION (WRITING)		
ATTAINMENT TARGET(S):	**OBJECTIVES:**	
• Develop approaches to the writing process to enable students to organise their ideas into a coherent structure, including, layout, sections and paragraphs • Write to narrate, to persuade and for a range of transactional purposes, using SJE and JC and incorporating multimedia approaches to writing • Use language and text forms correctly and with imagination to create vibrant and engaging texts • Write well-constructed paragraphs which have linking sentences within and between them	Students will:: • Identify and discuss the importance of key phrases in writing prompts • Use the stages of the writing process to compose narrative and expository pieces reflecting the content given • Use a variety of writing techniques to respond to narrative writing prompts (sensory details, dialogue, etc.)	
SUGGESTED TEACHING AND LEARNING ACTIVITIES **STUDENTS WILL:**	**KEY SKILLS**	**ASSESSMENT CRITERIA**
Examine specific writing prompts given to them and make presentations on what they understand the prompt to mean. Discuss in groups the importance and benefits of using writing prompts, and write about those benefits in their journals Write an expository piece on landforms in response to the writing prompt given.	• Analyse writing prompts • Respond to writing prompts	Presentations should outline the mode, task and key words within a prompt Group discussions should outline the importance of writing prompts to the writing process and at least three benefits of using writing prompts Expository piece should adhere to the following principles: - Paragraphs contain topic sentences, supporting details and concluding sentences - Transitional phrases and words are used to link paragraphs
Imagine they are an earthquake or a landform. Brainstorm ideas for a narrative or explanatory piece relating to their choice by using such techniques as the 5Ws and 5 senses.	• Brainstorm, create, draft, edit, revise and	Five Senses Chart appropriately used

The following is an example of a five senses chart which can be used for brainstorming.

The topic is placed in the centre and circles surrounding it are filled in with ideas according to each sense. This example could be used to write from the point of view of an earthquake that just 'quaked'.

- *What can be heard ...*
- **Topic**

  My Big Day
- *What can be seen…*
- people running out of buildings
- Shrill, blood curdling screams etc.
- Loud warning Gongs and wailing sirens etc
- Buildings swaying to and fro like trees.

publish written pieces.

- Sequence ideas

- Write explanatory/narrative pieces.

Paragraphs written in structured format and appropriate transitions used to link paragraphs

Narrative or explanatory pieces demonstrate effective application of the writing process

(NB. Explore using other senses) Use the writing process, paragraphing techniques and transitional words and phrases to expand the ideas captured in the brainstorming activity.		
Revise narrative or expository piece drafted from the five senses chart and incorporate figures of speech to add to the impact of their writing.	• Apply figurative language	Written pieces include effective use of figurative devices
Create story boards to assist with the drafting of narrative or explanatory pieces relating to the theme, ensuring that sequencing words such as firstly, later, next, afterwards, consequently, etc. are used along with grammar principles. In the case of the example below, grammar focuses on use of the present and past continuous tense. (Students should be instructed to ensure they use these in their writing.) Example: Storyboard on the title 'A New Peak Forms' N.B. The story boards may be created electronically, using programmes like Windows Movie Maker. They can also be done manually as shown below using regular plain paper. | *This section of the story board is reserved for the picture that reflects what the text is about*					• Brainstorm, draft, edit and publish written pieces • Sequence ideas • Create storyboards • Apply grammar principles	Storyboards are properly completed reflecting appropriate sequencing of ideas Digital stories demonstrate elements of story writing and provide accurate information

I was fast asleep enjoying the cool waves lapping my base far down in the ocean	Suddenly there was a violent shaking and I felt a painful tear rip through me	I yelled with everything in me, a large fault had developed under me.	Consequently, the hot thick lava from deep in the earth could come up, to help form another peak next to me. I could feel it pushing up fast.
Next it burst out of me tearing a large whole in my side			

Use the ideas from the story boards to create digital stories which will be viewed by their peers.

Other Suggested Topics

- Landforms found in Jamaica
- How mountains are formed
- The importance of land forms to Jamaicans
- Myself as a mountain, plain, etc.

Engage in panel discussions where the discussion is focussed on problems in their community, such as erosion of hillsides. Write sentences to share with the class about how to address this situation and why. The sentences should reflect one of the text structure patterns:	• Write explanatory pieces	Sentences written include the use of text structures and signal words/phrases

• Compare and contrast: More people are killed each year by falling buildings during earthquakes than from drowning in ponds. • Problem and solution: Teaching farmers terracing helps to reduce soil erosion, reducing the problem while still making use of the land resource. • Cause and effect: Farmers remove vegetation on hillsides in order to clear farmland, which leads to soil erosion. ➢ Sentences should also employ the use of signal words/phrases to indicate a transition in the ideas being presented. ➢ Revise and edit what is written by using a checklist. ➢ Publish what has been written in the context of the sentences and oral presentations.	• Employ text structure patterns • Apply signal words and phrases • Use the writing process	

ICT Attainment Target(s):
- 💻 **COMMUNICATION AND COLLABORATION – Use technology to communicate ideas, information and understanding for a variety of purposes.**
- 💻 **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING – Use technology to develop a logical process for decision making and problem solving.**
- 💻 **DIGITAL CITIZENSHIP – Recognise the ethical, social and legal responsibilities in the use of technology.**

Learning Outcomes
Students are able to:
- Present ideas appropriately to an audience using SJE
- Demonstrate active listening and appropriate speaking skills
- Demonstrate mastery of word recognition skills
- Locate information from different sources using text features
- Extend their knowledge with a range of comprehension skills
- Show noticeable improvement in writing skills based on the writing process technique

Points to Note	**Extended Learning**
Samples/models of the texts that students should write (e.g. pamphlets, directions, stories, pieces reflecting different text structure patterns) should be made available to guide the writing process • Students should be carefully supervised as they use the internet • Marking that does not set clear targets and steps for building weak skills is not encouraged. Hence marking should not be number grade only.	• Students should maintain a vocabulary of word roots (including meanings and examples) that extends beyond the sub-theme of weather, as this activity has the potential to rapidly extend their vocabulary development and spelling skills • They should also practise the use of grammatical structures learned (modal auxiliaries, etc.) in these contexts.

Additionally, number grades must clearly show the weight given to each skill being graded • Students should first be given steps to help them understand how thoughts connect in their mind. They will apply strategies such as Think Aloud, to help in making these connections. These steps should be modelled to provide opportunities for whole-group practice, prior to asking small groups or individuals to exercise the skill.	• Students should continue to apply spelling rules outside of language class. • Principles of text structure and transitional words/phrases should be applied in all learning environments, especially those requiring extended writing
Resources • Social Studies text(s) • Class reader(s) with stories, poems, expository pieces related to aspects of the weather • Supplementary reading materials – books related to the weather, advertisements, pamphlets, posters • Road maps/atlases • Grade 6 Word List • Audio and/or video capture device • Internet • Computer and any other available technologies	**Key vocabulary** • Landforms • Language context • Previewing • Summarising • Analysing • Author's viewpoint • Fact • Opinion • Contrast • Compound Sentences • Brainstorm • Homophones • Text features • Text structure • Demonstrative Pronouns • Abstract Nouns • Concrete Nouns

Links to other subjects:
 	
The unit provides links to other subject areas, such as:
       Geography (Land formations in Jamaica)
       Social Studies (Impact of physical environment on way of life)	

GRADE 6 LANGUAGE ARTS UNITS

TERM 2 UNIT 1

INTRODUCTION TO THE UNIT
This unit seeks to build on the skills taught in Term 1, using the theme 'Energy and Matter' and the sub-theme 'Light and Sound.' It facilitates the development of active listening and other necessary listening skills through discussion of the theme and sub-theme. It also aims to develop reading fluency through application of grade appropriate word recognition strategies while exploring structural elements such as inflectional endings and affixes. Students are given the opportunity to reinforce and extend their competence in identifying main ideas, summarising information and recognising the author's point of view. They are encouraged to conduct basic knowledge search/research by effectively using parts of books and a range of sources, including those found online. In this unit, students also continue to practise using stages of the writing process.

Most of the activities give students an opportunity to practise specific language skills. In some cases, the teacher may need 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.

UNITS OF WORK GRADE 6   - TERM 2 Unit 1   (6 Weeks)

Focus Question: How does light behave?	
LISTENING AND SPEAKING	
ATTAINMENT TARGET(S):	**OBJECTIVES** **Students will:**
• 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 • Explain and comment on speakers' use of language, including use of SJE and JC, and use of vocabulary, grammar and other features	• Reflect on their own use of listening and speaking skills previously learned and apply according to the context • Listen and respond to implicit and explicit information • Generate and answer questions from implicit or explicit information received • Identify and paraphrase important points in oral presentations • Determine diction and appropriate persuasive techniques (rhetorical questions, repetition) for oral presentations • Apply rules of SJE in making oral presentations
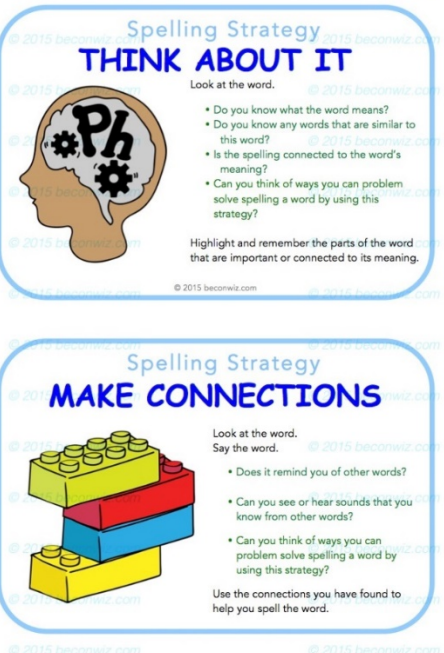
Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Work in groups, discuss and record what they know about the properties of light. Prepare and present oral reports. Write in journals reflecting on the listening and speaking skills they used to complete their oral reports. Comment on peer's journal entry.	• Listen for information • Use SJE in oral presentations • Work in groups • Discuss/communicate ideas • Write in journals	Oral reports reflect good use of language and evidence of collaboration Journals reflect evidence of listening and speaking skills learned and applied
In role as the CEO of JPS, use information previously gained to address students on the importance of light to their daily lives. The CEO will be introduced and the students will listen to the information being shared. Students construct questions and take turns asking questions to get clarifications or other additional information	• Determine formality of context and select language accordingly • Respond to creative expressions • Listen for information	Students' responses (questions/comments) demonstrate the principles of effective listening
Listen to a taped radio broadcast on noise pollution (or any other current issue related to sound) and write notes on the key points of the presentation. Exchange notes with a partner. Write a summary using partner's notes. Return notes and summary to partners and discuss.	• Share ideas • Listen to the views of others • Observe Communication Protocol • Take notes • Summarise presentation	Discussions reflect adequate use of communication protocol Summaries included key points of presentation
Pretend to be on a vox-pop programme. Prepare questions using appropriate question words (Did, Can, Wh- words). Take turns being the host by going around the classroom with a microphone asking	• Compose questions • Ask and answer questions	Questions and answers generated using SJE structures

students questions relating to light/sound. Questions should be asked and answered in SJE. Record the vox-pop programme using available recording devices. Listen to recordings to identify and correct incorrect use of SJE structures.	• Use correct SJE structures	Incorrect use of SJE structures identified and corrected
In groups, pretend that they are selling a product then prepare and present arguments to convince their peers to buy the product. For example, imagine selling light bulbs to individuals who have never used them before. As a sales representative, prepare arguments to convince such individuals to buy light bulbs.	• Use persuasive techniques • Present arguments	Students' arguments use persuasive techniques appropriately

Focus Question: How does light behave?
READING WITH FLUENCY & RECOGNITION (WORD RECOGNITION & VOCABULARY DEVELOPMENT)

ATTAINMENT TARGET(S):	OBJECTIVES Students will:
• Automatically recognise words (including basic sight word lists) through repeated exposure and mnemonic devices • Use a range of word recognition clues to identify new words • Use a range of approaches to learn and spell irregular words • Build vocabulary through various strategies	• Work cooperatively with peers to examine strategies used to decode and decipher pronunciation and meaning of unknown words • Use mnemonics and other spelling techniques to improve encoding and decoding skills • Use dictionary skills to decipher the meanings of words used in isolation and in context • Identify analogies and other word relationships, including synonyms and antonyms, to determine the meaning of words

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment
Read light-related words in the context of sentences/paragraphs and use context clues to determine the synonyms and antonyms for the targeted words, as well as the meanings of homophones. Complete cloze passages using targeted words.	• Use context clues • Identify synonyms and antonyms • Give meanings • Complete cloze passages	Context clues effectively used to determine synonyms, antonyms and homophones Cloze passages completed correctly using target words
<table><tr><td>**Word** *Chiefly*</td><td>**Synonyms** *especially* *particularly*</td></tr><tr><td>**Definition** *For the most part.*</td><td>**Sentence** *Light is an important form of energy, chiefly because plants need it to make food.*</td></tr></table> Complete vocabulary map similar to the one above to show meaning of words used in context relating to the theme	• Define words • Use words in context	Words accurately defined and suitable synonyms identified Words used in the correct context
Read a range of texts, applying the following word recognition strategies – re-reading, self-correction, use of structural analysis skills (use of compound words, inflectional endings, and affixes for decoding)	• Use word recognition strategies	Word recognition strategies accurately applied in order to decode words

In groups, share the strategies they used to pronounce words. Discuss the effectiveness of these strategies. Use suggested strategies from peers to decipher pronunciation and meanings of words. Create strategy poster, giving examples and outlining the steps for one of the strategies used.	• Work collaboratively • Share and discuss pronunciation strategies • Apply strategies • Decipher word meanings • Create strategy poster	Strategies shared and applied appropriately to pronounce words Strategy poster outlines steps and gives examples
Observe as teacher models spelling techniques to spell 'tricky' words. Ask and answer questions based on the techniques demonstrated by the teacher In pairs, develop and apply mnemonics, Think About It and other spelling techniques to spell 'tricky' vocabulary words, e.g. echo, lightning, reflection, refraction, translucent, transparent, opaque, vibrate, prism, etc.	• Observe teacher modelling • Ask and answer questions • Develop and apply spelling strategies • Write in journals	Strategies appropriately applied to spell words Journal entries reflect effective use of the strategy Questions and responses relate to techniques demonstrated by the teacher

Spelling Strategy
THINK ABOUT IT
Look at the word.
- Do you know what the word means?
- Do you know any words that are similar to this word?
- Is the spelling connected to the word's meaning?
- Can you think of ways you can problem solve spelling a word by using this strategy?

Highlight and remember the parts of the word that are important or connected to its meaning.

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Spelling Strategy
MAKE CONNECTIONS
Look at the word.
Say the word.
- Does it remind you of other words?
- Can you see or hear sounds that you know from other words?
- Can you think of ways you can problem solve spelling a word by using this strategy?

Use the connections you have found to help you spell the word.

In journals, comment on the effective use of the strategies developed and applied.		
Given two words that begin with the same letter, brainstorm words that will come between the two words in the dictionary, e.g. reflect-refract Use guide words to help search for light/sound–related vocabulary in the dictionary Write in journals commenting on the effective use of the strategy.	• Use guide words • Develop games	Words that appear between guide words in the dictionary accurately identified Games developed by students reinforce use of guide words.

Focus Question: How does light behave?

READING FOR MEANING AND ENJOYMENT (COMPREHENSION)

ATTAINMENT TARGET(S):	OBJECTIVES Students will:	
• 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 • Identify and comment on the structure of texts and on the language choices, grammar and techniques writers use to create an impact • Reflect on and critically respond to literature and other texts, on paper and on screen	• Compare and contrast setting and plot in different stories read • Read for enjoyment and information • Discuss explicit information and share personal views • Set and answer questions before, during and after reading to guide understanding of the text • Interpret messages, moods, feelings and attitudes conveyed in stories, poetry and prose • Use Text Sets to make connections with texts (text-to-text, text-to-self and text-to-world) • Distinguish facts from opinions and reality from fiction during reading discussions • Respond critically to linguistic devices (imagery, connotation and denotation) used in literature/text • Cite biases in viewpoints between authors and characters in selected narratives/texts	
Suggested Teaching and Learning Activities **Students will:**	**Key Skills**	**Assessment**
In groups, read different stories relating to sound and compare and contrast elements of the stories, such as setting, plot, conflict, character and solution. Discuss answers among group members and then share with the class.	• Compare and contrast elements of a story • Collaborate in groups	Responses shared reflect comparisons of story elements Graphic organizers completed accurately to reflect comparison and contrast of setting and plot

After reading two stories, use graphic organizers to compare and contrast the setting and the plot.		
Agree or disagree with statements about light before reading text. This should assess prior knowledge and set a purpose for reading. Discuss statements with teachers and the class, providing reasons for agreeing or disagreeing. Then read and discuss the text. Ask questions about text content, make predictions, and then read to confirm or refute their predictions. Example of anticipation guide: | Before Reading	Statements	After Reading
No	We need light to see	
Yes	Light travels at 200,000 mph			• Use prior knowledge to assume information • Read to clarify assumptions • Make and check predictions • Make adjustments to predictions	Anticipation guide used effectively to make and clarify assumptions based on information gleaned from texts Predictions made and checked after reading
Read articles from newspapers and magazines and discuss with peers the information presented. Give opinions using evidence from the article to support position. Consider the text-to-text, text-to-self and text-to-world connections.	• Make connections with text • Give opinions	Discussions reflected satisfactory use of evidence from text to support opinions Appropriate connections made with text
Read/listen to folktales about light/sound. Discuss any feelings about the text, messages that the writer is conveying and the general mood of the text with peers.	• Read /listen to folktales • Identify mood • Express opinions	Discussions reflect the mood and messages conveyed in the text
Participate in games, e.g. 'Sentence Hunt'. Search for sentence strips containing facts and opinions about light in various parts of the	• Distinguish facts from opinions	Facts accurately distinguished from opinions using games and text-based activities

classroom and place them on a chart under the correct heading, i.e. "FACTS ----- OPINIONS." Construct sentences containing facts and opinions. Create facts and opinions anchor posters about sound.	• Construct sentences • Create posters	Statements of facts and opinions satisfactorily constructed Anchor posters give definitions and examples of facts and opinions
Engage in a Direct Reading Thinking Activity about a story pertaining to sound and be guided in asking questions about the text and making predictions. Read to confirm or refute predictions. Complete graphic organisers using the DRTA strategy	• Use Directed Reading Thinking Activity (DRTA) strategy • Make and check predictions • Complete graphic organisers	DRTA strategy effectively used to make and check predictions in a range of texts
Read texts related to sound and light. Identify examples of the use of imagery, connotation and denotation. Discuss how the use of the linguistic devices helps to clarify meaning. Use comic strips to create their own examples of imagery, connotation and denotation.	• Read texts • Discuss use of linguistic devices • Give examples	Discussions reflect accurate identification of devices and critique their use Comic strips created reflect accurate use of linguistic devices
In groups, rewrite selected portions of texts from different points of view. Using literature circles, discuss how the point of view reflects the biases between the authors and characters.	• Discuss point of view • Identify biases	Discussions adequately identified and examined biases between authors and characters Rewrites depict different point of view
Be told about the three ways connections can be made with the text – text-to-text (making connections between/among texts); text-to-self (how does the text remind you of your life?) and text-to-world (how does the text remind you of what happens in the world at	• Make text connections	Text connections are logical and meaningful

large?).Read the text aloud to bring focus to one text connection, for example, text-to-self. Identify aspects of the text that remind them of their lives. Complete reader response worksheets about making connections. ![Making Connections Reading Response worksheet]		
Read a passage, either informational or fictional, relating to sound. Review the different types of questions (**right there, think and search, on my own, author and me**). In groups, develop different types of questions about the passage and share them with the other groups. Attempt to answer questions composed by peers	• Compose different kinds of questions based on texts • Answer questions developed by peers	Different types of questions about text composed and shared Satisfactory responses to questions supplied by peers
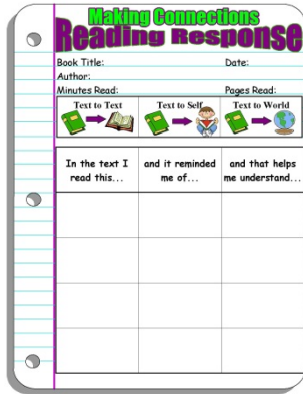
Focus Question: How does light behave?		
READING FOR INFORMATION (RESEARCH & STUDY SKILLS)		
ATTAINMENT TARGET(S):	**OBJECTIVES** **Students will:**	
• Research issues and interests by generating ideas and exploring texts using a range of strategies • Identify and use text features to support navigation of texts, retrieving and synthesise information gained from a range of sources	• Use glossaries to support the comprehension of fiction and non-fiction texts • Compile own glossaries of terms specific to areas of study/information communicated in projects • Organise and synthesise information located from various sources	
Suggested Teaching and Learning Activities **Students will:**	**Key Skills**	**Assessment**
Use glossaries to identify the meaning of vocabulary words used in texts. After listening to the meaning of a word, use the glossary to identify the word. After completing a project, develop a glossary of words and terms for related words	• Define words/phrases • Create glossary	Glossaries created and used to support comprehension of text
Examine text features in texts. Engage in teacher-led discussion about the use and importance of text features. In small groups, use table of contents, index of texts and other sources to find information on light and its properties. Use this information to prepare and present reports on specific projects. Make a reference list showing the books/articles read, titles and authors. (Scaffolding may be needed)	• Use text features • Organise and synthesise information • Compose reference list	Discussions focussed on the use and importance of text features Text features effectively used to accurately locate information Reports adequately compiled using information garnered Reference list of titles and authors used in research paper is accurately logged
Search various sources (offline/online) to locate pictures/quotes/poems/songs about light/sound. Use the information to create an advertisement for any related light/sound product or venture.	• Conduct searches • Create advertisement • Organise information	Advertisements reflect use of online/offline searches

Focus Question: How does light behave?

LANGUAGE STRUCTURE (GRAMMAR & CONVENTIONS)

ATTAINMENT TARGET(S)	OBJECTIVES:
- Use and adapt a range of sentence structures according to context, distinguishing between SJE and JC - Write sentences, paragraphs and extended pieces which are grammatically accurate and correctly punctuated, using SJE and JC - Use different forms of punctuation correctly	Students will: - Distinguish between declarative, exclamatory and interrogative sentences - Use demonstrative pronouns appropriately in written and oral sentences - Apply the past perfect tense appropriately to regular and irregular verb forms - Place commas and quotation marks correctly in written dialogue/direct speech

Suggested Teaching and Learning Activities **Students will:**	Key Skills	Assessment
Participate in a mini lesson where teacher provides different opportunities for students to model use of the past perfect tense with regular and irregular verbs. Pull a slip containing a past time from a bag, e.g. 'in February.' State something they had already done by that time using the past perfect tense. For example, "I had already applied to school in February." Convert passages to the past perfect tense.	• Use Past Perfect Tense	Past Perfect Tense accurately used in different written contexts
Practise using demonstrative pronouns (this, these, that, those) correctly in sentences and paragraphs related to light/sound when writing up observations/research.	• Use demonstrative pronouns	Demonstrative pronouns accurately used in writing Worksheets completed accurately

Complete teacher sourced worksheets where they use demonstrative pronouns to complete sentences. e.g. *Natural sources of light include sunlight, the stars, volcanoes, meteorological lightning and biochemical sources. _____ types of light are naturally occurring and do not necessarily need humans to create light.* https://www.reference.com/science/five-natural-sources-light-d694ba1fd65bacb3#		
After examining a variety of materials placed on a table (including a lit candle, an unlit candle, a working flash light, a blown bulb, a bottle and a cellular phone), complete sentences about the objects based on their ability or inability to produce light. Select the correct demonstrative pronouns in constructing sentences. For example: (This, These) candle can produce its own light.	• Select the correct demonstrative pronouns	Correct demonstrative pronoun selected
Review with the guidance of the teacher the rules for punctuating direct speech. Examine newspaper articles with examples of reported speech. Convert the reported speech to direct speech. Rewrite sentences in direct speech, e.g. *The teacher told the children that they should not listen to loud music.* *The teacher said, "Do not listen to loud music."*	• Use direct speech • Use commas and quotation marks	Sentences showed correct usage of quotation marks and commas
Identify different types of sentences in texts. Select a sentence from a text and rewrite it as declarative, exclamatory and interrogative. Example: Thomas Edison's invention of the electric light bulb affected my lifestyle. Did Thomas Edison's invention of the electric light bulb affect my lifestyle? Thomas Edison's invention of the electric light bulb affected my lifestyle!	• Identify sentence types • Use punctuation marks	Different types of sentences correctly identified and written

Focus Question: How does light behave?

COMMUNICATION (WRITING)

ATTAINMENT TARGETS	OBJECTIVES Students will:
- Develop approaches to the writing process to enable students to organise their ideas into a coherent structure, including layout, sections and paragraphs - Write to narrate, to persuade and for a range of transactional purposes, using SJE and JC and incorporating multi-media approaches to their writing - Use language and text forms appropriately and with imagination to create vibrant and engaging texts - Write well-constructed paragraphs which have linking sentences within and between them	- Analyse and differentiate between the statement and instruction in writing prompts - Develop and use editing checklists to evaluate their own writing - Use adjectives, adverbs and descriptive phrases to create different effects in writing - Organise paragraphs to reflect different internal text structures (compare & contrast, cause & effect) - Use a range of signal words to indicate transitioning in writing - Identify and use figures of speech (personification and alliteration) to add impact to their writing

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment
Write poems about light/sound. In groups, students are given an opening line or theme for a poem. They take turns writing each line of the poem and must use one or more figures of speech in each line. At the end of each line, they will indicate the figure(s) of speech used. For example: "light danced off the wall sparkling and smoothly (alliteration, personification)."	• Identify and use figurative speech	Figures of speech effectively used to create poems
Write a persuasive essay about light or sound. e.g. Explain why you should conserve energy at school. Underline the key words/phrases in writing prompts and state what they are expected to write about.	• Use persuasive techniques • Support position • Use internal text structures (cause and effect)	Relevant arguments developed to support position Internal structures effectively used to organise essay

In groups, develop an editing checklist to edit the essay. Use checklist to edit their essays, e.g. **My Editing Checklist** Name_____ Date_____ **Directions:** Answer each of the following questions by putting a check (☑) in the "YES", "NO" or "Corrected" boxes. Questions / YES / NO / Corrected 1. Did I **re-read** my writing to check for mistakes? 2. Did I start each sentence with a **capital letter**? 3. Did I end each sentence with a **period**, an **exclamation point**, or a **question mark**? 4. Did I **space my words** and **write neatly**? 5. Did I **indent** at the beginning of each **paragraph**? 6. Did I **circle** any words that I think are misspelled? 7. Did I use a **Dictionary** or **ask for help** spelling words? 8. Did I use **adjectives** in every paragraph to add **details** to my writing? 9. Did I tell "WHO?", "WHAT?", "WHEN?", "WHERE?", "WHY?" and "HOW?"? 10. Did I **ask someone else** to read my writing to check for mistakes I might have missed?	• Organise paragraphs • Use editing checklist • Evaluate paragraphs • Differentiate between statements and instructions	
Develop a bank or anchor chart of transitional words and phrases. Review essays and add transitional words/phrases to improve them. Use words from anchor chart or bank as reference.	• Use transitional words/phrases • Review essays	Signal words used effectively to indicate transitioning in writing Anchor charts or word bank of transitional words developed
Participate in a sketch-to-sketch activity. Close their eyes and create a mental picture of the text relating to light, sketch their visualisation, share images with class and use adjectives to describe their pieces.	• Create mental images • Use adjectives	Mental images created and vividly described using adjectives

ICT Attainment Target(s):
- 💻 **COMMUNICATION AND COLLABORATION – Use technology to communicate ideas, information and understanding for a variety of purposes.**
- 💻 **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING – Use technology to develop a logical process for decision making and problem solving.**
- 💻 **DIGITAL CITIZENSHIP – Recognise the ethical, social and legal responsibilities in the use of technology.**

Learning Outcomes	

Students are able to:
  ✓ Present ideas to an audience using SJE
  ✓ Show awareness of active listening and speaking skills
  ✓ Demonstrate mastery of word recognition skills
  ✓ Locate information from different sources using text features
  ✓ Extend their knowledge of a range of comprehension skills
  ✓ Show noticeable improvement in writing skills based on the writing process techniques	

Points to Note	**Extended Learning**
• As in previous units, continue to model the strategies students should learn • Allow for guided and independent practice	Apply writing strategies effectively to journal writing activities and other casual pieces composed. Create an anthology of poems and critique each using the writing strategies practised in class.

Resources
 	
➢ Science text(s)
➢ Class reader(s) with stories, poems, expository pieces related to aspects of light and sound
➢ Supplementary reading materials
    o Communication Protocol Chart
    o Observation checklists/rubrics
    o Dictionaries, encyclopaedias, index, bibliography, table of contents
    o Grade 6 Word List
	Key vocabulary
	
	• Modal auxiliaries
	• Author's viewpoint
	• Fact
	• Opinion
	• Compare
	• Contrast
	• Homophones
	• Demonstrative pronouns
	• Declarative
	• Interrogative
	• Exclamatory

Links to other subjects: The unit links to other subject areas such as: Science (light and sound)	

GRADE 6 LANGUAGE ARTS UNITS

TERM 2 UNIT 2

INTRODUCTION TO THE UNIT

This unit seeks to build on the skills taught in Term 1 and Unit 1 of Term 2 via the theme "Living Things and Life Processes" and the sub-theme 'The Human Body System.' It reinforces the development of active listening and other necessary listening skills introduced in earlier units through discussion and the sharing of responses to creative performances. It also develops reading fluency through the application of 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 figurative language to add colour to their writing/composition of poems. They are also able to locate information through the use of text features. They also continue to practise the stages of the writing process.

Materials used will include content area texts as well as samples of letters and poems relating to the theme. Students will benefit from oral presentations done by their peers. Information in the form of advertisements, diagrams and tables are used to further build language skills.

Most of the activities give students an opportunity to practise specific language skills. The teacher may need, 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.

UNITS OF WORK GRADE 6   TERM 2 UNIT 2 (7 Weeks)

Focus Question: How do we use oral and written language to express our understanding of the life processes of living things?

SPEAKING & LISTENING

ATTAINMENT TARGET(S): Life and Interdependence	OBJECTIVES Students will:
• 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 accurately and creatively	• Reflect on their own use of listening and speaking skills previously learned and apply them according to the context • Apply listening skills previously learned to present context • Share interpretations of words used in context • Listen to determine the purpose of presentations • Select language to suit purpose and audience • Code-switch to suit a variety of purposes • Use body language to enhance oral presentation and create desired impact

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
CriListen to excerpts from science texts related to the function of the skeleton or muscles. Use SJE structures to formulate and answer questions in groups to check their understanding of information presented, including questions requiring the interpretation of words in context.	• Listen for information • Formulate questions in SJE • Answer questions in SJE • Use context to determine the meanings of words heard	Questions formulated and answers given reflect understanding of texts

Listen to a presentation on human body systems and make an assertion based on the presentation. Give three reasons to substantiate the assertion. e.g. Name: _____ Date: _____ **Assertion and Support Reading Comprehension Worksheet** Directions: Make an assertion based on the reading. Assertion: _____ _____ Write three citations or lines from the text that supports your assertion. _____ " " " Explanation: (Explain how your citations or lines support your assertion) _____ _____ _____ Copyright www.englishlinx.com	• Listen to presentations • Make assertion • Cite evidence	Reasons given adequately support assertion
Create a list of elements of body language (gestures, facial expressions, eye contact, etc.), that can be used to enhance an oral presentation. Select and read a poem/speech and identify how body language can be used to improve the presentation. Orally present poem/speech, incorporating body language. Reflect on the effect that body language had on their peers' presentations.	• Identify body language • Select poems/speeches • Use body language • Reflect on presentations	Presentations reflected appropriate use of body language
Prepare and make an oral presentation on the importance of the excretory system to the overall health of the body. There should be a clear focus on the purpose of the presentation, and thoughts and ideas should be clearly organised. Incorporate body language in the presentation	• Determine the purpose of the presentation • Organise thoughts and ideas • Use verbal and nonverbal elements for impact • Select dominant language form	Oral presentation reflects a clear focus and organisation of thoughts and ideas Code-switching is used correctly

	• Code-switch for impact • Use body language	Verbal and non-verbal effects are effectively used to create impact
Respond to articles read aloud which are related to the digestive system using 'think clouds' prompts (such as a) I made a connection when_____, b) I thought _____ was important because_____) or by making connection thinking stems. Use the 'think clouds' to orally communicate ideas to classmates. **making connections thinking stems** **Text to Self** The text says _____, this reminds me of _____. If _____ happened to me, I would _____. I am like (a character) because we both _____. **Text to Text** This book reminds me of (another book) because _____. This (character) reminds me of (another character) because _____. I read about _____ in (another book). **Text to World** This reminds me of (a TV show) because _____. This reminds me of the real word because _____.	• Make connections	Connections between self and text are meaningfully made
Use the thinking routines, e.g. "Chalk Talk," to give views on editorial texts which focus on the excretory system. Use blank news print and markers placed in different areas within the classroom. Read aloud related texts in groups, then discuss and write brief responses to the text. Share ideas with the class using presentation techniques.	• Use thinking/writing routine • Write and discuss ideas	Views on editorial texts are clearly expressed through thinking routine strategies Responses to other types of texts are meaningfully shared with peers

READING WITH FLUENCY & RECOGNITION		
(WORD RECOGNITION & VOCABULARY DEVELOPMENT)		
ATTAINMENT TARGETS	**OBJECTIVES:** Students will:	
- Use a range of word recognition clues to identify new words - Automatically recognise words (including basic sight word lists) through repeated exposure and mnemonic devices - Use a range of approaches to learn and spell irregular words - Spell words accurately by using knowledge of letter-sound correspondences, morphological knowledge and etymological information - Build vocabulary using a range of strategies	- Explain choice of strategies used to decode and decipher pronunciation and meaning of unknown words - Self-select and use spelling techniques to improve encoding and decoding skills - Use different reference sources to decipher the meaning of words used in isolation and in context - Use analogies and other word relationships, including synonyms and antonyms, to determine the meaning of words	
Suggested Teaching and Learning Activities **Students will:**	**Key Skills**	**Assessment Criteria**
In groups, complete worksheets on analogies and synonyms to determine the meanings of words associated with life processes of living things.	- Use analogies and synonyms - Determine word meanings	Worksheets completed correctly to determine the meanings of words
Observe as teacher models word identification strategies to decode and explain the meanings of unfamiliar words. Discuss with the teacher the effectiveness of the strategy/strategies used. Select word identification strategies to decode and give meaning to unfamiliar words, e.g. phonics analysis, decoding by analogy, syllabic analysis, morphemic analysis. Explain why they chose a particular strategy.	- Select word identification strategy - Define words - Explain choice	Choice of strategies explained and applied effectively to decode words and clarify meaning
Add prefixes and suffixes to base words to formulate derivatives related to the reproductive system after reviewing the value/importance of prefixes and suffixes in aiding comprehension and pronouncing unfamiliar words. For example:	Make new words with affixes	Prefixes and suffixes accurately affixed to base words to form new words

			Read new words correctly

prefixes	Base word	suffixes	derivatives
re-	produce		reproduce

Examine texts to locate examples of derivatives. Dissect the word, then use the affixes to explain the meaning of the word.

e.g.

derivatives	Base word	prefixes	suffixes	meaning
reproduce	produce	re		to produce a copy of

Use self-selected spelling techniques such as **word within word** and **syllable breakdown** to spell words related to puberty which end with - s, -es, -ed, -ing and -ly, as well as -'s	• Practise spelling • Apply spelling techniques	Spelling techniques effectively used to spell words
Play sight games with words related to aspects of the human body, e.g. hop-scotch, Read and Race. Complete cloze passages related to the muscle movement by selecting suitable sight words from a given list. Upon completion, read the passage aloud.	• Accurately read sight words • Use sight words correctly in context • Read selected sight words in context	Sight words accurately used to complete cloze passage
Through games, use a variety of reference sources (such as dictionary, thesaurus, encyclopaedia, glossary) to find the meanings of words. List 5 adjectives that describe their personality. Share their list with a partner. The partner uses the thesaurus to find another synonym for the word. Lists can be shared until three synonyms are named. Challenges can include finding synonyms with three or more syllables. Use their dictionaries to check unfamiliar words to see if the synonyms are being used correctly.	• Use reference sources	Reference sources used to decipher meanings of words.

Focus Question: How do we use oral and written language to express our understanding of the life processes of living things?

READING FOR MEANING AND ENJOYMENT (COMPREHENSION)

ATTAINMENT TARGET(S)	OBJECTIVES: Students will:
▪ 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 ▪ Read fluently and with appreciation	• Recognise signal words used and make connections to different text structures • Distinguish facts from opinions • Analyse how messages, moods, feelings and attitudes are conveyed in stories, poetry and prose using inference and deduction in reference to the text • Interact with peers during shared reading to express interpretations and clarify misconceptions/misinformation • Cite evidence in text which identifies the author's viewpoint • Respond to different levels of questioning (literal, inferential and critical) • Respond critically to the linguistic devices (imagery, connotation and detonation) used in literature/text

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment
Read various passages about human body systems from different sources such as textbooks, articles and the internet. Use literature circles to express views and clarify misconceptions and misinformation. Preview text then write questions that probably can be answered in the text. As students read, they answer the questions.	• Read texts • Express views • Clarify misconceptions • Write questions	Ideas shared during literature circles clarified existing misconceptions and misinformation Questions satisfactorily developed and answered

Read prepared passage about human body systems. Use clues in the passage to answer inferential questions. Work in groups to carefully answer 'think and search' questions. In addition, groups should identify the evidence from the passage that led them to that answer. For example: "The light flickered as the thunder rolled. The wind howled as it crept through the cracks and sent an instant chill through Mike's fragile body, as he prepared for bed." | Question	Answers	Evidence
What time would it have most likely been?	It was night.	Prepared for bed
What kind of weather is being experienced?				• Use clues to answer 'think and search' questions • Collaborate in groups	Context clues effectively applied to determine meaning
Listen to explanations and participate in discussions of what is meant by "author's point of view". Students will read articles pertaining to human body systems and determine the authors' points of view, using words and expressions included as a guide.	• Determine authors' points of view • Cite evidence	Authors' points of view accurately determined Evidence given (based on authors' choice of words/expressions) supports conclusion
Use the "It says, I say and So.." strategy (or any other inference strategy) in groups to aid understanding of a story/ poem text related to the kidney/heart. A graphic organiser should be displayed and the strategy named and discussed. Use the	• Apply inference strategy	Strategy effectively used to assist in comprehending text

graphic organiser to help to analyse how messages, moods, feelings and attitudes are conveyed in stories, poetry and prose.

QUESTION	IT SAYS	I SAY	AND SO
Read the question.	Find information from the text to help answer each question—paraphrase or quote answers from text.	Consider what you know about the information.	Put together the information from the text with what you know, then answer the question.

Observe diagram/table related to the development of a baby over a period of time, and then answer questions at the inferential and evaluative levels.	• Answer questions	Responses to inferential and evaluative level questions are accurate or plausible
Read stories and poems about human body systems. Discuss the use of linguistic devices such as imagery, connotation and denotation. Say how effective the devices are to the stories/poem. Create strategy/anchor posters for linguistic devices such as imagery, connotation and denotation. Use examples from stories and poems read about human body systems	• Read stories/poems • Evaluate use of devices • Create posters	Discussions reflect critical analysis of linguistic devices Posters created depict examples of linguistic devices from stories and poems

READING FOR INFORMATION (RESEARCH & STUDY SKILLS)

ATTAINMENT TARGETS	OBJECTIVES Students will:	
• Research issues and interests by generating ideas and exploring texts using a range of strategies • Identify and use text features to support navigation of texts. Retrieve and synthesise information gained from a range of sources	• Use a variety of external text features in preparing projects and different types of texts • Organise and synthesise information gathered from various sources	
Suggested Teaching and Learning Activities **Students will:**	**Key Skills**	**Assessment Criteria**
In groups, read aloud text focusing on the function of the kidneys and discuss understanding of the content. Before reading, review 'response symbols' to guide the extraction of key information from the text. Use the symbols to indicate understanding of the content such as the parts they found important, very interesting and not clear. Discuss strategies that can be implemented to clarify content which are not clear (metacognition/fix-up)	• Extract details • Use symbols to indicate response to text • Share responses • Use fix-up strategies (picture clues, context clues, re-read)	Comprehension of text effectively monitored by recording response symbols Metacognitive strategies accurately applied where necessary
In groups, research information on two body systems. This research should be done in a report format. Prior to assigning task, review external text features and carefully read and discuss rubric to guide the completion of the report. Each group will present its research to the class.	• Review research skills • Use external text features • Locate information • Analyse texts • Discuss and share ideas • Organise and synthesise information • Present information	Research skills are adequately reviewed and rubric is fully discussed prior to research activity Report reflects satisfactory use of external features. Information presented is organised

Brainstorm ideas for a project related to human body systems. Research and collect information for the project. Use teacher designed rubric to guide the process. Use at least three different ways to convey information. Present the project to the class.	• Apply research skills • Present information	Presentations reflect satisfactory use of research and presentation skills Information is conveyed in at least three different ways.

LANGUAGE STRUCTURE (GRAMMAR & CONVENTIONS)

ATTAINMENT TARGET(S)	OBJECTIVES Students will:	
• Write sentences, paragraphs and extended pieces which are grammatically accurate and correctly punctuated, using SJE and JC • Use and adapt a range of sentence structures according to context, distinguishing between SJE and JC	• Construct questions using interrogative pronouns within the appropriate context • Practice using various tenses (present, past, future, continuous, past perfect) to create vibrant and engaging texts. • Use punctuation marks (brackets, colons, ellipses, dashes) appropriately	
Suggested Teaching and Learning Activities **Students will:**	**Key Skills**	**Assessment Criteria**
Formulate questions using interrogative pronouns within the correct context when analysing different aspects of the excretory/reproductive system. Practise the correct usage of who/which/what/why in sentence construction.	• Use interrogative pronouns	Interrogative pronouns correctly used to construct questions
Rewrite sentences in different tenses, e.g. Rewrite the sentence below in the future tense. We take special care of ourselves in order to live healthy lives. (present) We will take special care of ourselves in order to live healthy lives. (future)	• Use verb tenses	Sentences written correctly using the correct tense Sentences made using different tenses.

Participate in a call and response game. A student is given a word to make a sentence. The student then calls the name of another student and that student repeats the sentence but uses another tense.		
Write a report based on how the body changes during puberty. The report should include the use of brackets, colons, ellipses and dashes where applicable.	• Write report • Use punctuation marks	Brackets, colons, ellipses, dashes are included and used correctly in written report
Identify and discuss the use of colons and dashes in paragraphs. Use colons and dashes to write sentences about the digestive system.	• Use colons and dashes • Write sentences	Sentences composed and dashes and colons appropriately inserted
Review verb tenses – Present, Past, Continuous, Future and Perfect – and use in sentences and paragraphs about aspects of the human body system	• Use verb tenses correctly	Verb tenses used correctly in sentences

COMMUNICATION (WRITING)

ATTAINMENT TARGETS:	OBJECTIVES: Students will:
• 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 • Write to narrate, to persuade and for a range of transactional purposes, using SJE and JC and incorporating multi-media approaches to writing	• Analyse and differentiate between the statement and instruction in writing prompts • Apply stages of the writing process in producing a range of written pieces • Use adjectives, adverbs and descriptive phrases to create different effects in writing • Organise paragraphs to reflect different internal text structures (compare & contrast, cause & effect) • Use a range of signal words to indicate transitioning in writing • Use figures of speech to write different types of texts, including poems

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Use adjective and adverbial clauses to extend sentences related to the human body system	• Use adjectival and adverbial clauses	Adjectival and adverbial clauses correctly used to construct sentences
Brainstorm ideas about the title of a story relating to body systems in order to activate prior knowledge. Their ideas should be written on a concept map. e.g. Title Students' ideas	• Discuss ideas	Brainstorming used effectively as a prewriting strategy to generate ideas for writing task
In groups, use adjectives, adverbs, descriptive phrases and figures of speech to create an advertisement for exercise equipment designed to build muscles. Each group will present their advertisement to the class. After each group's presentation, the rest of the class should reflect on the use of parts of speech and figurative expressions.	• Create advertisements • Use figures of speech • Share feedback	Advertisements made reflect competent use of adjectives, adverbs, descriptive phrases and figures of speech Reflections evaluate the use of parts of speech and figurative expressions
Write a story related to an aspect of the human body using the following prompt: "It was just yesterday I thought I would never have this experience. As soon as I entered the room, all eyes were fixed on me. I was…" Use the RAFT strategy to ensure correct interpretation. The story should contain the elements of story. Use writing process to ensure satisfactory final pieces	• Use given prompt • Interpret prompt • Use writing process	Stories contain story elements

	• Compose stories • Include story elements	
Work in groups to examine sample business letters. Consider how they are structured and compare to the friendly letter structure. Share findings with class. Write a letter to a business entity seeking sponsorship for a child at school who needs money to help with medical expenses related to his/her kidney (or on any other issue relating to the theme). Include the effects that the contributions will have on the child	• Interpret and use prompt • Compose business letter • Use correct format • Use cause and effect • Include relevant content • Use appropriate tone • Collaborate in groups	Students' letters reflect content relevant to the prompt, format and tone Letter effectively presents relevant points and satisfies the requirements of grammar and conventions
Listen/read samples of different types of poems. Identify and interpret figurative speech used. (Students should be given prompts to guide their interpretation of the figures of speech. For example: It is effective because it shows/tells…) Compose poems of their own using figures of speech such as metaphor, simile, personification and onomatopoeia.	• Identify, interpret and use figures of speech in poems	Figures of speech in poems correctly identified and interpreted Poems composed using figures of speech effectively

ICT Attainment Target(s):
- 🖥️ **COMMUNICATION AND COLLABORATION – Use technology to communicate ideas, information and understanding for a variety of purposes.**
- 🖥️ **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING – Use technology to develop a logical process for decision making and problem solving.**
- 🖥️ **DIGITAL CITIZENSHIP – Recognise the ethical, social and legal responsibilities in the use of technology.**

Learning Outcomes

Students are able to:

- ✓ Demonstrate active listening and speaking techniques when communicating with peers and others
- ✓ Apply more advanced word recognition skills, such as the use of structural analysis and extended vocabulary, by learning prefixes, suffixes and inflectional endings
- ✓ Improve the quality of their writing by the applying stages of the writing process
- ✓ Demonstrate competence in the use of the structures and conventions of Standard Jamaican English
- ✓ Demonstrate competence in the use of figurative language to add clarity and imagery to writing
- ✓ Extend sentences by correctly using adverbial and adjective clauses in oral and written language

Points to Note	**Extended Learning**
• Thinking clouds, word cards and excerpts should be prepared prior to lessons • Read aloud should not be taken for granted so students should be given opportunities to read aloud in order to correct miscues • Rubric for writing/research/advertisement task should be given and explained to students simultaneously with task	• Use an anticipation guide in content area read or KWL chart and QAR. • Students can use prepared/selected questions to guide their understanding of text content. • Contextual vocabulary should be explicitly taught, as well as vocabulary outside the theme. Word games can be downloaded from the internet • Students should be exposed to a variety of poems

Resources	**Key Vocabulary**
• Flow Charts showing kidney and brain connection • Grade six science text book • Editorial text • Newsprint • Thinking clouds • Makers • Word cards • Samples of poems • Samples of letters • KWL chart • RAFT template	• Reflexive pronouns • Demonstrative pronouns • Story elements • Clauses • Prefixes and suffixes • Story elements • Signal words • Transitional words • Adverbial and adjective clauses

Links to other subjects: The unit includes links to other subjects such as: Science (human body systems)	

GRADE 6 LANGUAGE ARTS UNITS

TERM 3 UNIT 1

INTRODUCTION TO THE UNIT

This unit seeks to build on the skills taught in Terms 1 and 2 via the theme of 'Diversity, Sustainability and Interdependence' and the sub-theme 'Diversity and interdependence in nature and society.' It reinforces the development of active listening and appropriate listening skills introduced in earlier units through discussion of national issues and sharing responses to creative performances. It also develops reading fluency through the application of the grade appropriate word recognition strategies of sight words, and the study of structural elements such as inflectional endings and affixes. Students are given the opportunity to learn and apply the skills of previewing, summarising and analysing information. They are also tasked with locating information using text features. In this unit, they also continue to practise using the stages of the writing process.

Most of the activities give students an opportunity to practise specific language skills. The teacher may need, in some cases, to explicitly teach rules, structures and strategies prior to these activities. The content outline for Grade 6 must therefore be consulted for details on the scope of content/skills to be delivered.

UNITS OF WORK GRADE 6   - TERM 3

Focus Question: How do I describe the diversity among ethnic groups in Jamaica and the Caribbean?	
SPEAKING & LISTENING	
ATTAINMENT TARGET(S):	**OBJECTIVES** **Students will:**
• 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 creatively	• Code-switch to suit purpose • Summarise and synthesise the content of information heard • Critique the use of verbal and non-verbal communication cues during oral presentations • Organise thoughts and ideas and make planned and impromptu presentations • Express a range of emotions when making oral presentations • Demonstrate appropriate use of SJE and JC in persuasive arguments • Demonstrate active listening while participating in discussions and oral presentations

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Listen to recording or watch interactive presentation of a poem, for example, 'Colonisation in Reverse' by Louise Bennett, and discuss ideas presented in relation to their knowledge of colonisation. Observe the basic skills of communication (e.g. waiting turns, avoiding side conversations)	• Listen for information • Share ideas • Use SJE structures correctly • Practise Communication Protocol	Poem adequately and meaningfully discussed observing Communication Protocol
Use drama mode (dramatic monologue, Speak Easy) to share their feelings about any aspect of colonisation in Jamaica. Use appropriate language for situation being discussed	• Use drama modes • Select relevant language forms • Communicate emotions/feelings	Drama and effective language skills used to communicate feelings and reactions to different elements/concepts linked to ethnic diversity
Pretend that they are representing an ethnic group. Working in groups, prepare and present an oral presentation about the contributions of that group to the overall culture of Jamaica. Use verbal and nonverbal elements to affect the audience. Listen to each group's presentation. Discuss the effects of non-verbal cues in the presentation	• Locate information • Plan and prepare oral presentations • Critique use of verbal and non-verbal elements • Ask questions	Relevant information located Oral presentations planned and prepared Verbal and non-verbal elements and their effects critiqued Group work completed successfully

Focus Question: How do I describe the diversity among ethnic groups in Jamaica and the Caribbean?

READING WITH FLUENCY & RECOGNITION

(WORD RECOGNITION & VOCABULARY DEVELOPMENT)

ATTAINMENT TARGET(S):	OBJECTIVES Students will:
• Use a range of word recognition clues to identify new words • Automatically recognise words (including basic sight word lists) through repeated exposure and mnemonic devices • Use a range of approaches to learn and spell irregular words • Build vocabulary through various strategies	• Apply strategies used to decode and decipher pronunciation and meaning of unknown words • Apply rules of syllabication and knowledge of root words in decoding unfamiliar vocabulary • Consult a variety of reference sources to find and verify pronunciation and clarify the meaning of technical vocabulary • Examine the connotative and denotative meaning of grade level words • Examine analogies and other word relationships, including synonyms and antonyms, to determine the meaning of words

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Read passages and demonstrate an understanding of key vocabulary – diversity, ancestors, descendants, sustainability, consequences, ethnic, cooperation and interrelationship – by deciphering meaning	• Use context clues • Use dictionary	Context clues accurately used to derive meanings of new words Dictionary correctly used to locate and confirm meanings derived from context clues
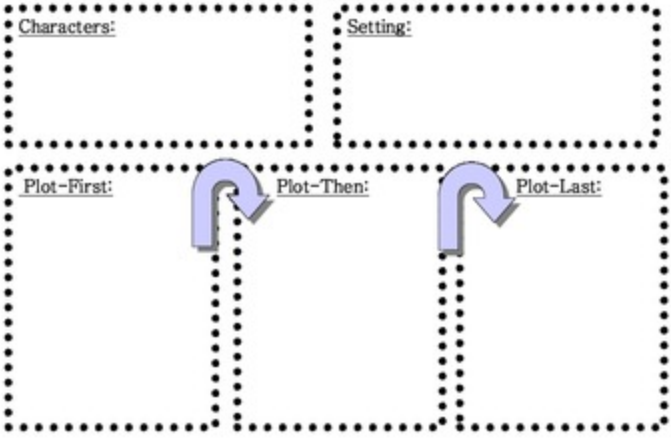
using context clues. Use the dictionary to clarify answers.		
Compile bank of sight words related to ethnic diversity, e.g. population, experience, ethnic, Caribbean, advantage, disadvantage, culture, immigrant. Find their meanings and use them to make sentences. Use sight word bank to play games to help learn words related to ethnic diversity. Identify root word/syllables in words. Use the root word to clarify the meanings of the words.	• Compile bank of sight words • Identify syllables/root words • Clarify meanings	Sight words accurately used in different contexts Syllables and root words correctly identified
Engage in Spell-a-thon, using rime and syllable patterns and knowledge of root words to chunk unfamiliar vocabulary. e.g. diversity, ancestors, descendants, sustainability, consequences, ethnic, cooperation and interrelationship	• Chunk words • Apply syllabication patterns	Word parts effectively used to assist in the pronunciation/spelling of words
Use context clues to choose the correct word out of pairs/groups of homophones, synonyms and antonyms in a cloze passage related to ethnic diversity in the Caribbean, e.g. their/there, diversity/difference, cooperation/division	• Use context clues • Select appropriate homophones/synonyms/antonyms	Cloze sentences/passages accurately completed with appropriate homophones, synonyms and antonyms

Use games to examine words in texts and determine their connotative and denotative meanings. Identify whether words are used positively or negatively.	• Determine meaning • Take turns • Read words/phrases	Connotative and denotative meanings identified and discussed
For example: Students will pass along a container with phrases or words on pieces of paper. Background music will be played and stopped at different intervals, the student who has the container will take a strip and use the phrase to create a sentence.		
Example of phrases:		
calculated response thoughtful response		
Identify words in a passage/sentence that have a negative connotation. Rewrite the sentences, replacing the word so that it has a positive connotation.		
For example,		
He has **militant** opinions, and has shown himself to be a **tyrant**. His problem-solving abilities are **weird** but he always solves his		

own problems and helps others to solve problems too. Militant – strong, tyrant – leader, weird – unusual		
Apply decoding strategies while participating in synonym/antonym word bingo. Search for the synonym/antonym of the stated word. Use context clues to understand the meaning of words.	• Apply strategies • Recall antonym/synonym	Strategies applied to decode words accurately Synonyms/antonyms of words correctly identified

Focus Question: How do I describe the diversity among ethnic groups in Jamaica and the Caribbean?

THEME: Diversity, Sustainability and Interdependence

SUB-THEME: Diversity and interdependence in nature and society.

READING FOR MEANING AND ENJOYMENT (COMPREHENSION)

ATTAINMENT TARGET(S):	OBJECTIVES Students will:
• 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	• Apply various reading strategies to sustain engagement with longer texts • Use evidence from text to deduce implicit information • Infer writers' perspectives from what is written and what is implied • Identify and comment on the use of elements of poetry, e.g. rhyme, figurative language • Analyse setting, character and plot using evidence from across a text to infer the outcome of the story • Evaluate linguistic techniques used by writers and poets, noting the effective use of these techniques • Critique biases in viewpoints between authors and characters in selected narratives/texts

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria

Read and interpret charts, maps, graphs and tables to answer questions related to ethnic groups; e.g. language and territories.	• View and interpret graphical information	Charts, maps, graphs and tables adequately used to answer questions related to ethnic groups
Read, identify and discuss the elements of different poems which address aspects of ethnic diversity, e.g. 'There was an Indian' – rhyme, rhythm, figurative language (metaphor, simile, personification, onomatopoeia)	• Identify elements of poetry • Discuss the impact of poetry elements	Poetry elements correctly identified and discussed in a range of poems
Share different types of narrative pieces (through shared reading, guided reading, read aloud, etc.). Talk about the structures of these pieces. Select a narrative (non-fiction, mystery, fantasy) to relate an event or set of events linked to their different ethnic groups	• Discuss/select types of narratives • Identify elements of different types of narratives	Discussions focussed on the elements of different types of narratives
Read stories about different ethnic groups. At various parts, use graphic organisers to analyse setting, characters and plot.	• Read stories • Analyse setting, characters and plot • Discuss outcomes	Graphic organisers satisfactorily used to analyse setting, plot and characters. Discussions reflect plausible outcomes of the story

Name:_____ **Date:**_____ ## Story Elements • Characters: • Setting: • Plot-First: • Plot-Then: Plot-Last: In small groups, use graphic organisers to discuss possible outcomes of the story.		
Participate in literature circles to discuss writers' perspectives on various issues in texts. Use other informational sources such as newspaper, magazines, videos etc. to identify writers' perspectives.	• Discuss writers' perspectives	Discussions in literature circles adequately addressed writers' perspectives
View a video about examining bias in reading. Engage in guided discussions on how to identify biases. Examine headlines on similar topics and identify the perspectives from which they are written. Identify biases	• View videos • Engage in discussions	Biases correctly identified in headlines Presentations satisfactorily identified and outlined biases in texts

in the headlines. Read related articles and identify vocabulary that suggests biases. Read and discuss excerpts/articles about interdependence among Caribbean countries. Compare/contrast the points of view of different authors, how they structure each argument and how their word choice is significant Make presentations outlining biases between authors and characters.	• Identify biases and perspectives • Read and discuss texts • Compare/contrast points of view	
In pairs, select poems/texts that use linguistic techniques (imagery, connotation, denotation). Discuss the effective use of these techniques in the poems/texts selected.	• Select poems/texts • Identify linguistic techniques • Discuss effectiveness of techniques	Poems/texts select use linguistic techniques (imagery, connotation, denotation) Discussions adequately addressed the effective use of linguistic techniques in poems/texts

Focus Question: How do I describe the diversity among ethnic groups in Jamaica and the Caribbean?

READING FOR INFORMATION (RESEARCH & STUDY SKILLS)

ATTAINMENT TARGET(S):	OBJECTIVES Students will:
• Research issues and interests by generating ideas and exploring texts using a range of strategies • Identify and use text features to support navigation of texts. Retrieve and synthesise information gained from a range of sources	• Use a variety of internal and external text structures/features to prepare and analyse an assortment of texts • Employ different internal text structures (cause and effect, comparison and contrast, time sequence) to present research information • Synthesise and present information located from various sources

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Engage in research online and offline using available Language Centre Resources (library, computer labs, internet, etc.) to prepare for and engage in a debate to orally express their views on debatable topics related to the theme, e.g. 'Regional cooperation is of paramount importance'	• Conduct research • Prepare for and engage in debate • Navigate digital content on the internet and storage devices	In-class debates conducted include the effective presentation of strong arguments and the use of basic debate protocol

	• Use search engines safely to perform single topic searches	
Research online and offline sources to complete tables of abbreviations relating to regional cooperation e.g. | Abbreviations	Meanings	
CARICOM	Caribbean Common Market	
CARIFESTA	Caribbean Festival of Arts			• Locate information • Use search engine safely to perform single searches	Meanings of abbreviations are accurately located in online and offline sources
Read teacher prepared summaries of prescribed texts then use a summary checklist to examine the summaries. Share and compare results with classmates.	• Examine summaries • Compare results • Use text features • Locate information	Checklists effectively used to evaluate summaries Text features used to locate relevant information Summary skills effectively used to compile information Group synergy and collaboration are evident as students work together

	No	Sometimes	Yes
The summary is written in the learner's own words.			
The summary does not give the learner's opinion.			
The summary has a suitable topic sentence.			
The summary includes the main ideas.			
The summary does not include the unimportant details.			
All of the sentences are complete - they include a subject and a verb.			
The summary is an appropriate length.			

The main table of the page:

(checklist table shown above) https://opentextbc.ca/abealf4/back-matter/writing-assessment-checklists/ In groups, use text features to locate information from textbooks, magazines and journals about common historical experiences among Caribbean people. Discuss and summarise information. Set up mini displays to present information.	• Summarise information • Discuss main ideas • Work cooperatively	
Construct and use questionnaires to interview Jamaicans from different ethnic groups about their practices, record information obtained and compare with that of classmates.	• Develop questionnaires • Interview Jamaicans from	Questionnaires appropriately developed

Record interview and play for class discussion. Enter findings on an online blog, create posters and place information in 'In Case You Didn't Know' box.	different ethnic groups • Record information • Compare findings • Use online blog • Create posters • Use information box	Information received from interview is accurately recorded, shared and compared with classmates' findings Findings are meaningfully shared through different media
Briefly review various forms of narrative texts related to ethnic diversity and categorise them according to genres – mystery, fantasy and non-fiction	• Categorise narrative texts	Texts correctly categorised as mystery, fantasy or non-fiction

Focus Question: How do I describe the diversity among ethnic groups in Jamaica and the Caribbean?

THEME: Diversity, Sustainability and Interdependence

SUB-THEME: Diversity and interdependence in nature and society

LANGUAGE STRUCTURE (GRAMMAR & CONVENTIONS)

ATTAINMENT TARGET(S):	OBJECTIVES Students will:
- Write sentences, paragraphs and extended pieces which are grammatically accurate and correctly punctuated, using SJE and JC appropriately - Use and adapt a range of sentence structures according to context, distinguishing between SJE and JC	- Use singular and plural reflexive pronouns appropriately to construct sentences - Use negative and interrogative sentences - Practise using various tenses (present, past, future, continuous, past perfect) to create vibrant and engaging texts - Critique the use of various punctuation marks in different texts

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Construct sentences using singular verbs and reflexive pronouns to explain factors influencing regional cooperation. Orally discuss efforts being made at this level	- Use singular verbs - Use reflexive pronouns	Singular verbs and reflexive pronouns are used correctly

	• Construct sentences	
With the guidance of a teacher, review singular and plural reflexive pronouns. Rewrite sentences using singular/plural reflexive pronouns. e.g. The Chinese and the Indians will resolve the issue on their own. The Chinese and the Indians will resolve the issue by **themselves**.	• Use reflexive pronouns	Sentences are rewritten correctly using reflexive pronouns.
Describe (orally and in writing) an activity (e.g. the slave, the triangular trade) using correct verb tenses and reflexive pronouns. e.g. As *they* <u>boarded</u> the slave ships, the slave masters thought of ***themselves*** as gods.	• Use correct verb tenses • Use reflexive pronouns	Correct verb tenses and reflexive pronouns used to complete oral and written tasks
Play online/offline punctuation games that demonstrate mastery of punctuation marks.	• Use punctuation marks	Punctuation marks used in games demonstrate students' understanding of their use
Examine texts to identify affirmative sentences. In pairs, students take turns to change the affirmative sentences to negative sentences.	• Identify affirmative sentences	Affirmative sentences correctly identified in texts.

State a negative sentence and peer changes it to the affirmative.	• Convert affirmative sentences to negative	Affirmative sentences correctly changed to negative sentences
Review rules of subject/verb agreement learned in other grades and terms/units of Grade 6. Complete workbook and other exercises requiring the selection/formation of appropriate verb forms.	• Recall agreement rules • Apply rules	Correct forms of subject/verb agreement used in oral and written exercises
Examine text to determine correct use of colons, ellipses, brackets and dashes. Integrate these in transactional and creative writing pieces. Create anchor posters that give examples and rules for using colons, ellipses and dashes.	• Critique use of colons, ellipses, dashes, brackets • Use punctuation marks in creative and transactional pieces.	Brackets, colons, ellipses, dashes correctly used in written tasks

Focus Question: How do I describe the diversity among ethnic groups in Jamaica and the Caribbean?

COMMUNICATION (WRITING)

ATTAINMENT TARGET(S):	OBJECTIVES	
	Students will:	
• Develop approaches to the writing process which enable students to organise ideas into a coherent structure which includes appropriate layout, sections and paragraphs • Write well-constructed paragraphs with linking sentences within and between them	• Analyse and differentiate between the statements and instruction in writing prompts • Apply stages of the writing process in producing a range of written pieces • Compose narrative and expository pieces to satisfy a variety of text structures • Use figures of speech to write different types of text, including poems	

Suggested Teaching and Learning Activities **Students will:**	Key Skills	Assessment Criteria
Examine a variety of writing prompts and highlight the instructional words or phrases. In pairs, read writing prompts and determine the task(type of writing), the audience (who will read your writing), and the purpose(why you are writing).	• Examine writing prompts • Differentiate instructions	Instructional words and phrases clearly identified in prompts Task, audience and purpose are identified and analysed in discussions

	• Determine audience, task and purpose	
Write (or use class email to send) letters to the principal requesting that their school organise visits to a historical site linked to the colonisation of Jamaica.	• Compose formal letters • Use appropriate format • Include relevant details • Create document	Letters are meaningful and use the appropriate format
Pretend to be immigrants or slaves who came to the Caribbean from other parts of the world. Compose friendly letters to relatives back in their countries of origin which describe the experience *travelling to* or *living in* the Caribbean. Use class email account to email letters to classmates.	• Assume roles • Compose friendly letters • Include relevant content • Use acceptable format • Send and receive emails with attachments	Letters contain relevant content Letters use correct format for degree of formality (friendly)

Compose and orally present poems about diversity, sustainability and interdependence among ethnic groups in Jamaica/the Caribbean using elements of poetry – rhyme, rhythm and figurative language.	• Compose poems • Use elements of poetry • Present poems	Poems demonstrate students' understanding of elements of poetry
Review provided models of good writing. Engage in collaborative writing; explain the diversity and practices of ethnic groups found in the Caribbean and the effect this diversity has on the culture of the Caribbean. Use a checklist to move through the process.	• Use writing models • Engage in collaborative writing • Give explanations	Models of good writing effectively used to guide writing activity The collaborative writing process is successfully used Explanations about the diversity of ethnic groups are clear and adequate
Compile a writing portfolio that reflects samples of products at different stages of the writing process. Share portfolio with peers for peer review. Use feedback from peers to refine portfolio.	• Apply stages of the writing process • Compile portfolio • Share portfolio • Give reviews	Portfolio contains writing products at different stages of the writing process and samples of peer review

ICT Attainment Target(s):

- ⌨ **COMMUNICATION AND COLLABORATION** – Use technology to communicate ideas, information and understanding for a variety of purposes.

- ⌨ **RESEARCH, CRITICAL THINKING AND DECISION MAKING** – Use technology to develop a logical process for decision making and problem solving.

- ⌨ **DESIGN AND PRODUCTION** – Use technology to design and produce multimedia products to demonstrate creative thinking.

- ⌨ **DIGITAL CITIZENSHIP** – Recognise the ethical, social and legal issues and implications surrounding the use of technology.

Learning Outcomes

Students are able to:

- ✓ Demonstrate competence in the use of writing styles when communicating with specific audiences.

- ✓ Competently use the structures and conventions of Standard Jamaican English.

- ✓ Demonstrate tolerance and respect for the views/opinions of others as they communicate.

- ✓ Communicate effectively and efficiently as they actively demonstrate listening and speaking techniques.

- ✓ Demonstrate comprehension skills by drawing inferences and identifying and summarising main ideas from texts.

- ✓ Understand and apply a wide range of word recognition and decoding strategies.

Points to Note	Extended Learning
• Models of writing styles should be made available for students to view and use as a guide. • There should be strict supervision of students as they use the internet. • Students should be carefully monitored as they use recording equipment.	• Frequent opportunities for practising the tenses should be provided. • Students should be given support re effective summary writing. • Provision should be made for students to engage in public speaking and oral presentation activities to develop and enhance their confidence.
Resources • Social Studies text(s) • Class reader(s) with stories, poems, expository pieces related to ethnic groups in Jamaica and the Caribbean • Supplementary reading materials – books related to ethnicity (including poems and a range of narrative texts and poems) • http://www.english-online.org.uk/games/pasttense2.htm may be visited and used to develop tense (particularly past tense) • Triangular slave trade map • Flow chart	**Key vocabulary** • Diversity • Ancestors • Descendants • Sustainability • Consequences • Ethnic • Cooperation • Interrelationship • Reflexive pronouns

• Semantic map • Display board/booth • Free game templates • Internet, computers and any other available technologies • Appropriate software	• Rime • Syllable • Semantic maps

Links to other subjects:

The unit allows links to other subjects such as:

- Mathematics – Venn Diagrams

- Social Studies – Ethnic groups, culture and heritage

- Information Technology – Research and use of online resources

NATIONAL STANDARDS CURRICULUM

GRADE 6 SCIENCE

PHILOSOPHICAL STATEMENT

The Philosophy behind the New 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.
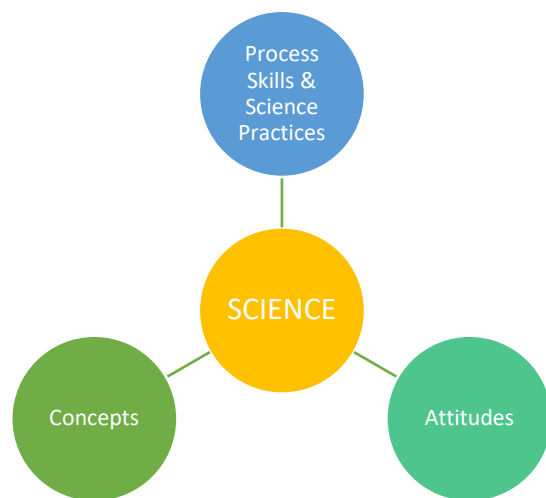
Figure 1: Elements of Science

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 21st 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**
GRADE 4	• **Introduction to Science** 　Science & How scientists work • **Living Things** 　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 • **Plants and Animals** 　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	• **Sense Organs** 　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 • **Materials: Introduction** 　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	• **Water and Air** 　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

| GRADE 5 | • **Forces and Work**
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

• **Energy Forms**
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 | • **Nutrition**
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

• **Ways Food are Grown**
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 | • **Simple and Complex Machines**
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

• **Weather Instruments**
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 |
| GRADE 6 | • **Environment**
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 | • **Materials: Properties and Uses**
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 | • **Diet and Drugs**
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 |

	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 • **Energy: Light and Sound** 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	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 • **Human Body Systems** 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 • **Mixtures** Investigating mixtures Defining mixtures Classifying mixtures as solutions, suspensions and colloids Properties of materials used in separating mixtures Simple separation techniques	Distinguishing 'over the counter' and 'prescription' drugs Examining information provided on medicinal drugs Beneficial and harmful drugs Effects of drugs on the body	

SCIENCE UNITS OF WORK GRADE 6 TERM 1 UNIT 1: THE ENVIRONMENT

About the Unit

In this Unit, students will learn about climate change, its effects and ways of stemming it. They will explore the nature of solid waste pollution, and identify ways in which this problem can be alleviated. In addition, they will study the causes of soil degradation, the methods of preventing soil degradation, and appreciate the importance of caring for the environment.

Range of Content

- The environment is all the physical surroundings on the Earth, including all living and non-living things, and which affects life on earth. Deserts, forests, wetlands, grasslands, marine, freshwater and tundra are examples of environments which differ in vegetation, animal life, soil and terrain and climate.
- Conserving the environment means trying to preserve natural resources so they will still be around in the future.
- The activities of people may affect the environment in good and bad ways. Human activities have caused serious environmental problems which have changed the earth and its climate, and have impacted the health of many living things.
- Climate change is a change in Earth's overall average weather. Climate change is caused by an increase in the average temperature of the earth's atmosphere due to the trapping of heat energy in the atmosphere.
  Climate change has several detrimental effects including: harsher weather conditions (e.g. droughts), increased flooding (due to rising sea levels), distortion of the natural habitats and lives of many plants and animals.
- The effects of climate change may be mitigated through several practices such as: conserving energy, conserving water, recycling, and planting trees.
- Pollution is anything that damages or contaminates the environment. Solid waste is unwanted solid materials such as garbage, paper, plastics, metals, and wood. Solid waste is produced in homes, schools, and businesses (e.g. factories, farms, mines).
- Solid waste pollution is a threat to public health and the environment, and is a contributor to climate change.
- To minimise consequences of solid waste pollution on humans and the environment, solid waste should be properly managed. This includes its collection and transport to landfills (areas where garbage is buried) for processing or disposal, and monitoring of waste materials.
- The production of solid waste can be reduced through several methods including: recycling, proper disposal of garbage, composting.

Soil degradation is the weakening of the quality of soil as a result of human behaviour or severe weather conditions. Drought, flooding and human activities, such as deforestation, poor agricultural practices and urbanization, can all put pressures on fertile land, causing the soil to become degraded or polluted.

Focus Question 1: Why is it important to care for the environment?

THEME: Living things, Life Processes and the Environment

Attainment Target(s):

- 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:

- Be aware of some environmental problems (climate change, solid waste disposal, soil degradation) and how to mitigate against them.
- Use prior experiences and scientific knowledge to formulate and test hypotheses, and interpret results.
- Make a series of measurements of quantities and make inferences from observations in order to draw conclusions.
- Plan and carry out fair tests to identify aspects of a model or prototype that can be improved.
- Show responsibility in food choices.
- Show sensitivity to others who make unhealthy eating choices.
- Show concern by being respectful and responsible towards the environment and the organisms living in it.
- Display curiosity, objectivity and perseverance in their approach to activities.

Objectives:

- Formulate a definition of environment.
- Justify the importance of conserving the natural environment
- Outline the effects of human activities on the environment
- Investigate features/ soils of different environments
- Recognise the need for and importance of conserving living things and the environment to sustain the balance in the ecosystem.
- Show concern for the impact of humans on the environment
- Be aware of their responsibility to preserve the environment
- Value individual effort and teamwork
- Observe, collect and record information regarding the interacting factors within an environment

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.
💻 **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.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Students will: Explore their school or a nearby environment and record their observations, including temperature and light conditions. View pictures/ videos of different types of environments e.g. deserts, marine, freshwater, forests, grassland, tundra (polar region) and wetlands. In groups, compare the physical features of the different environments, including their own. Identify and record the typical features associated with each environment (terrain, weather, vegetation, animals). Compile a short list of animals and plants observed in each environment. Share their findings with the class in a variety of ways. As a class, develop a simple working definition of the term 'environment'.	• Communicate, think critically (compare, define operationally), collaborate, Observe,	• Observations appropriately recorded • Physical features and organisms in each environment correctly identified • Acceptable definition of environment
Visit and examine soil samples collected from different environments e.g. beach, wetland, forest, garden. Examine the soil particles, how they feel	• Collaborate, manipulate, communicate, observe, think	

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
(texture) and the size of the particles. Pass samples through a sieve. Arrange soils in order of particle size. Write a brief description of the soil samples showing their differences. Identify the soil types in the different environments.	critically – analyse, draw conclusions	• Description contains accurate information and differentiates among soils
In groups, investigate the water-holding capacity of the soil samples collected. Cork a plastic funnel with cotton wool and add a fixed mass of each soil sample to separate funnels. Fit the end of the funnel over a measuring cylinder or beaker. Add a known volume of water to each soil sample. Measure the time taken for the water to pass through and the volume of water that passed through the soil and funnel. Compare the volumes of water before and after. Answer the questions, "Which soil held the most water?", "What does this suggest about the water-holding capacity of the soil?" Predict which soil would be best for seed germination/ plant growth.	• Collaborate, manipulate, measure, observe, communicate, think critically – analyse, interpret, predict, draw conclusions	• Correct time and volume measurements taken • Correct calculations done • Logical conclusions drawn
As a class, discuss how animals and plants are suited for their environments. Identify how selected organisms from the list compiled are suited to their environment. Make a scrapbook/ collage with the information garnered. In groups, suggest possible environmental changes (e.g. increased/decreased temperature, droughts, floods and urbanisation) and the effects of these on the animals and plants. As a class, summarize the information and present in a variety of ways.	• Collaborate, think critically (make inferences), communicate, create	• Correct information presented on how particular features of the selected organisms make them suited for the environment in which they live.
Research (online/off-line) ways of conserving the environment and develop a scrap book/poster/digital story to illustrate these. Compose a song/poem about the importance of conserving the environment. Make a presentation to the class.	• Create, communicate, think critically (research, apply, synthesize)	• Correct information presented on ways to conserve the environment. • Song/poem contains correct information and is creative.
As a class, identify an area in their community that is not cared for. Visit the area and gather evidence, such as photographs sketches etc. In groups, develop a plan to restore the area; plans should include the specific problem being addressed, required resources and limitations. Present and critique plans based on criteria developed by the class. Make modifications to the plans	Observe, collaborate, create, think critically (analyse, plan and design, develop criteria for evaluation, evaluate), communicate,	• Plans contain measures that can address the problem.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
where necessary. As a class, evaluate all the plans and select the best one (i.e. most feasible). If possible, implement the selected plan. In groups, use electronic/non-electronic stimulus materials (newspaper articles, videos, magazines etc.) to identify ways in which the activities of humans affect the environment, e.g. slash and burn, improper dumping/burning of garbage, over-fishing. Record and summarise the information in a variety of ways, and share with the class. As a class, assess practices that cause destruction of selected natural environments, e.g. coral reefs and mangrove swamps. Develop a podcast/ public service announcement to sensitise the school community to the negative effects of such practices.	Collaborate, communicate, create, think critically (analyse, evaluate)	• Podcast/ public service announcement contain correct information on how human activities impact the environment.

Learning Outcomes
Students who demonstrate understanding can:
- ✓ Explain the meaning of environment and describe the features of different environments
- ✓ Develop a logical argument in support of conserving the natural environment
- ✓ Demonstrate good stewardship in their efforts to preserve/protect/conserve/(care for) their environment
- ✓ Work individually and as members of a team
- ✓ Use selected ICT tools to browse and search for information, and to produce multimedia presentations for communicating information

Points to Note	Extended Learning
Relate environmental problems to Jamaica and the Caribbean. Cross-curricular links: Social Studies (AT1 – climate, grades 4-6) Follow guidelines to promote healthy use of ICT tools	Field trips to wetlands (mangrove swamps) and coral reefs (Marine Parks in Discovery Bay and Montego Bay).

Resources	Key vocabulary
Videos/slideshow, cardboard, paper, paste, scissors, books, computer with software to make digital presentations, multimedia projector, Internet, image/video recording device(e.g., camera) and any other available technologies	Environment, conservation, urbanization, environmental change, physical features, preservation, adaptation, slash and burn, over-fishing, coral reefs, mangrove swamps

Focus Question 2: How do environmental problems affect us?

THEME: Living things, Life Processes and the Environment

Attainment Target(s):
- 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:
- Be aware of some environmental problems (climate change, solid waste disposal, soil degradation) and how to mitigate against them.
- Use prior experiences and scientific knowledge to formulate and test hypotheses, and interpret results.
- Make a series of measurements of quantities and make inferences from observations in order to draw conclusions.
- Plan and carry out fair tests to identify aspects of a model or prototype that can be improved.
- Show responsibility in food choices.
- Show sensitivity to others who make unhealthy eating choices.
- Show concern by being respectful and responsible towards the environment and the organisms living in it.
- Display curiosity, objectivity and perseverance in their approach to activities.

Duration: 4 weeks/ 8 Hours

Objectives:
- Formulate a simple working definition of climate change
- Use evidence from everyday local/regional/international situations to explain the effects of climate change on humans
- Explore ways of reducing factors that cause climate change
- Propose measures to reduce/eliminate selected sources of solid waste pollution
- Describe the factors that cause soil degradation
- Explain how soil degradation can be prevented
- Show concern for the impact of environmental problems on humans
- Be aware of their responsibility to carry out good environmental practices
- Value individual effort and teamwork

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.

- **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.

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
Students will: • In groups, examine simple data on climate change issues (e.g. tables, graphs, pictures, reports) to identify trends. Summarize the main findings from the data and share with the class. • In groups, brainstorm the term 'climate change'. Write a simple working definition of climate change and report to the class. (*Teacher will guide students in formulating definition for climate change*) View a video on the effects of climate change (e.g. "Take Aim at Climate Change"; See Resource CD/DVD or visit https://www.youtube.com/watch?v=08z-Hw7s54E). From video, observe and record information that will be used to answer the following questions: What causes climate change; how does climate change affect man, animals, plants and the environment; what can we do to prevent/reduce/eliminate climate change. Summarise findings and present to the class in a variety of ways.	• Think critically (analyse), communicate Collaborate • Think critically (Define operationally), collaborate, • Think critically (analyse, evaluate), communicate	• Main issues associated with climate change presented • Acceptable simple working definition of climate change • Relevant information on effects of climate change recorded and presented.

• In groups, discuss how climate change affects our island, Jamaica and other countries. Research and debate ways of reducing factors that cause climate change. Video tape the debate sessions to post on their class wiki or blog OR make presentations on climate change in a variety of ways (dub poems, songs, digital story/mini-documentary, cartoon, models etc.)	• Collaborate, communicate, think critically (analyse), create	• Creative presentations with correct information on the impact of climate change on Jamaica/the Caribbean.
• View video clip on solid waste disposal. List various sources of solid waste pollution observed, their effects, and determine through discussion how these can be alleviated.	• Think critically (analyse, evaluate), communicate	• Sources of solid waste pollution listed correctly
• Investigate how improper disposal of solid waste can lead to the spread of diseases (e.g. vector borne and water borne) and the measures which can be taken to prevent these. Dramatize a scenario that depicts proper solid waste disposal and/ or the harmful effects of improper disposal.	• Think critically (analyse, evaluate), communicate, creative thinking	• Correct information presented on measures to prevent the spread of disease through improper waste disposal.

• In groups, research (online/ offline) the causes of soil degradation (overgrazing, deforestation, slash and burn, soil exhaustion, chemical fertilizer and pesticide use, soil erosion, climate change) and measures that can be taken to reduce the effects. Use the findings to generate class displays in a variety of ways.
• browse and search teacher-reviewed websites and other information sources on climate change in order to answer the following questions:
   o How does climate change affects Jamaica and other countries?
   o What are some of the ways of reducing factors that cause climate change?
Include a multimedia presentation and or video on findings to enhance display.
	• Create, manipulate, collaborate, communicate, think critically (research for information), creative thinking
	
	• Download files
		• Information presented in displays is relevant and accurate.
		• Displays depict creativity

• Research the importance of soils to living organisms and the environment. View pictures or videos of landslides and soil erosion. Discuss the dangers of soil erosion and suggest ways of conserving soils. Construct drawings/models or collect pictures of different soil conservation methods. Present to the class, explaining how the method helps to conserve/ protect soils.	• Research, communicate, create, think critically – analyse	• Models/ drawings represent the conservation method • Presentations are informative and accurate

Learning Outcomes

Students who demonstrate understanding can:
- ✓ Cite evidence about how climate change affects us
- ✓ Apply the concept of climate change to explain its occurrence in other contexts
- ✓ Practice proper solid waste management
- ✓ Explain how human activities can cause or prevent soil degradation
- ✓ Use selected ICT tools to browse and search for information, and to produce multimedia presentations for communicating information

Points to Note	Extended Learning
Use opportunity to **mention** other forms of pollution covered previously: air and water. Relate these environmental problems to Jamaica. **Cross-curricular links**: Social Studies (AT1 – climate, grades 4-6) Follow guidelines to promote healthy use of ICT tools	Invite resource persons to speak on: 1. Soil Degradation (e.g. farmer/RADA/4H/Forestry Department) 2. Solid waste disposal (e.g National Solid Waste Management Association) 3. Climate Change (e.g. UWI Physics Department, Met Service)
Resources Videos/slideshow, cardboard, paper, paste, scissors, books, computer with software to make digital presentations, multimedia projector, Internet, image/video recording device(e.g., camera) and any other available technologies	**Key vocabulary** Climate change, soil degradation, exhaustion, deforestation, slash and burn, overgrazing, pesticide, chemical, erosion, solid waste, vector and water borne diseases, reforestation, crop rotation, terracing, organic agriculture, soil erosion, soil conservation

SCIENCE UNITS OF WORK GRADE 6 TERM 1 UNIT 2: LIGHT AND SOUND

About the Unit

In this unit, students will investigate the nature of light and sound energy, and how they interact with various materials. They will identify sources of noise pollution, note the harmful effects on humans and be aware of mitigation strategies.

Range of Content

- Light is the form of energy which is detected with the eyes and enables vision
- All objects are either transparent, or translucent, or opaque
- Objects emit or reflect light, that is they are luminous or non-luminous
- Different materials may cause light to behave in a variety of ways
- Light travels in straight lines in all directions from a source (i.e. they radiate)
- Sound travels in all directions from a source
- The pitch of a sound is dependent on the length of the vibrating medium
- Sound travels fastest through solids and slowest through gases
- Excessive sound in an area can result in noise pollution
- Loud noise can have harmful effects

Focus Question 1: How does light behave?

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):** - Explore the properties of light and sound, and how different materials affect their behaviour. - Use prior experiences and scientific knowledge to formulate and test hypotheses, and interpret results. - Make a series of measurements of quantities and make inferences from observations in order to draw conclusions. - Plan and carry out fair tests to identify aspects of a model or prototype that can be improved. - Display curiosity, objectivity and perseverance in their approach to activities. **Duration:** 4 weeks/ 8 Hours	**Objectives:** - Distinguish between **luminous** and **non-luminous** objects/organisms - Investigate the properties of light - Investigate the interaction of light with materials that are shiny, dull, transparent, translucent and opaque - Investigate the interaction of light with lenses/mirrors - Investigate some effects of reflection/refraction in everyday life - Carry out fair tests in conducting investigations on the properties of light - Show objectivity by using data and information to validate observations and explanations about light - Value individual effort and team work

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.

- **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.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Students will: • As a class, discuss what they know about light. (*Teacher should lead discussion in order to review that light is a form of energy, and light enables vision.*)	• Communicate	• Correct information about light given.
• In groups, be given various objects/organisms (or pictures) to group into those that produce light and those that do not. Tabulate the information (digital/non-digital) and present it to the class. (*Teacher should introduce the terms luminous and non-luminous/illuminated.*)	• Collaborate, communicate, classify	• Objects/organisms correctly classified in table.
• In groups, use a straight straw to look at an object, then bend the straw at a slight angle (less than 45º), and check whether the object can still be seen. (*Teacher should emphasize fair testing by ensuring students use the same straw at the same distance from the object being viewed*). Discuss their findings, giving reasons for their observations (e.g., explain why the object was/was not seen) and record findings. Punch identical holes in the	• Investigate, communicate, think critically (analyse, infer), manipulate, record, observe, collaborate	• Report contains accurate information on the investigation. • Correct inference made that light travels in straight lines

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
centre of three cardboard sheets of similar size (roughly 10 cm by 10 cm). Arrange the boards so that they are 15 cm apart from each other and the holes are aligned. Place a light source (e.g. flashlight) at one end and view it from the other end through the holes in the cardboard. Record their observations. While looking through the hole, slightly shift the middle cardboard so that the holes are no longer aligned. Record and explain their observations in a simple report (digital/non-digital), outlining the steps of the investigations.		
• In groups, use a light source (e.g. a lamp, the Sun) and various types of materials (transparent/non-transparent) of different sizes and shapes to explore the formation of shadows. Record their observations in drawing and writing. Discuss and suggest reasons for the formation of the shadows and share with the class in a variety of ways (electronic/non-electronic).	• Collaborate, investigate, observe, communicate, think critically (analyse, infer), manipulate, record	• Correct suggestions made for the formation of shadows.
• In groups, turn on a flashlight and vary its distance from a flat surface. Record their observations in drawing and writing. Offer simple explanations for their observations. Observe a light bulb or lit candle and suggest the direction in which the light travels. Share their ideas with the class.	• Investigate, record, manipulate, observe, think critically (analyse, infer), communicate	• Acceptable explanations/suggestions given for observations.
• Use a light source to shine light from the same distance on objects made from different materials (e.g. rubber, regular glass, frosted glass, plastic, metal etc.). Record their observations and sort the objects into one of three groups corresponding to – most of the light coming through (transparent), no light coming through (opaque) or some light coming through (translucent). Share and discuss their findings with the class.	• Investigate, manipulate, observe, record, classify, communicate, think critically (analyse)	• Objects correctly classified.
• Use a lens/mirror and a light source (e.g. flashlight), to explore how the direction of light may be changed. Record the steps they took and their observations (direction of the light rays) in drawing and writing. Share their findings with the class. Engage in a teacher-led discussion to arrive at simple explanations for the terms reflection and refraction.	• Investigate, observe, record, manipulate, communicate, think critically (analyse, develop explanations)	• Drawings clearly indicate the path of light. • Path of light rays correctly represented.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
• In groups, use a flexible, flat, smooth, shiny piece of metal sheet (such as aluminium or zinc), or a flexible mirror to make observations about the images seen of themselves. View their images with the metal/mirror in different positions, e.g. flat, curved inwards, curved outwards. Record their observations in a variety of ways. Share and discuss their findings with the class. (*NB: Metal edges should be rounded or covered to prevent injury*).	• Investigate, observe, record, manipulate, collaborate, communicate, think critically (evaluate)	• Observations appropriately recorded.
• In groups, place a pencil in an empty transparent container and make observations. Fill the container half-way with water, view from various angles and make more observations. Record their observations in writing and drawing. Suggest simple explanations for their observations. Share and discuss their ideas with the class.	• Collaborate, manipulate, observe, record communicate, think critically (analyse, develop explanations)	• Acceptable explanations offered for observations.

Learning Outcomes

Students who demonstrate understanding can:
- ✓ Illustrate some properties of light
- ✓ explain some everyday observations in terms of the behaviour of light
- ✓ apply words and phrases related to light
- ✓ make and record observations and present information in drawing and writing
- ✓ Use selected ICT tools to create KWL chart , record observation and to communicate information

Points to Note	Extended Learning
• Teacher should clarify all misconceptions regarding luminous and non-luminous objects, e.g. the misconception that the moon is luminous. • Exercise care in choice of light sources as some may be hazardous to the eyes. Monitor students and ensure that they do not shine light into their/others' eyes. • Help students to represent the path of light using straight lines with arrows. • Guide students in the use of word processing software, incorporating organisational features such as columns and tables, to plan and record observation from activities	Research how shadows can be used to tell the approximate time of day.

Resources	Key vocabulary
Magnifying glass, lenses and/or mirrors Props for performance piece/materials for the display Sample objects/materials for the activities, Light source Straws, Piece of metal for mirror Transparent containers, Water Multi-media materials on luminous & non-luminous sources of light Computer database e.g. from Internet (where possible) Objects/materials for sound activities Light and sources computer, multimedia projector, word processing software and any other available technologies	Light, reflect, refract, luminous, non-luminous, shiny, dull, lens, mirror, source

Focus Question 2: How does sound behave?

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)**: • Explore the properties of light and sound, and how different materials affect their behaviour. • Use prior experiences and scientific knowledge to formulate and test hypotheses, and interpret results. • Make a series of measurements of quantities and make inferences from observations in order to draw conclusions. • Plan and carry out fair tests to identify aspects of a model or prototype that can be improved. • Display curiosity, objectivity and perseverance in their approach to activities. **Duration:** 3 weeks/ 6 Hours	**Objectives:** • Investigate some properties of sound • Explain why sounds may be interpreted as pleasant/unpleasant • Identify sources of noise pollution, and ways to eliminate them • Explain why loud sounds can be harmful • Formulate hypotheses when conducting investigations into the properties of sound • Describe sounds using appropriate scientific language • Show curiosity in investigating the property of sounds • Work cooperatively in groups
ICT Attainment Targets: 🖥 **COMMUNICATION AND COLLABORATION - use technology to communicate ideas and information, and work collaboratively** 🖥 **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.**	

🖥 **DESIGNING AND PRODUCING** - use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations. 🖥 **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 2	Key Skills	Assessment Criteria
Students will: • In groups, fix one end of a plastic ruler to a table and allow the other end to hang over the edge. Measure the distance from the edge of the table to the tip of the hanging end of the ruler. Make the ruler vibrate by plucking/flicking the hanging edge, and record their observations in a table as in the example shown below. Repeat the steps with the ruler at varying lengths hanging over the edge, each time trying to flick/pluck the ruler with the same force. Record their observations.	• Collaborate, investigate, manipulate, measure, think critically (analyse, evaluate, infer), record, communicate, conduct fair tests, observe	• Relationship between length of the ruler and pitch of sound, and length of the ruler and speed of vibrations, correctly identified.

Example:
Place a tick (✔) in the relevant box

Table showing the speed and pitch of a vibrating ruler

Length of Ruler/cm	Speed			Pitch		
	fast	medium	slow	high	medium	low
25			✔			✔

Discuss their results to ascertain any patterns/relationships between the length of the ruler and the speed and pitch of the vibrations. Share and discuss their ideas with the class.

In groups, repeat the activity above using rulers made from different materials, e.g. a wooden ruler and a metal ruler. Compare the results from all the investigations and make suggestions about the relationship between

• Investigate, observe, manipulate, record, conduct fair tests, collaborate, think	• Relationship between the type of material and the sound produced, correctly identified.

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
the type of material and the sound produced. (*Teachers should emphasise fair testing.*)	critically (analyse, draw conclusions), communicate	
• In groups, be provided with at least five (5) empty glass bottles. Keep one bottle empty (full of air) and fill one with water. Pour different volumes of water in each of the other bottles. Knock the top edge and/or blow over the mouth of each bottle, with the same force. Record their observations and draw conclusions. Share and discuss their conclusions with the class.	• Investigate, observe, record, manipulate, think critically (analyse, infer), communicate, collaborate	• Conclusions drawn consistent with data.
• Half-fill a drinking glass with water. Use a metal spoon/fork to knock the side of the glass above the water level, then below the water level. Record and offer simple explanations for their observations. Identify the vibrating medium (air/water) in each case. Share and discuss their observations with the class.	• Investigate, observe, record, manipulate, think critically (analyse, infer), communicate	• Acceptable explanations offered for their observations. • Vibrating medium correctly identified.
• In groups, pluck a variety of rubbers bands of various thicknesses and lengths. Note and discuss their observations. Formulate a statement suggesting the reasons/ideas for their observations. Share and discuss their reasons/ideas with the class. In a teacher-led discussion, arrive at a class consensus regarding statements that can be tested (**hypotheses**). (*Teacher should introduce the term hypothesis as a part of the scientific method.*) In groups, plan, design and carry out an investigation to test their hypothesis. Record their results in a variety of ways. Discuss their results and determine if they supported their hypothesis. Share and discuss their plans and findings with the class.	• Investigate, observe, record, communicate, think critically (analyse, infer, clarify conclusions), make predictions, hypothesise, plan and design, conduct fair tests, communicate	• Testable hypothesis formulated • Investigation reflects a fair test.
• Have some members of the class form a circle then blindfold them. Place a source of sound, e.g. a radio, cd player, ipod etc., in the centre of the circle. Ask blindfolded classmates to indicate the direction of the sound. As a class, discuss the responses of their blindfolded classmates and make suggestions about how sound travels. (*Teacher should assist the students in coming to the realisation that sound travels in all directions from its source.*)	• Observe, collaborate, think critically (develop explanations, analyse), communicate	• Acceptable suggestions offered for how sound travels.

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
• Stand at a distance of about 100 m from a wall. Clap two pieces of hard board together and record their observations. Repeat with different number of claps in quick succession, each time recording their observations. Suggest reasons for their observations and record these. Share and discuss their observations and suggestions with the class. (*Teacher should ensure that students recognise that echoes are reflected sounds.*)	• Investigate, think critically (infer, develop explanations), record, observe, communicate	• Acceptable suggestions offered for observations.
• Listen to a selection of sounds of different volumes and pitches (frequencies), then group each sound as being pleasant/unpleasant, giving reasons for each choice. Share and discuss groupings and reasons with the class.	• Observe, classify, think critically (justify choices), communicate	• Acceptable justification offered for classifications.
• In groups, list examples of noise pollution (sources), giving reasons for examples stated. Suggest how they can eliminate/reduce unwanted sounds. (*Note: noise is unwanted sound; noise pollution is harmful or annoying levels of noise continuously released into the environment.*) Be given a range of materials (such as bubble wrap, blanket material, foam sheeting etc.) to determine which would be the best for muffling a sound (i.e. acoustic insulation). Plan and design their investigation paying attention to how they will make fair comparisons of whether the sound is muffled, what they will use as a sound source, what they will vary (e.g. material, number of layers, area of material). Present plans to class for discussion. Based on the feedback, decide on and make adjustments to their plans, where necessary. Execute final plans and record their results in a variety of ways. Present and discuss findings with the class.	• Collaborate, think critically (analyse, evaluate), plan and design, conduct fair tests, investigate, communicate, draw conclusions	• Logical suggestions made for the reduction/elimination of unwanted sound. • Investigation reflects a fair test. • Conclusions supported by results.
• As a class, discuss whether loudness is a factor in noise pollution. Suggest other factors that may contribute to noise pollution (e.g. repetition of sound over long periods, frequency etc.). Provide supporting reasons for their ideas. Suggest and discuss possible harmful effects of noise pollution.	• Collaborate, communicate, think critically (analyse, evaluate, infer)	• Letter contains accurate information about noise pollution.

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
Write a letter to a friend about noise pollution, its impact on society and ways of reduction.		

Learning Outcomes
Students who demonstrate understanding can:
- ✓ carry out activities to show the properties of sound
- ✓ explain some everyday observations in terms of the behaviour of sound
- ✓ classify sounds as pleasant/unpleasant
- ✓ appreciate that loud sounds can be harmful
- ✓ create devices to reduce noise pollution
- ✓ Use selected ICT tools to browse and search for information, and to demonstrate safe, respectful, responsible and clear online communication

Points to Note	Extended Learning
Sound should be dealt with in a qualitative manner ONLY; no measurement of decibels required. Monitor children with the use of rubber bands. When stretched, they can become harmful missiles. Children should exercise care in handling glass bottles.	Research ways in which the reflection of sound is used. Design and create an earmuff to reduce noise pollution entering the ear.
Resources Audio- or videotape of selection of sounds of different volumes & frequencies, sample objects/materials for the activities, Light and sound sources. Computer, internet access, multimedia projector, audio/playing device and any other available technologies	**Key vocabulary** Sound, vibration, volume, pitch, frequency, noise pollution, acoustic insulation

SCIENCE UNITS OF WORK GRADE 6 TERM 2 UNIT 1: MATERIALS – PROPERTIES AND USES

About the Unit

In this unit, students continue to learn about the names, properties and uses of everyday materials begun at the lower grades, are clear about safety at all times, and recognise that materials are handled, stored and disposed of in different ways depending on their properties. Students will plan investigations; including controlling variables where appropriate e.g. fair tests.

Students will differentiate between reversible and irreversible changes. They will evaluate, through investigations, whether or not particular changes are reversible. They will assess the usefulness of some reversible and irreversible changes in everyday situations.

Range of Content

- Materials exist as solids, liquids or gases.
- Materials/objects have different properties, such as transparency, absorbency, strength, magnetic property, and heat conductivity, which determine their everyday use.
- Improper disposal of some materials can affect the environment.
- Materials can undergo reversible or irreversible changes.
- Irreversible changes cannot be undone and form new materials.
- Reversible changes can be undone.
- Reversible and irreversible changes can be useful in everyday life.
- Substances can change their state by heating and cooling.
- Melting, freezing, evaporation and condensation can cause materials to change state.

Focus Question 1: What are some properties of common materials and their everyday uses?

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 how to safely use, store and dispose of everyday materials, and how their properties determine their uses. • Use prior experiences and scientific knowledge to formulate and test hypotheses, and interpret results. • Make a series of measurements of quantities and make inferences from observations in order to draw conclusions. • Plan and carry out fair tests to identify aspects of a model or prototype that can be improved. • Display curiosity, objectivity and perseverance in their approach to activities. **Duration:** 2 weeks/ 4 Hours	**Objectives:** • Identify correct and safe ways of using, storing and disposing of materials and household items. • Examine a selection of materials/objects to determine the transparency, absorbency, strength, magnetic property, and heat conductivity of materials in everyday use. • List some properties of materials that determine the choice of objects for specific purpose in everyday life. • Evaluate how the disposal of selected materials affect the environment • Assess the impact of different materials on the society • Generate predictions of material properties based on observations and experience. • Work cooperatively in groups • Accept the ideas of others • Be willing to change their minds if what they find is not what they had believed

ICT Attainment Targets:	
💻 **COMMUNICATION AND COLLABORATION - use technology to communicate ideas and information, and work collaboratively** 💻 **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.** 💻 **DESIGNING AND PRODUCING - use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations.** 💻 **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: • Collect a variety of labels from household items and examine them for instructions for use, warning signs (hazard symbols), expiration date, ingredients, storage and disposal. Prepare a checklist and record the information on the different types of products. Discuss the importance of each type of information, paying special attention to use, storage and disposal. • Use research skills to determine how the disposal of some materials (eg. cell phones, plastic, batteries etc.) may affect the environment. Make a table to show what effect each material has on the environment/ or human health. Share findings with the class in creative ways (multimedia presentation, drama, orally etc). Suggest safe disposal practices for each material identified or ways the materials can be recycled. • Develop criteria and use it to evaluate selected products for safety and compliance. Compare their criteria with the relevant standards from the Bureau of Standards Jamaica website.	• Communicate, create, think critically • Research, record, create table, communicate, think critically (evaluate, apply, draw conclusions) • Create, compare, think critically	• Checklist has all the required criteria. • Correct information displayed in table • Creative presentations contain accurate information • Logical conclusions drawn • Plausible disposal practices suggested • Product safety and compliance accurately assessed based on criteria.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
• In groups, be given sets of identical materials to investigate an assigned property: transparency, absorbency, strength, magnetic property, and heat conductivity (*each groups should be assigned one of the properties listed*). Plan, design and execute the investigation, paying special attention to fair testing. Record observations in a table.	• Collaborate, communicate, think critically, manipulate, create	• Designed investigation reflects a fair test.

MATERIAL	PROPERTY: (e.g. Strength)		
	Weak	Fair	Strong
(e.g. ply wood)		✓	

Report on how they carried out the investigation and their findings to the class. Discuss and collate the results of each group. Create a class display of the compiled findings.		
• In groups, complete a worksheet on Properties and Uses of Materials. Use materials found in the home/ school and complete a table showing name of material, what it is used for/ made from, why the material is a good choice and the property of the material (eg. transparent, absorbent, conductor etc.)	• Record, observe, collaborate, think critically (analyse, make conclusions)	• Completed worksheet with accurate information
• Make predictions on the most suitable materials for use in specific everyday situations, e.g. which material is best for making a garbage bin. Plan, design and carry out simple investigations to test their predictions. Record findings and draw conclusions. Share and discuss findings with the class.	• plan, design, manipulate, communicate, think critically (analyse, predict, draw conclusions)	• Conclusions supported by findings.
• As a class, identify a problem in the classroom. In groups, plan and design a solution to the problem using recycled materials. Peer-assess the plans of each group and arrive at a class consensus as to the best solution.	• communicate, plan, design, collaborate, think critically (analyse, apply, synthesize)	• Solution addresses the problem in some way.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria

Learning Outcomes
Students who demonstrate understanding can:
- ✓ Recognize correct and safe ways of using, storing and disposing of materials and household items
- ✓ Sort a selection of materials/objects to determine the transparency, absorbency, strength, magnetic property, and heat conductivity of materials in everyday use.
- ✓ Describe some properties of materials that determine the choice of objects for specific purpose in everyday life.
- ✓ Make predictions based on observations and experience

Points to Note	Extended Learning
Select materials that will not pose any danger to students.	Research some 'new' materials that are used for everyday purposes
Resources Wood, metals, plastic, straw, paper, household labels, food labels	**Key vocabulary** transparency, absorbency, strength, magnetic property, and heat conductivity

Focus Question 2: what changes are reversible and irreversible?

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):
- Recognise that some changes are irreversible and others are reversible.
- Understand the processes involved when a solid changes to liquid (and vice-versa) and a liquid changes to gas (and vice-versa).
- Use prior experiences and scientific knowledge to formulate and test hypotheses, and interpret results.
- Make a series of measurements of quantities and make inferences from observations in order to draw conclusions.
- Plan and carry out fair tests to identify aspects of a model or prototype that can be improved.
- Display curiosity, objectivity and perseverance in their approach to activities.

Duration: 3 weeks/ 6 Hours

Objectives:
- Conduct an investigation to illustrate that some changes result in the formation of new materials and others do not.
- Distinguish between reversible and irreversible changes
- Classify some changes as reversible and others as irreversible;
- infer that some materials can change from one state to another (solid, liquid and gas)
- Identify the processes involved when materials change from one state to another (freezing, melting, evaporating, condensing)
- Make careful observations of reversible and irreversible changes, record and explain these using suitable scientific language
- Accept the ideas of others
- Be willing to change their minds if what they find is not what they had believed
- Work cooperatively in groups
- Predict the effect of heat on selected materials
- Predict whether a change will be reversible or irreversible
- Test predictions of changes with actual observations

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 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 2	Key Skills	Assessment Criteria
Students will: • Observe and record what happens when they or the teacher: – gently heat(s) a square of butter in a hot water bath then allows the butter to cool; – inflate(s) then deflate(s) a balloon; – cut(s) a sheet of paper into four pieces then put it back together; – boil(s) water and place a mirror (or other cold surface) directly above the steam.	• Make observations, record, collaborate, communicate, manipulate, investigate	• Observations accurately recorded.
As a class, discuss the changes that occurred in each case and state whether any new materials have been formed. (*In discussions teacher should introduce the term reversible to describe changes in which no new materials are formed.*) Write a simple description of the meaning of the term 'reversible change'. Share their descriptions with the class.	• Communicate, think critically (analyse, draw conclusions, define operationally)	• Participated in discussions • Acceptable description given for the term 'reversible change'.
ICT Integration: Capture images of each investigation and insert them under the heading "before" and "after" on slides or a page in appropriate software. Use pictures to aid the discussion of the results.	• capture image using image capturing device. • Insert pictures	
• Observe and record what happens when the teacher:	• Observe, record	• Observations accurately recorded.

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
– cracks and heats a raw egg, then allows the heated egg to cool; – burns paper; – mixes vinegar and baking soda Discuss the changes that occurred in each case and state whether any new materials have been formed. (*In discussions teacher should introduce the term irreversible to describe changes in which new materials are formed.*) Write a simple description of the meaning of the term 'irreversible change'. Share their descriptions with the class. *ICT Integration: Capture images of each investigation and insert them under the heading "before" and "after" on slides or a page in appropriate software. Use pictures to aid the discussion of the results.*	• Communicate, think critically (analyse, draw conclusions, define operationally)	• Acceptable description given for the term 'irreversible change'.
• In groups discuss and predict whether some simple activities will result in reversible or irreversible changes (e.g. mixing sand and water, striking a match and letting it burn etc.) In groups, carry out or make observations as the teacher demonstrates the activities, and record their observations in a variety of ways. Discuss findings with the class and compare their predictions with the class consensus. (*Teacher should encourage the use of appropriate scientific language in discussions.*)	• Collaborate, communicate, observe, investigate, think critically (make predictions, make comparisons, classify)	• Accurate classification of changes as reversible or irreversible.
• Brainstorm how water may be changed from one state to the another. Record observations as teacher demonstrates: (1) the melting of ice through heating; (2) the evaporation of water through boiling; (3) the condensation of water vapour through cooling.	• Think critically, observe, communicate, record	• Accurate observations recorded.
• View videos/pictures of materials changing state, including the freezing of water. Discuss the causes of the changes of state, that is, the heating (gain of heat) and cooling (loss of heat) of the materials. Represent the changes of state on a heat flow diagram. E.g.	• Collaborate, communicate, create diagrams	• Flow diagrams reflect correct state change and related heat flow.

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
  • In groups, write brief descriptions of how materials observed were made to change from one state to another. • In groups, be given four cards, each with one of the following words: freezing, melting, evaporation and condensation. Paste each word card at the appropriate place on the heat flow diagram. 	• Collaborate, communicate, think critically (analyse, make inferences) • Collaborate, think critically, communicate	• Acceptable descriptions given of how materials change state. • Processes correctly identified on flow diagram.

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
• In groups, develop a digital/non-digital presentation to illustrate the four processes and the associated heat flow, that occur when materials change from one state to another.	• collaborate, create, communicate, think critically	• Presentation contains correct information on heat flow and state changes. • Presentations creative

Learning Outcomes

Students who demonstrate understanding can:
- ✓ Differentiate between reversible and irreversible changes
- ✓ Carry out simple activities to demonstrate reversible and irreversible changes
- ✓ Illustrate how materials may change from one state to another
- ✓ Summarise the processes involved when materials change from one state to another
- ✓ Conduct Internet research and navigate and manipulate digital content
- ✓ Work collaboratively to use selected ICT tools to complete task and communicate information on reversible and irreversible changes of matter.

Points to Note	Extended Learning
• Teacher should NOT introduce the terms 'chemical change' and 'physical change'. • Various everyday materials should be used to demonstrate reversible and irreversible changes, e.g. cake mixture, dough, chocolate. • Exercise caution when using heated materials. • Follow guidelines to promote healthy use of ICT tools • Recognise and acknowledge the owners or creators of digital materials and • Encourage students to observe safety rules when browsing online.	Explore how reversible and irreversible changes may be used in everyday situations.

Resources	Key vocabulary
Butter, egg, water, ice heat source (e.g. electric burner/heater), suitable containers for heating, Computer, Internet multimedia projector, pictures and videos showing changes of state and the processes involved. image capturing device, computer and any other available technologies, Internet access, multimedia projector	Reversible, irreversible, freeze, melt, evaporate, condense, solid, liquid, gas, materials, state of matter

SCIENCE UNITS OF WORK GRADE 6 TERM 2 UNIT 2: HUMAN BODY SYSTEMS

About the Unit

In this Unit, students will learn about selected human body systems. Through observations, demonstration and research they will identify the organs associated with each system and state their functions.

Range of Content

- The main structures and functions of selected human body systems
    - ➢ Circulatory system (Heart, blood, blood vessels). The main job of the circulatory system is the transporting materials throughout the body. It carries nutrients, oxygen and water to different parts of the body and removes waste.
    - ➢ Digestive system (mouth, oesophagus, stomach, small intestine, large intestine). The digestive system helps to break down food into a form that the body can find useful.
    - ➢ Excretory system (kidney, bladder, skin, lungs). Substances that may be harmful to the body are removed through the excretory system.
    - ➢ Nervous system (brain, spinal cord, nerves). The nervous system controls the body's actions.
    - ➢ Reproductive system (penis, testes, vagina, ovary, uterus/womb). The reproductive system is responsible for producing offspring.
    - ➢ Respiratory system (nose, trachea, lungs). The respiratory system produces energy from food.
    - ➢ Skeletal and muscular systems (muscles, bones, joints). The muscular and skeletal systems work together to help the body to move. The skeletal system also protects major organs throughout the body.

Focus Question 1: What are some of the systems in my body and how do they work?

THEME: Living things, Life Processes and the Environment	Objectives:
Attainment Target(s): • Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans. • 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 structure and functions of selected animal systems. • Use prior experiences and scientific knowledge to formulate and test hypotheses, and interpret results. • Make a series of measurements of quantities and make inferences from observations in order to draw conclusions. • Plan and carry out fair tests to identify aspects of a model or prototype that can be improved. • Show responsibility in food choices. • Show sensitivity to others who make unhealthy eating choices. • Show concern by being respectful and responsible towards the environment and the organisms living in it.	• Explain what is meant by the term 'system' • Identify the organ systems and state their functions in humans • Recognise the integration of the different organ systems in carrying out life processes • Identify selected organs in the human digestive system (mouth, oesophagus, stomach, small intestine, large intestine) and outline the path food travels from mouth to anus • Describe how the bones, joints and muscles work together to produce movement in humans • Identify the excretory organs of humans (kidneys, lungs and skin) and state their role in excretion • Show curiosity in exploring their own body and questioning about the structures or functions of the body. • Share their views confidently • Demonstrate self-assurance about their uniqueness

- Display curiosity, objectivity and perseverance in their approach to activities.

Duration: 3 weeks/ 6 Hours

ICT Attainment Target(s)

- 🖳 **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.

- 🖳 **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.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Students will: • View videos/pictures of simple systems. In groups, name the components that make up each system viewed, and record their ideas. Discuss and suggest how the components of each system work together and affect one another. Generate a simple working definition for the term 'system'. Share their ideas with class.	• Think critically (define operationally), record, communicate, collaborate,	• Acceptable working definition of 'system' developed.
• As a class, discuss the fact that the human body has several systems that work together to keep it alive. In groups, suggest what they think are the organs systems in the human body, and record their ideas. Research the names of the human organ systems and their function(s). Summarise the	• Collaborate, record, communicate, think critically (research, reason, infer), label diagrams, manipulate	• Organs correctly positioned and labelled.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
function of each system. View videos/interactive simulations/charts of the human organ systems. Draw/be provided with an outline of the human body and place the organ cut-outs, provided by the teacher, in the correct position for each system. Add the appropriate labels for selected organs.		
• In groups, use the chart of the digestive system from the previous activity to trace the path that food travels from the mouth to the anus. Illustrate this path using a flow diagram. Using available materials, plan, design and construct a model of the digestive system illustrating selected organs (**mouth, oesophagus, stomach, pancreas, small intestine, large intestine**). As a class, peer-assess the group models using a pre-prepared checklist developed by the class.	• Collaborate, think critically (evaluate, generating solutions), manipulate, measure, create, plan and design, communicate	• Flow diagram shows accurate sequence of the route food travels • Model correctly represents the digestive system.
• Mimic body building actions flexing and extending various muscles and joints in the body. Feel the muscles that contract and relax to bring about these movements and discuss the role played by muscles, joints and bones. View x-rays, pictures or videos of muscles, bones and joints found in the body. Write a short paragraph explaining how bones, joints and muscles work together as a system.	• Observe, communicate, think critically (analyse, infer)	• Paragraph correctly describes how muscles, bones and joints cause movement of the body.
• As a class, discuss what would happen if someone never threw out his or her garbage and leftover food? With the aid of the teacher, identify some excretory products, relate them to their corresponding organs and describe how they are removed from the body (simple treatment). Summarise and present their understanding of excretory organs and related products (*lungs – Carbon Dioxide; kidneys and skin – urea*).	• Collaborate, communicate, think critically (evaluate)	• Summaries contain accurate information about excretory organs and their related products.
• In groups, make a model of the excretory system (i.e. the urinary system: kidneys, bladder and ureters) in the outline of the human body drawn on stiff paper/cardboard, using simple materials (such as kidney beans, spaghetti, glue, mini-marshmallows, drinking straws, cord or string)	• Collaborate, communicate, create	• Model accurately illustrates the excretory system • Acceptable descriptions of what happens in the excretory system.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
provided. Using the model, take turns to describe to the class in simple scientific language, what happens in the Excretory System.		• Scientific terms correctly used.

Learning Outcomes
Students who demonstrate understanding can:
- ✓ Describe the role of the organ systems in humans
- ✓ Create and use models to illustrate the basic structure and function of selected organ systems
- ✓ Cite evidence of the integration of organ systems in carrying out life processes
- ✓ Appreciate the importance of their body systems
- ✓ Navigate digital content on websites and storage devices

Points to Note	Extended Learning
Main focus should be on organs mentioned in activities Urine is the fluid produced by the kidneys that carries metabolic waste (**e.g. urea**) out of the body. Follow guidelines to promote safe use of Internet and ICT tools	Do research on the alimentary canal of other animals e.g. cow, fish, and chicken.
Resources Pictures, chart, video, cloth, cord, x-ray, paste, scissors, cardboard, body outline, organ cut-outs, metre rule/tape measure, kidney beans, spaghetti, glue, mini-marshmallows, drinking straws, cord or string computer, internet access and any other available technologies	**Key vocabulary** Locomotion, skeleton, bone, muscle, joint, digestion, alimentary canal, oesophagus, stomach, intestines, anus, lungs, skin, kidneys, sweat, urine, urea, ureter, bladder, pancreas

SCIENCE UNITS OF WORK GRADE 6 TERM 2 UNIT 3: MIXTURES

About the Unit

In this unit, students will learn that substances can be combined to form mixtures. They will classify mixtures according to their properties. They will learn to work cooperatively and develop problem solving skills as they investigate specific methods of separating mixtures.

Range of Content

- Substances combine to form mixtures
- Types of mixtures include solutions, suspensions, and colloids
- Mixtures can be physically separated based on size of particles, magnetic properties and how readily they dissolve
- Methods of separating mixtures include filtration, evaporation, sieving, and decanting

Guidance for the Teacher

Activities in this unit are centred ONLY around identifying and classifying the three types of mixtures based on observable properties. Definitions of the terms solutions, suspensions and colloids are NOT required at this level. Details of particle sizes are NOT to be included.

Focus Question 1: What is a mixture and how can mixtures be separated?

THEME: Energy, Forces and Matter	Objectives:

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):
- Explore what happens when some materials are mixed and how they may be separated.
- Use prior experiences and scientific knowledge to formulate and test hypotheses, and interpret results.
- Make a series of measurements of quantities and make inferences from observations in order to draw conclusions.
- Plan and carry out fair tests to identify aspects of a model or prototype that can be improved.
- Display curiosity, objectivity and perseverance in their approach to activities.

Duration: 3 weeks/ 6 Hours

Objectives:
- Demonstrate that a mixture is made up of two or more substances.
- Classify mixtures as solutions, suspensions, and colloids.
- Recognise that all mixtures can be separated.
- Demonstrate the separation of selected types of mixtures using various techniques.
- Conduct investigations with due regard to safety
- Use appropriate scientific vocabulary to describe mixtures
- Work cooperatively in groups

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 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: • In groups, mix the materials given, (e.g. sugar and water, oil and water, stones and marbles, sand and rice etc.) and record their observations. Sort the items mixed as solid-solid, solid-liquid or liquid-liquid (e.g. sugar and water is a mixture of solid and liquid) and report to the class. Discuss their understanding of a mixture and how some mixtures differ from others. From your results and the discussions, write a simple working definition for the term 'mixture'. • In groups, add water to each of the substances provided (salt, dirt and oil) and stir for two minutes. Describe the appearance of the resulting mixture in writing and drawing. Share their observations with the class, and in a teacher-led discussion, relate the special features of each type of mixture to the terms solution, suspension, and colloid. Sort pictures of mixtures provided by the teacher as solution, suspension or colloid.	• Collaborate, manipulate, observe, communicate, record, classify, think critically (define operationally) • Collaborate, manipulate, observe, communicate, classify	• Correct classification of materials as solids, liquids and gases. • Acceptable working definition for mixture given. • Pictures correctly classified.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
• In groups, be provided with different types of mixtures (solid-solid, solid-liquid and liquid-liquid), and various equipment that may be used to separate them. Design a plan to separate each mixture, using the appropriate equipment. Execute their plans and record their results. Report their methods and results to the class. In a teacher-led discussion, relate the methods used to the scientific terms: filtration, decanting, sieving, evaporation, using a magnet.	• Collaborate, manipulate, plan and design, think critically (generate solution), communicate	• Appropriate methods devised for separating mixtures. • Successful separation of mixtures.
• In groups, given a list of mixtures (e.g. oil and water, sand and water, gravel and sand, soda), indicate the most suitable method to separate each mixture on the list. Report suggestions to the class.	• Collaborate, think critically (generate solution), communicate	• Appropriate separation technique suggested for each mixture.
• Analyse everyday scenarios involving mixtures and identify the best way(s) of separating them. For example: *Mr Brown was unloading some deliveries at his shop when he tripped and fell. Unfortunately, he dropped some of the deliveries on the floor and they got mixed up. He swept up what he could and put it in a bucket. Can you help him separate the different materials again? The mixture contains: salt, sawdust, paperclips and gravel.*	• Think critically (analyse, generate solution), communicate	• Appropriate separation techniques suggested.

Learning Outcomes

Students who demonstrate understanding can:
- ✓ Describe what is a mixture
- ✓ Identify various separation techniques
- ✓ Separate mixtures using appropriate methods
- ✓ State the meaning of the terms solution, suspension and colloid.
- ✓ Use materials efficiently to avoid wastage
- ✓ Use selected ICT tools effectively to communicate main ideas of separation techniques in different media formats.

Points to Note	Extended Learning
Teacher should assist and carefully monitor students in carrying out any activities involving evaporation. In evaporation activities, mixtures should be gently heated. Due care should be taken to prevent students from tasting mixtures. Harmless substances should be used to create mixtures. When students are doing online activities remind them to observe safety procedures. **Cross-curricular links**: Technical Vocational Education (Grade 4, AT2)	Survey the application of separation techniques at home.
Resources Water, Oil, Sugar, carbonated drink Stones, Marbles, strainer/filter, containers Multimedia projector, computer with word processor/presentation software, Internet, CDs/DVDs	**Key vocabulary** Mixture, filter, filtration, evaporation, sieving, decanting, solution, colloid, suspension

SCIENCE UNITS OF WORK GRADE 6 TERM 3 UNIT 1: DIET AND DRUGS

About the Unit
In this Unit, students will learn that eating a balanced diet is important for good health and there are consequences for long-term consumption of unbalanced diets. They will recognise that obesity, diabetes and malnutrition are examples of conditions associated with long term consumption of unbalanced diets. They will identify the specific dietary factors that contribute to each condition, and link these to appropriate methods of prevention and treatment. They will also evaluate the use and misuse of drugs.

Range and Content
The key concepts, skills and knowledge students will learn in this unit are:
- Unbalanced diets, resulting from eating too much or too little of a particular food type, can lead to ill-health
- Obesity, diabetes and malnutrition can be caused by poor eating habits or prolonged unbalanced diets.
- Consuming too much carbohydrates and fats in the diet leads to obesity.
- Increasing the intake of vitamins and minerals (from fruits and vegetables) can help to prevent nutritional diseases.
- Drugs are substances which affect how the body functions.
- Drugs can be classified as beneficial (medicines) or harmful (if misused or abused) and legal or illegal.
- Various diseases, substances and activities, can have debilitating and/or deadly effects, on the life span of humans, and therefore responsible behaviour involves – taking precautions against these diseases; avoiding/limiting intake of these substances; avoiding these activities and making life style changes.

SCIENCE UNITS OF WORK GRADE 6 TERM 3 UNIT 2

Focus Question 1: Why is it important to have a balanced diet?	
THEME: Living things, Life Processes and the Environment **Attainment Target(s):** • Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans. • 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**: • Realise that an unbalanced diet may result in disease (obesity, malnutrition, diabetes) and be aware of the dangers of drug misuse. • Use prior experiences and scientific knowledge to formulate and test hypotheses, and interpret results. • Make a series of measurements of quantities and make inferences from observations in order to draw conclusions. • Plan and carry out fair tests to identify aspects of a model or prototype that can be improved. • Show responsibility in food choices. • Show sensitivity to others who make unhealthy eating choices. • Show concern by being respectful and responsible towards the environment and the organisms living in it.	**Objectives:** • Explain some of the consequences of not having a balanced diet • Assess the causes of obesity, diabetes and malnutrition • Outline measures to mitigate against selected lifestyle diseases • Justify the need for eating healthy foods • Evaluate data to draw conclusions about the consequences of improper diets • Show concern for others who make unhealthy eating choices • Show sensitivity to individuals who suffer from food related illnesses or challenges • Use appropriate scientific language related to food and health

• Display curiosity, objectivity and perseverance in their approach to activities.
Duration: 4 weeks/ 8 Hours

ICT Attainment Target(s)
   ⌨ **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.
   ⌨ **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.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Pupils will: • As a review, in groups draw/obtain pictures of food items from a variety of sources, e.g. websites, magazines or newspapers. Use the pictures to create a balanced meal. Display their composition and discuss why it is balanced. Evaluate and critique each other's presentation. • In groups, observe then discuss pictures/video clips of children or adults suffering from the effects of unbalanced diets, e.g. diets lacking in vitamin C (Scurvy), vitamin D (Rickets), calcium (Rickets), protein and carbohydrates (malnutrition). Summarise the consequences of not having a balanced diet in each case. • In groups, use a variety of sources to research the causes and ways of preventing obesity, diabetes and malnutrition. Discuss their findings,	• Communicate, collaborate, manipulate, think critically (evaluate) • Communicate, think critically (reason, evaluate), collaborate	• Meal reflects a balanced diet. • Summaries contain accurate information on the effects of diets lacking the selected nutrients. • Presentation contains relevant and accurate information on

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
prepare a report and present the information in a variety of ways (e.g., digital story, cartoon strip, multimedia presentation, poem, song, skit etc. • In groups, analyse data provided by the teacher on the incidence of diabetes, malnutrition and obesity in Jamaica and the Caribbean. Compare the occurrence of these diseases in children across the Caribbean. Develop a class display to illustrate their findings.	• Research, collaborate, communicate, create, think critically (evaluate) • Collaborate, think critically (compare), create, think creative	the causes and prevention of obesity, diabetes and malnutrition. • Acceptable comparisons of disease occurrences across the Caribbean provided.

Learning Outcomes
Students who demonstrate understanding can:
- ✓ Describe the potential detrimental effects of under or overeating
- ✓ detail what the outcomes of having too much or too little of one particular food group might be
- ✓ Appreciate the impact of diet on health
- ✓ Navigate digital content on websites and storage devices
- ✓ Use selected ICT tools effectively to create multimedia

Points to Note:	Extended Learning
Only a simple treatment of selected deficiency diseases is required. Follow guidelines to promote safe use of Internet and ICT tools	Compare the incidence of diabetes, malnutrition and obesity in the Caribbean to another region, e.g. North America, Europe, Asia etc.
Resources Pictures, books, multi-media, paste, paper, magazine, computer with suitable software to create multimedia presentations, Internet access, multimedia projector and any other available technologies	**Key vocabulary:** Obesity, malnutrition, diabetes, Scurvy, Rickets

Focus Question 2: Why is the proper use of drugs important?

THEME: Living things, Life Processes and the Environment **Attainment Target(s):** • Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans. • 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:** • Realise that an unbalanced diet may result in disease (obesity, malnutrition, diabetes) and be aware of the dangers of drug misuse. • Use prior experiences and scientific knowledge to formulate and test hypotheses, and interpret results. • Make a series of measurements of quantities and make inferences from observations in order to draw conclusions. • Plan and carry out fair tests to identify aspects of a model or prototype that can be improved. • Show responsibility in food choices. • Show sensitivity to others who make unhealthy eating choices. • Show concern by being respectful and responsible towards the environment and the organisms living in it. • Display curiosity, objectivity and perseverance in their approach to activities. **Duration:** 4 weeks/ 8 Hours	**Objectives:** • State the meaning of the term 'drug' • Classify commonly used drugs as legal or illegal • Explain the importance of following guidelines on the proper use of a drug • Describe the effects of drugs on the body • Show responsible behaviour in the use of drugs

ICT Attainment Target(s):	
⌨ **COMMUNICATION AND COLLABORATION - Use technology to communicate ideas, information and understandings for a variety of purposes.** ⌨ **RESEARCH, CRITICAL THINKING AND DECISION MAKING- Use technology to develop a logical process for decision making and problem solving.** ⌨ **DESIGNING AND PRODUCING – Use technology to design and produce multimedia products to demonstrate their creative thinking.** ⌨ **DIGITAL CITIZENSHIP – recognise the ethical, social and legal implications surrounding the use of technology.**	

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
Students will:		
• In groups, brainstorm and formulate a simple working definition for the term 'drug'. List some examples of drugs. Share and discuss their simple working definitions and lists with the class and arrive at a class consensus for the meaning of the term 'drug'. In a teacher-led class discussion, discuss the meaning of 'legal' and 'illegal'. Classify the drugs from the lists as 'legal' or 'illegal'.	• Collaborate, communicate, think critically (define operationally), classify	• Acceptable definitions given. • Drugs correctly classified as legal or illegal.
• In groups, discuss what is meant by 'over-the-counter' and 'prescription' drugs. Examine the instructions and any other information found on empty medicine containers, and group them as over-the-counter or prescription drugs. Suggest why they think some drugs are available over-the-counter while others require prescriptions from medical doctors. Share and discuss their ideas with the class.	• Collaborate, communicate, classify, think critically (infer, evaluate)	• Drugs correctly classified
• In groups, examine the information found on packages/containers collected from over-the-counter and prescription drugs. Use a teacher-prepared checklist to record whether the container/package has the following information: expiration date; warning; dosage (instructions for use); bar-code/batch number; storage instructions. Discuss the importance	• Think critically (evaluate), communicate, create, collaborate, think creatively	• Displays capture the most important information.

Suggested Teaching and Learning Activities – Focus Question 2	Key Skills	Assessment Criteria
of each type of information. Develop a display highlighting the critical information found on over-the-counter and prescription drugs. • Use secondary sources (e.g. video, CD-ROM, leaflets, magazines etc.) to research the effects of some legal and illegal drugs on the body. Create posters to inform other children of the effects of drugs on the body.	• Think critically (research), create, communicate, think creatively	• Posters convey accurate information about the effects of drugs on the body.

Learning Outcomes
Students who demonstrate understanding can:
- ✓ Distinguish between legal and illegal drugs
- ✓ Appreciate the importance of following instructions on drug use
- ✓ Outline some effects of drugs on the body

Points to Note	Extended Learning
Teachers should take responsibility for providing the sample drug containers/packages. Drug containers MUST be thoroughly washed out before allowing students to handle. Definition of a drug - any substance, other than food, which changes our physical or mental state when ingested, inhaled or applied to the body. Ensure that pupils do not bring illegal substances to class/school.	Conduct research on Jamaican scientists who developed medicines using locally grown plants.

Resources	Key vocabulary
Medicine containers/packages, secondary sources on the effects on drugs on the body, paper, crayon, cartridge paper, computer with suitable software to create digital product, e.g., poster; Internet access, multimedia projector	Legal, illegal, expiry date, dosage, duration of use, prescription, over-the-counter

SOCIAL STUDIES

GRADE __6__

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

The 21st 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

AT1 THEME: The physical environment and its impact on human activities	AT 2 THEME: Diversity, interdependence and sustainability in nature and society	AT3 THEME: Living together	AT4 THEME: Our common heritage
Standard: 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.	**Standard:** 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.	**Standard:** 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.	**Standard**: 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.

OVERVIEW OF SUBJECT CONTENT GRADE 6

SUBJECT	TERM 1	TERM 2	TERM 3
Social Studies	**Our Common Heritage** The Chinese and East Indians in Jamaica Promoting and preserving Caribbean culture Independence in Jamaica, Haiti and Cuba National heroes- Marcus Garvey, Norman Manley, Alexander Bustamante **Living Together** National symbols and emblems	**The Physical Environment and its Impact on Human Activities** Mountain environments and human activities Landmasses and water bodies of the world Locating places using lines of latitude and longitude **Living together** Decision making at the national level and how decisions affect citizens Rights and responsibilities of citizens	**The Physical environment and its Impact on Human Activities** Factors influencing climate Movements of the Earth- Rotation and Revolution Air pollution **Living Together** Cooperating with our Caribbean neighbours

About the Unit

In this Unit, students will continue to explore the roots of Caribbean culture and identity by examining the history of the Chinese and East Indians in the Caribbean. They will investigate the reasons these two groups migrated to the Caribbean, their relationship with other groups that were already living in the region and the contributions they made to our diverse Caribbean culture. Students will be engaged in problem solving and creative activities as they acquire a deeper understanding of Caribbean culture.

Prior Learning
Check that students:
- Have an understanding of the influence of the Europeans and Africans on Caribbean culture

UNITS OF WORK GRADE   6   TERM 1   Unit 1 (4 weeks)

Focus Question: How can we promote and preserve our Caribbean culture?	
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:** - Develop working definitions for and use the following: indentured servant, indentureship, contract, festival, carnival, immigrant, migration, push and pull factors - Recall the meaning of culture, heritage, ethnic group - Gather information and use mathematical skills to construct timeline showing the arrival of the various ethnic groups to the Caribbean - Create a thematic map of the world showing the places of origin of the ethnic groups that came to the Caribbean - Distinguish between the pull and push factors that led to migration of the East Indians and the Chinese to the Caribbean - Describe the life of Chinese and East Indian immigrants on the plantation from the 19th to the 20th century - Describe the relationship between East Indians, Chinese, Europeans and Africans in the post emancipation period - Discuss the contribution of the East Indians and Chinese to the Jamaican economy - Categorise aspects of culture as goods and services

ICT attainment targets:	• Describe and compare the traditions and celebrations of different ethnic groups by examining the following: Diwali(Divali)/ Hosay, Easter/Christmas, Crop Over, Chinese New Year
❖ **ICT : COLLABORATION AND COMMUNICATION**: Use technology to communicate ideas and information and work collaboratively to support individual needs and contribute to the learning of others ❖ **ICT : DESIGNING & PRODUCING –Use digital tools to design and develop creative products to demonstrate their learning and understanding of basic technology operations** ❖ **ICT: DIGITAL CITIZENSHIP**-Recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour.	• Identify various ways of preserving Caribbean culture • Describe various strategies that are used to promote Caribbean culture • Create goods (products) and services (strategies) to promote Caribbean culture • Value the contribution of the East Indians and Chinese to Caribbean culture • Gather information from multiple sources using the origin to guide selection • Be aware of the economic value of culture and creative industries

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Conduct online/offline research and develop working definitions for the following terms: indentured servant, indentureship, contract, festival, carnival, immigrant and use them in sentences or in stories.	Conducting research	Sentences or stories reflect the correct meaning and appropriate context of the terms
Locate on a map of the world/digital map the places of origin of the Tainos, Spanish, British, Africans, East Indians and the Chinese. On blank maps colour the areas. Develop a key to show these areas on the map. Use arrows to show route taken to the Caribbean	Creating thematic maps	Key on the map helps to correctly identify places of origin of the Chinese and East Indians on the map. The countries should be named as well as places within the country identified
Examine online/offline sources to find out when the different ethnic groups came. Determine a scale and use a ruler to construct a timeline showing the time of arrival of the ethnic groups who came to the Caribbean	Constructing timelines	Timeline must show the period/year of arrival for the Spanish, English,

		Africans, East Indians and Chinese
Participate in role play about why people migrate. Students will record role play with image capturing device. They will then discuss and list the reasons people migrate. Conduct online offline research to find out the push and pull factors that influenced the Indians and Chinese to migrate to the Caribbean. Students will make a list of these factors under the headings Pull and Push factors. Compare these with reasons identified in the role play	Organising and classifying information	Correctly identifying and classifying push and pull factors that influenced Chinese and East Indian to migrate to the Caribbean
Watch videos or from materials provided students will work in collaborative groups to describe the experiences of the Indians and Chinese on the plantation e.g. working and living conditions, wages, terms of contracts, restriction on freedom. They will make comparisons to present day working and living conditions. Each group will make a presentation to class using various creative means.	Making connections between the past and the present	Correctly describing the various experiences the East Indians and Chinese had on the Caribbean plantation in relation to living and working conditions.
Conduct online/offline research on the relationship among the Europeans, Africans and Asians (Chinese and East Indians) in the Caribbean in the post emancipation era. In collaborative groups create cartoons or write stories about the relationship among the groups. The story or cartoon should examine a conflict that arose and end with an amicable resolution of the conflict. Students can then discuss the relationship between these groups in Jamaica today.	Problem solving	Cartoon or story must highlight the relationship between the Chinese and East Indians and one of the ethnic groups that were in the Caribbean before their arrival. The story or cartoon must include conflict that could have occurred in the society in the post emancipation era and a resolution that would be satisfactory to all parties involved.

Listen to resource person(s) (East Indians and Chinese from the community, Indian High Commission, talk about Chinese and East Indian culture in Jamaica	Listening for information	Correctly identifying and classifying push/ push factors that influenced Chinese and East Indians to migrate to the Caribbean
Conduct online/offline research on Chinese and East Indian culture in Jamaica- food, dress, music, dance, celebrations, and economic activities. Students may set up display to showcase the contribution of the Chinese and East Indians to Jamaica's culture.	Gathering information and communicating information	Correctly describing the various experiences the East Indians and Chinese had on the Caribbean plantation in relation to living and working conditions. Making comparisons to present day working conditions
Watch online/ offline presentation on festivals in the Caribbean. Describe the celebrations (food, dress, dance, music) and the origin and significance of the festival and activities within the festival. Discuss similarities and differences of these festivals. Discussion should also involve the contribution of festival to the preservation of Caribbean culture.	Making comparisons and drawing conclusions	Discussion to focus on the origins, significance and descriptions of celebrations in the. Comparison of festivals should focus on similarities and differences of specific features.
Participate in a field trip to a festival. Use image capturing device to record scenes and images. Talk to patrons about the experience and why they attend. Write a report on experience at the festival. Plan a festival to celebrate and promote one aspect of Jamaica's culture.	Gathering information and writing a report Planning Evaluating	Report should include description of the festival. Plans for the festival should include where the festival will be held, when it will be held, how it will be promoted, what will be displayed, how it will be displayed and why the festival is being held.

Conduct online/offline research to find out how Caribbean culture is preserved. Discuss the effectiveness of the methods used. Set up a display on aspects of Jamaican culture that was contributed by the Chinese and East Indians. Display must also include how these aspects of culture have been preserved.		Display should include aspects of Jamaica's culture that have been contributed by the East Indians and the Chinese
Create a blog focussing on suggestions to promote Caribbean culture.	Communicating information	Blog should entails suggestions to promote Caribbean culture

Learning Outcomes
Students will be able to:
- ✓ Give accurate meaning for concepts and terms
- ✓ Use terms and concepts in the appropriate context
- ✓ Locate correctly the places of origin of the Indians and Chinese on a map of the world.
- ✓ Create an accurate timeline on the arrival of the ethnic groups to the Caribbean region
- ✓ Clearly distinguish between push and pull factors
- ✓ Give simple explanation of the factors that encouraged the East Indians and Chinese to migrate
- ✓ Briefly describe the life of the East Indians and Chinese on the plantation in the Caribbean.
- ✓ Describe the relationship between Europeans, Africans and the East Indians and Chinese.
- ✓ Make statements that show clearly the contribution of the East Indians and the Chinese to Caribbean culture and society
- ✓ Use word processing software to construct timeline
- ✓ Provide details about the origins and significance as well similarities and differences of Caribbean festivals.
- ✓ Create blog with suggestions on how to promote Caribbean culture.

Points to Note	Extended Learning
- The information on the East Indians and the Chinese in the Caribbean must be treated as introductory. Students will be exposed to more detailed information in later years. - The festivals in this Unit are not limited to those engaged in by the Chinese and East Indians. Students should be introduced to festivals in general. - The teacher should make full use of festivals that are held in or near to their school or community. - Teacher should help students to understand the Jamaican motto "Out of Many One People" - Students must be able to distinguish between religious and cultural/secular festivals	Students can look at other ethnic groups (Irish, Scots, Germans, and Syrians) in the Caribbean and find out how they have contributed to Caribbean culture and society. Students may conduct detailed search online/offline to find out the number of Chinese and East Indians that came to the various Caribbean countries, the ships they came on and how they contribute to the culture of each territory. Students may conduct research on Kwanzaa
Resources Indian High Commission, Embassy of the Republic of China Parish libraries Maps of Caribbean, the world as well as atlas, globes Text books and other printed materials Videos on the arrival of the East Indians in Jamaica, festivals in the Caribbean. Appropriate computer software **http://dohistory.org/on_your_own/toolkit/timeline.html**	**Key vocabulary:** indentured servant, indentureship, contract, festival, carnival, immigrant, migration, culture, heritage, ethnic group, Hosay, Diwali, Easter, Christmas

About the Unit

In this Unit, students will begin to understand the significance of independence and nationhood. They will examine the life, work and contribution of three of Jamaica's nation builders and national heroes; Marcus Garvey, Norman Manley and Alexander Bustamante. Students will also compare how Jamaica achieved independence with how it was achieved in Haiti and Cuba.

Prior Learning
Check that students:
• Know important events that have helped to shape Jamaica's history.
• Can explain the term colony and colonization

UNITS OF WORK GRADE 6 TERM 1 Unit 2   (4 weeks)

Focus Question: How did Jamaica achieve independence?

Attainment Target 4:	Objectives:
Recognize the contribution of individuals and groups who have helped to shape Jamaica's development over time. **THEME:** Our Common Heritage	• Develop working definitions for the following: independence, colonial rule, commonwealth, constitution, nation, monarchy, trade union, political party, self -government, universal adult suffrage, franchise, revolution • Use Mathematical skills to construct timeline to show major developments in Jamaica's history from arrival of the Tainos to independence • Examine, compare and evaluate multiple sources that outline the life and work of Marcus Garvey, Norman Manley, Alexander Bustamante • Apply lessons learnt from the lives of Marcus Garvey, Norman Manley and Alexander Bustamante to new situations • Compare the paths to independence taken by Jamaica, Haiti and Cuba

❖ **ICT : 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 AND PRODUCING-Use digital tools to design and develop products to demonstrate their learning and understanding of basic technology products ❖ ICT: 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. ❖ ICT: DIGITAL CITIZENSHIP: Recognise the human, ethical, social, cultural issues and implications surrounding the use of technology and practice online safety and ethical behaviour.	• Name the major personalities involved in the independence movement in Jamaica, Cuba, Haiti • Compare how independence is commemorated in Jamaica and other countries • Explain the significance of independence day • Formulate questions about Jamaica's decision to pursue independence and conduct research to answer these questions • Distinguish between dependent and independent countries in the Caribbean • Show appreciation for the work done by individuals in Jamaica's independence movement • Weigh the arguments for and against being an independent nation and draw conclusions about Jamaica's decision to pursue independence • Resolve conflicts amicably while completing tasks in collaborative group • Compile and arrange alphabetically a list of sources including, author, title, publisher and date of publication

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Create a dictionary using the following terms: independence, colonial rule, commonwealth, constitution, nation, monarchy, trade union, political party, self -government, universal adult suffrage, franchise, revolution. Each word is to be used in a sentence.	Using concepts in the correct context	Dictionary includes correct meaning and sentences reflect accurate understanding of concepts.

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Construct a timeline depicting the major development in the history of Jamaica from the arrival of the Spanish to Independence. Timeline to be displayed in class.	Sequencing events in history	Timeline shows correct sequence of events from the arrival of the Spanish to independence in Jamaica.
Conduct research online/offline and create a profile on the life of Alexander Bustamante, Marcus Garvey and Norman Manley. Profile should include place and time of birth, challenges, accomplishments/contribution to nation-building, how he is honoured and remembered in Jamaica today. Write a reflection on a lesson learnt from the life of each hero.	Reflective thinking	Profile of each hero should include dates for specific milestones in his life, achievements and how he is honoured and remembered in Jamaica today. Reflective piece should describe the lessons learnt and how it may be applied to a current situation.
Conduct online research and create a table showing independent and dependent nations in the Caribbean. Include the date when independent Caribbean nations achieved their independence. Conduct research to determine the features that distinguishes an independent nation from a dependent one. Create a table for this activity using word processing software	Classifying	Table should list at least five (5) dependent territories and ten (10) independent nations in the Caribbean. The date when each state became independent should be included. The distinguishing features of independent states should be itemised.
In collaborative groups conduct online/offline research on the path taken to independence by Jamaica, Cuba, and Haiti. Compare how independence was achieved in Jamaica with how it was achieved in Cuba and Haiti. The date the country achieved independence and the major persons involved in the movement must be identified. Each group will write a script for an interview which will be conducted with the major personalities in bringing about independence in each country. Questions for the interview should	Making comparisons	Interviews should reveal the path taken to independence by each country, when independence was achieved, the majors players, the benefits of independence

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
include how independence was achieved, when it was achieved and how they hope it will benefit their country.		
Discuss the significance of Independence Day and compare how Jamaica and Cuba celebrate their independence. The Cuban Embassy or Cubans living in the community may be used as resource persons to gather information on how independence is celebrated in Cuba. Students may also gather information from Jamaicans about how they celebrate Independence Day. Collect pictures and memorabilia of Independence Day celebrations and create an attractive display for presentation in class.	Gathering information	Display should include pictures of independence day celebrations and memorabilia as well as the significance of Independence Day
Listen to songs and poems on Independence from the various countries and compose songs/poems of their own. These are to be used to create a class anthology.	Synthesizing information	Songs and poems created to include material on independence on Jamaica, Cuba Haiti.
Brainstorm and list the pros and cons of living at home with parents as against living on their own and being independent. Gather information and discuss the pros and cons of Jamaica being an independent nation versus a colony. Draw conclusions and use evidence to support same	Using evidence to support conclusions	Conclusion drawn must be based on logical arguments and supported by evidence.

Learning Outcomes
Students will be able to:
- Gather and interpret information from a variety of sources
- Give simple definition of termsand concepts
- Use terms and concepts in the appropriate context
- Outline the major events and accomplishments in the life of Marcus Garvey, Norman Manley, and Alexander Bustamante
- Use lessons learnt from the lives of our national heroes to solve problems
- State clearly the significance of independence to a nation
- Identify the major personalities in the independence movement in Jamaica, Cuba, Haiti
- Make comparisons between Jamaica's road to independence and that of Cuba and Haiti.
- Make simple distinctions between countries that are independent and those that are dependent.

Points to Note:	Extended Learning:
• Teachers are advised to present the information on the independence in Jamaica, Cuba and Haiti as simply as possible. • Cuba and Haiti were selected because their road to independence differs from that of Jamaica. The major players in Jamaica negotiated our independence from Great Britain while the Cubans and Haitians fought for their independence from their colonial masters.	Conduct research to find out the road to independence in other English speaking countries in the Caribbean e.g. Trinidad, Guyana and Barbados. Compare the independence movement in Jamaica with independence movement in these countries. Conduct a survey in your community to find out how many persons think Jamaica should be an independent nation and why.
Resources: Jamaica Information Service http://jis.gov.jm/information/jamaican-history/ http://old.jamaica-gleaner.com/pages/history/story007.html https://www.youtube.com/watch?v=CKdNODM-MOc https://www.youtube.com/watch?v=BzAZ7v1z-8o https://www.youtube.com/watch?v=UPQwB-0Df7A https://www.youtube.com/watch?v=Sqh1h8SEcEc	**Key Vocabulary:** independence, colonial rule, commonwealth, constitution, nation, monarchy, trade union, political party, self -government, universal adult suffrage, franchise, revolution.

Links to other subjects:

Language Arts, Visual Arts, Mathematics

About the Unit:

In this Unit, students will examine the ways in which as Jamaicans we honour and show respect for our country. They will discuss and devise strategies to improve respect shown by Jamaicans for national symbols, emblems and positions of authority. Students will learn to observe protocol associated with national emblems and symbols through simulation exercises.

Prior Learning:
Check that students:
• Know the national symbols of Jamaica

UNITS OF WORK GRADE   6   TERM   1 Unit 3 (4 weeks)

Focus Question- How do we show respect and loyalty for our country?

Attainment Target 3:	Objectives:
Know and value the contributions of communities and institutions in fostering national, regional and international integration **THEME**: Living Together ICT Attainment Targets: ❖ COMMUNICATION AND COLLABORATION- use technology to communicate ideas and information and understanding for a variety of purposes. ❖ DESIGNING AND PRODUCING – use technology to design and produce multimedia products to demonstrate their creative thinking. ❖ RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING – use technology to develop a logical process for decision making and problem solving.	• Develop working definitions and use correctly the following concepts: emblem, flag, coat-of-arms, symbols, nationhood, anthem, crest, bearing, motto, patriotism • Explain what national symbols and emblems are and analyze their importance to nationhood. • Identify and describe the national symbols of Jamaica. • Examine images which show the changes in the Jamaican Coat-Of-Arms, justify the changes made • Tell the meaning of each colour on the Jamaican flag. • Recite and interpret the National Anthem and National Pledge • Select a group/organization, describe its purpose and values then design symbols to reflect its purpose and values • Observe etiquette to be adhered to regarding national symbols and emblems • Assess the role and responsibilities of the citizens in acknowledging and maintaining pride in our national symbols. • Show respect for our national symbols and emblems. • Show respect for individuals who hold public office

	Negotiate and compromise to resolve conflict during collaborative work	
❖ DIGITAL CITIZENSHIP –recognize the ethical, social and legal issues and implications surrounding the use of technology.		

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Create a booklet of terms with their meaning relating to:- culture, flag, loyalty, coat-of-arms, symbols, nationhood, nation-building, patriotism, national pride, national pledge, independence, anthem, reverence, celebration, crest, bearing, motto. Images may be included.	Developing meaning	Booklets should include correct definition of terms
In class examine school crest and other school symbols and discuss their meaning and significance to the school community. Design a crest or coat of arms to represent a group of friends, school, church or family. Explain the reasons for the symbols used.	Designing	Design of crest or coat of arms should reflect the characteristics or goals of the group
Conduct research online or offline and collect pictures Jamaica's national symbols and emblems i.e. Coat- Of-Arms, flag, and motto etc. In groups create a chart with three columns showing a picture of the symbol, a description and the significance. Chart to be displayed in class.	Organizing information	Chart to include pictures , description and significance of symbols and emblems
Listen to Jamaica's national anthem, national song and other patriotic songs. Discuss and interpret the lyrics of each song. Highlight patriotic words and add new words to their booklet of terms. Create a class/school anthem.	Interpreting	Discussion should highlight the meaning of patriotic words and phrases in the national anthem and other patriotic songs.

		The song created should reflect the culture and character of the class/school, the wholesome values or aspirations shared by members of the class
Conduct a survey to find out the level of awareness and respect that members of the school or community have for the national symbols and emblems. Develop strategies to improve awareness and respect among their schoolmates or members of the community.	Strategic thinking	Strategies should target a specific group, clearly outline activities and criteria for success
Participate in a debate with the moot: National symbols and emblems are not respected by most Jamaicans.	Presenting logical arguments	Debate should include information about the importance of symbols and emblems. Arguments presented must be supported by evidence
. Conduct online/offline research on: - Protocol to be observed when national symbols and emblems are used - Steps taken by local authorities to ensure respect for and loyalty to national symbols and emblems - How do other Caribbean nationals view their national symbols and emblems? Create a brochure which includes the emblems and symbols and the protocol to be observed when these are used.	Using information gathered to develop product	Brochure should include a picture of the emblem or symbol and the related protocol to be observed.
Participate in a simulation of an official meeting/function where they will have to observe protocol regarding symbols and officials. Students should conduct online/offline research on protocol to be observed when Governor-General, Prime Minister, Ministers, Mayors etc. are in attendance.	Simulating to show understanding	Simulation of meeting/function should exhibit protocol to be observed

Learning Outcomes

Students will be able to:
- ✓ Give correct meaning for the terms and concepts
- ✓ Use the concepts relating to national symbols in the appropriate context
- ✓ Identify and name the national symbols and emblems
- ✓ Exhibit patriotism for our nation
- ✓ Give a brief history of national symbols
- ✓ Use national symbols to create designs
- ✓ State the significance of national symbols
- ✓ Draw conclusions about the role and responsibilities of Jamaicans in maintaining respect and honour for national symbols
- ✓ Demonstrate respect for national symbols and holders of public office

Points to Note	Extended Learning
• The use of technology may enhance students understanding of the concepts in this Unit	Find out about the national symbols and emblems of other Caribbean countries. Present information found to members of the class or display information on notice board in the classroom.
Resources **http://opm.gov.jm/national-symbols-emblems/** http://www.jamaica-land-we-love.com/national-symbols-of-jamaica.html https://www.nlj.gov.jm/?q=jamaican-national-symbls Computer Internet Multimedia projector	**Key vocabulary** nationhood, government, , flag, loyalty, coat-of-arms, symbols, nationhood, nation-building, patriotism, national pride, national pledge, independence, anthem, reverence, celebration, crest, bearing, motto

Social Studies

GRADE 6

TERM 2

About the Unit

In this Unit, students will explore mountain environments. They will name and locate the major mountains of Jamaica and the world and investigate the uses and importance of mountains in Jamaica. Students will build on their understanding of the reciprocal nature of the relationship between man and his environment. They will be engaged in activities that promote a problem solving approach to the challenges that arise when human use mountain environments. Students will also be required to design strategies to mitigate the negative impact of human activities. The activities will deepen their environmental sensitivity and the value they place on mountain environments.

Prior Learning
Check that students can:
• Explain the term relief
• Explain how relief/orographic rainfall occurs

UNITS OF WORK GRADE   6   TERM   2 Unit 1 (3 Weeks)

Focus Question: How are mountains important to people's lives and how do human activities affect mountain environments?	
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:** • Develop working definitions for and use correctly the following concepts/terms: mountain, mountain range, hill, valley, plateaux, landforms, plains, forest reserve, summit, slopes • Create a thematic map showing the name and location of the major mountains in Jamaica • Use different criteria to rank mountains and mountain ranges • Use data to make comparisons and draw conclusions about how mountains affect weather and climate • Gather information from multiple sources and use it to describe the activities, goods produced and services that are carried out/offered in mountain/hill environments then draw conclusions about the importance of mountain/hill environments • Gather information from multiple sources and use it to analyse the effects of human activities on mountains

	• Design models and develop strategies to reflect best practices for human activities in mountain/hill environments • Create thematic map showing the name and location of major mountain ranges of the world (at least one in each continent) • Make decisions that show responsibility and care for the environment • Critique the work/ideas of group members	
Suggested Teaching and Learning Activities **Students will:**	**Key Skills**	**Assessment Criteria**
Use graphic organisers e.g. concept map to develop an understanding of the terms, **mountain, hill, valley, plateaux, landforms, plains, summit, slopes.** Graphic organiser must include attributes/characteristics of the feature, examples and may include a picture, part of speech, and a sentence in which the concept is used appropriately	Developing concepts	Completed graphic organisers shows clear understanding of the concepts with correct attributes and examples
Examine relief map of Jamaica in their atlas or on a wall map and use the key to identify mountain ranges and hills. Use the key to estimate the height of mountain peaks and hills. Complete a table showing ranking of the mountain ranges in order of height above sea level. Use the key to estimate the height of the mountain range or hill nearest to their school or use Google Earth to find the height of the hill or mountain peak near their school.	Gathering information from maps Ranking data	Table with mountain ranges ranked in ascending or descending order
Complete a blank map of Jamaica showing major mountains. Create a key for their blank map using the correct colours and symbols. Insert the names of mountain ranges on the map in the correct location.	Mapping information	Completed map of Jamaica showing major mountain ranges in their correct location, with names inserted and correct colours and symbols used.
Participate in a field trip to a community in a mountain environment. Complete observation schedule which may include the following; | Human activities	Impact on the Environment	Human intervention
---|---|---|	Gather information through observation and questioning	Field report should include vivid descriptions of the human activities in mountain environments, the effects of activities on the environment and

				actions taken to remedy the adverse effects.
Farming on slopes – crops e.g. bananas, coffee	Landslides /evidence of past landslides	Terracing/ no terracing		
Settlement – houses, shops	Landslides/evidence of past landslides	Retaining wall /no retaining walls		
Cutting down trees – charcoal burning	Destruction of habitat for animals	Replanting / area left bare		

Use image capturing devices to take pictures of human activities in mountain environments. Students write a report on their observations.

Create an interview schedule and ask questions of a resource person who will discuss the suitability and importance of mountain environments for human activities, how human activities impact mountain environments and actions that are being taken or can be taken to reduce or prevent the negative impact. Students will write a blog on the presentation.	Organizing information Developing appropriate questions Listening for information	Blog should include the importance of mountain environments, how human activities impact mountains and actions that can be taken to prevent or reduce negative impacts.
Examine pictures, films, texts etc. which show the how humans use mountains. Students will deduce how these activities may affect the humans in a positive or negative way. Design a model to reflect best practices that may be used when human activities are conducted in mountain/hill environments.	Deductive reasoning	Model should be practical and feasible
Watch animation or video on how mountains affect the elements of weather and climate. Compare rainfall and temperature data for Jamaica's north coast e.g. Portland with Jamaica's south coast e.g. Kingston. Use statistical diagrams to show the comparisons and draw conclusions from the data.	Drawing conclusions	Appropriate statistical methods should be used to represent the data. Conclusion must be based on the data shown in statistical diagrams
Participate in a field trip or watch a virtual tour of a forest reserves in Jamaica. Conduct online/offline research to find out what is a forest reserve, why forest reserves are established, the indigenous plants and animals that live in forest reserves. Write a report using information gathered.	Conducting research	Report must identify forest reserve visited or viewed. It must also answer all questions asked.

Learning Outcomes

Students will be able to:
- ✓ Given a map of Jamaica accurately name and locate mountains ranges
- ✓ Place mountains in ascending or descending order according to height
- ✓ Put forward reasoned arguments which show the importance of mountains
- ✓ Explain the effect of human activities on mountain environments
- ✓ Conceptualise and design practical and feasible strategies to mitigate the negative impact of human activities on mountain environments
- ✓ Draw diagrams and interpret statistical/diagrams which show how mountains affect weather and climate
- ✓ Demonstrate an awareness of and sensitivity for mountain environments

Points to Note	Extended Learning
• The students are not required to know how mountains are formed or the types of mountains. • For a landform to be considered a mountain it must be over 600m high. Some hills are called mountains and some mountains are called hills e.g. Amity Mountain in Westmoreland is 104m high. It is therefore a hill and not a mountain.	Conduct research on the work of environmental groups in Jamaica and find out how they can become a member of the group or assist in the work being done by the group. Participate in a tree planting activity with their classmates.
Resources Maps Wall maps Globes Atlases Diagrams Computer Multimedia Projector Internet Our World Environment, Carlong Primary Social Studies Book 6 http://www.my-island-jamaica.com/mountains_in_jamaica.html http://www.jpat-jm.com/virtour/dolphinhead/dolphinhead.html	**Key vocabulary** Habitat, mountain, hill, valley, plateaux, landforms, plains, leeward, windward, rain shadow area, forest reserve, protected area, indigenous species,

http://www.jpat-jm.com/virtour/royalpalm/royalpalm.html http://primaryhomeworkhelp.co.uk/mountains/climate.htm http://www.currentresults.com/Weather/Jamaica/annual-average-temperature-rainfall.php	
Links to other subjects Language Arts, Visual Arts, Mathematics	

About the Unit

In this Unit, students will continue to examine the physical features of the Earth by differentiating between the major landforms and water bodies on the continents of the World. They will create maps which show the absolute and relative locations of the landforms, use their features describe and classify them in various ways. Students will participate in hands on activities in order to understand the geographic coordinate system. They will use this system to locate places and features in the Caribbean. Students will understand the usefulness and importance of geographic coordinate systems in real world situations.

Prior Learning

Check that students:
- Are able to describe the main physical features of Jamaica
- Are able to identify Jamaica and other countries on regional maps
- Can locate places using cardinal and intercardinal points

UNITS OF WORK GRADE 6 TERM 2 Unit 2 (2 weeks)

Focus Question: How can we classify the landmasses and water bodies of the world?

Attainment Target 1:	Objectives:
Understand the process and forces that have influenced the physical and built environment **THEME:** The physical environment and its impact on human activities ICT Attainment Targets: ❖ COMMUNICATION &COLLABORATION- Use technology to communicate ideas, information and work collaboratively to support individual needs and contribute to the learning of others. ❖ DESIGNING AND PRODUCING - Use technology to design and develop creative products to demonstrate their learning and understanding of basic technology operations	• Develop working definitions for and use correctly the following concepts: continent, island, ocean, sea, lake, river, bay, gulf, peninsula, isthmus, archipelago, • Recall the meaning for the terms : grid, latitude, longitude, great circle, hemisphere • Use various criteria to classify landmasses and water bodies • Use mathematical skills to approximate the proportion of landmasses to water bodies on Earth's surface • Differentiate between landforms and water bodies (continent, island, ocean, sea, lake, river, bay, gulf, peninsula, isthmus,) • State the absolute and relative location of landforms and water bodies • Use lines of latitude and longitude to locate places and features in the World

❖ 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 judgments. ❖ DIGITAL CITIZENSHIP - Recognize the ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behavior.	• Identify and name lines of latitude and longitude on a map of the World • Examine different sources to determine the characteristics of lines of latitude and longitude • Create thematic map showing the name and location of the continents, major rivers and oceans of the world • Name and describe the parts of the river • Work independently to complete individual tasks • Recognize the usefulness and importance of a geographic coordinate system in solving real world problems

Suggested Teaching and Learning Activities	Key Skills	Assessment Criteria
Students will: Collect pictures online/offline of the following: continents, island, ocean, sea, lake, river, bay, gulf, peninsula, and isthmus. Use the images to create a picture dictionary which also includes an example of the feature in the Caribbean and an example from another part of the world. Use online/offline sources to define terms; longitude, latitude, grid, hemisphere, great circle	Organizing information	Picture dictionary includes appropriate pictures and correct definitions and examples
Examine paper and digital maps and globes to describe the characteristics of lines of latitude and longitude. The descriptions should include terms such as vertical, horizontal, parallel, perpendicular, angle, intersect and circle. Students should be asked to state the difference in appearance of the lines of latitude and longitude on a globe and on a map. Use play dough to make a model of the Earth. Cut along the lines of latitude and lines of longitude and then describe and explain the differences observed.	Gathering and using information Using mathematical terms and principles	Model of the Earth and diagram must show lines of longitude meeting at the poles and lines of latitude becoming shorter as they approach the poles.

Students will then draw lines of latitude and longitude on a sheet of paper to make a grid. Use an atlas to find the names of the main lines of latitude and longitude. Label a diagram showing these lines		Diagram must identify and name the major lines of latitude and longitude
Watch demonstration on how to use lines of longitude and latitude to locate places or features. Students will complete worksheet on using lines of longitude and latitude to locate places. Questions must require students to use lines of latitude and longitude in real life scenarios e.g. tracking hurricanes	Locating places using lines of longitude and latitude	Completed worksheet with correct responses.
Examine a digital map/wall map/atlas map of the Caribbean and locate and name a sea, ocean and gulf. Use information from picture dictionary to assist with description and making distinctions between the features. Examine the map of the Caribbean and locate and name an island, archipelago, isthmus, peninsula and continent. Use the dictionary to assist with descriptions and making distinctions between features. Identify Caribbean countries which are mainland territories.	Identifying features on a map Making distinctions	Make clear distinctions between features using words and images(drawing, pictures, diagrams)
In collaborative groups use graph leaves to calculate the area of each continent. Students should trace the shape of each continent onto graph paper, determine the size of each square on the graph paper and calculate the size of each continent. Rank the continents in order of size. Students will use the same method to calculate the area of the oceans of the world. Rank the oceans in order of size. They will then find the sum of the area of all continents and the sum of the area of all oceans and use this to calculate the percentage of land to water.	Ranking information Calculating area	Area of each continent and ocean should be ranked in ascending or descending order. (Area calculated is a rough estimate). The proportion of water to land should be approximately 70% to 30%.

Watch virtual tour of a river from its source to mouth or examine pictures/diagrams showing the parts of a river. Complete blank diagram showing the parts of a river (source, tributaries, banks, channel, and mouth).

Use atlases to identify and make a list of the main river in each continent. Complete a blank map of the world by inserting the names of the continents, oceans and rivers. Create a table of the major rivers ranked according to length. | Gathering information from pictures/diagrams

 Map making

Presenting information in tabular form | The diagram must show the parts of a river with correctly labeled. Map of the world must have continents, oceans and rivers. The rivers must be placed at the correct location on the continent and the correct symbol used. |

Learning Outcomes
Students will be able to:
- ✓ Given a map of the world, accurately locate and name the continents and oceans of the world
- ✓ Given a map of the world, accurately locate and name a major river on each continent
- ✓ Make clear distinctions between landmasses and water bodies in the Caribbean
- ✓ Given a map of the Caribbean name and label correctly land masses and water bodies
- ✓ Clearly distinguish between islands and mainland territories in the Caribbean
- ✓ Rank the continents in ascending or descending order according to size
- ✓ State the proportion of land to water on earth's surface
- ✓ Accurately label a diagram or picture showing the parts of a river

Students will create a digital story on main oceans and rivers to be used for class discussion and reinforcement.

Points to Note:
- A thematic map is designed to show one theme or subject. Political maps and relief maps are thematic maps. A relief map shows the landscape or relief features of an area. Thematic maps are different from general reference maps that show many themes on one map e.g. relief and political features on same map.
- Teacher will guide students in creating digital story for class discussion and reinforcement
- Teacher will ensure students observe internet safety and correct posture when using the computer keyboard

- Countries such as Cayman Islands and Bahamas are considered as other territories rather than a part of either the Greater or Lesser Antilles | **Extended Learning**
Research for additional information on the importance of water bodies and landmasses to human activity and make presentations |

Resources	**Key vocabulary**
Maps Globes Atlases Graph paper Pictures Internet Computer Multimedia projector	water bodies, land masses, continents, ocean, sea, lake, river, island, archipelago, peninsula, isthmus, latitude, longitude, grid, coordinate system, hemisphere, great circle, International Date Line, Greenwich Meridian, Tropic of Cancer, Tropic of Capricorn, Arctic Circle, Antarctic Circle

Links to other subjects
 Language Arts, Visual Arts, Mathematics

About the Unit

In this Unit, students will begin to explore concepts such as citizenship and democracy. They will participate in activities to develop responsible citizenship. Students will begin to consider their rights and responsibilities as citizens and examine how leadership at the local and national levels affect the members of the community.

Prior Learning

Check that students:

- Understand how some key decisions are made in communities at a local level
- Understand that decisions impact communities and individuals
- Are able to describe how the Municipal Corporations (Parish Councils) operate in Jamaica

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UNITS OF WORK GRADE   6   TERM 2 Unit 3 (4 Weeks)

Focus Question: How are decisions made at the national level and how do these decisions affect us?

Attainment Target 3 :	Objectives:
Know and value the contributions of communities and institutions in fostering national development, regional integration and international cooperation **THEME**: Living together	- Develop working definitions and use correctly the following terms: citizen, leader, democracy, cabinet, government, parliament, opposition, senate, monarch, constitution, vote, constituency - Distinguish between local and central government - State the requirements for Jamaican citizenship - Participate in activities that foster and develop responsible actions by citizens - Distinguish between rights and responsibilities of citizens - Examine the rights of a Jamaican citizen and develop a list of responsibilities of a citizen that complement these rights - Examine an organizational chart of the structure of the Jamaican system of government then describe it and make deductions about the relationship among members

	• Identify persons in positions of power, describe how they acquired the position of power and how their use of this power affects the freedoms and rights of others • Examine the activities of various leaders and then develop and justify a list of skills and qualities needed to lead at the national level • Identify the goods and services provided by government and explain how the government gets money to pay for these • Evaluate various decisions made by the Jamaican government and discuss the intended and unintended impact of these decisions on the Jamaican people then propose amendments to the decisions • Compare the procedures for making decisions in a various settings (classroom, school, home, community, government) • Examine various cases of how justice is meted out to citizens of Jamaica, then develop criteria to judge the degree of fairness and use it to evaluate cases and propose just measures • Work cooperatively and individually to accomplish goals

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Conduct online/offline research and define the term citizen. Research and discuss the different ways in which an individual may become citizen of a country. Make a book marker with information about requirements for Jamaican citizenship.	Conducting research	Bookmarker has correct definition of the term citizen and clear statements about requirements for citizenship
In collaborative groups conduct research online/off line to find out the rights of Jamaican citizen. Each group will create a skit that shows a particular right of citizens being violated and how citizens might seek and get redress.	Collaborative problem solving	Skit highlights the rights of citizens, shows selected rights being violated and how each problem is resolved amicably and legally.
Participate in a field trip to Gordon House to observe a sitting of the Lower House or Upper House. Write a report on their visit.	Communicating information	Report includes number of members present, order of

		proceedings, protocol observed, matters discussed
Nominate members of class for leadership positions. Class leaders will be selected by secret ballot. Students will design and make ballot paper. (Discuss how leaders are elected at the national level) Before casting their vote students will brainstorm the skills and qualities good class leaders should possess. They will then discuss which of these qualities and skills leaders at the national level should possess. Elected leaders of the class will lead the writing of a constitution (set of rules) for the class.	Decision making	Qualities of a good class leader discussed and agreed on. Election of class leaders done by secret ballot. Class constitution discussed and agreed on.
Identify an act of discrimination or injustice in the classroom, school or community. State why the act is unjust or discriminates. Gather and record data or evidence related to the act. Identify and record ways of dealing with the act of injustice or discrimination. Select the best/most appropriate solution to the problem.	Problem solving	Method selected from a number of choices and clear indication of the advantages of the selected method over other methods.
Examine case study of injustice or discrimination and evaluate how the situation was handled and by whom. Draw conclusions about how the matter was handled and if justice was meted out to individuals concerned.	Analysing	An unbiased assessment of how the case was handled supported by evidence from the case.
Create a table to show comparison of local government and central government. Comparison can be made about the functions of each, how members are elected, and when elections are held.	Evaluating	Table shows similarities and differences between local and central government
Participate in a class project on being a responsible citizen. Identify actions that demonstrate responsible citizenship in the class, school and community. Brainstorm to decide on a name/theme for the project. Discuss ways of promoting responsible citizenship among members of the class, school and community. Promotional activities may include; making posters that show responsible behaviours, a panel discussion on how the responsible/irresponsible actions of individuals affect the group, jingle and or slogan about responsible actions. Posters should be mounted in the classroom or on the school campus.	Making comparisons

Brainstorming

Planning and organising

Creative thinking | Project should highlight responsible behaviours suitable for the class, school, community |

Make a chart showing the structure of the Jamaican government. Chart must show the hierarchical structure of the government and include pictures or symbols of the different arms of the government. Chart must also include brief descriptions of each arm/branch of government	Organising and communicating information	Chart should show structure of the Jamaican government which includes the head of state, head of government, and the branches
List the services provided by government. Examine newspaper articles and news reports, to determine the extent to which government is adequately carrying out 2 or 3 of its functions. In collaborative groups devise strategies to address the inadequacies with a particular government service. Make presentation to their classmates.	Problem solving Strategic thinking Analysing Evaluating	Presentation should highlight the inadequacies of one service (function) provided and feasible strategies to deal with it.
Participate in a class debate on the moot "The decisions made by our leaders are more helpful than harmful to the people. Students will work in collaborative groups to conduct research and gather information to support or refute the moot. Each group will select a representative to speak on the proposing or opposing team.	Logical reasoning Analysing Drawing conclusions and making judgements	Arguments presented should be logical and support the position taken.

Learning Outcomes
Students will be able to:
- ✓ Write individualised definitions for terms and concepts
- ✓ Use concepts and terms correctly in the appropriate context
- ✓ State the similarities and differences between local and central government
- ✓ Provide detailed description of the fundamental rights of Jamaican citizens as outlined in the Jamaican constitution
- ✓ Label a diagram which shows the structure of the Jamaican government
- ✓ State the means by which government officials acquire positions
- ✓ Use case studies to show how elected government officials use their authority
- ✓ State and justify the skills and qualities that leaders at the national level should possess
- ✓ Draw conclusions about the quality of service provided by the Jamaican government
- ✓ Provide evidence to support arguments about the impact of decisions made by government on Jamaica on the people of Jamaica
- ✓ Make decisions and draw conclusions about justice based on information and assessment of alternatives
- ✓ Willingly and actively participate in group task and complete individual assignments

Points to Note	Extended Learning

The problem solving approach includes the following steps;
  I.   Identify the problem
  II.   Gather data
  III.   List and consider possible solutions
  IV.   Consider the advantages and disadvantages of each solution
  V.   Select the best solution to the problem
  VI.   Evaluate the effectiveness of the solution
	Find out the name of the Member of Parliament (MP) for your constituency, the location of the constituency office and the work done by the M.P .in the constituency.
	
	Find out the name of the Custos in your parish and his/her functions.
	
	Collect photographs of the MPs and Senators. Make a chart and display it in your classroom.

Resources Jamaica Information Service **https://www.nlj.gov.jm/?q=jamaican-civics**	**Key vocabulary** citizen, leader, democracy, cabinet, government, parliament, opposition, senate, monarch, constitution, vote
Links to other subjects Language Arts, Visual Arts, Civics	

About the Unit

In this Unit, students will describe the major climatic zones of the world, with emphasis on the Tropical Marine Climate that we experience in Jamaica. They will explain some of the factors that influence the type of climate that we experience; latitude, distance from the sea and altitude. Students will be engaged in the reading of maps and the interpretation of diagrams and graphs. Students will also begin to examine how humans, plants and animals adapt to a variety of climatic conditions. They will also start to explore the concept of climate change by studying cases of the evidence and the effects of it and proposing strategies to adapt to it. Students should begin to include in their everyday practices actions to reduce the negative effects of climate change.

Prior Learning

Check that students:
- Are able to distinguish between weather and climate and describe the weather patterns of the Caribbean
- Know some elements of weather

UNITS OF WORK GRADE   6   TERM 3 Unit 1 (3 weeks)

Focus Question: What are some of the key factors that influence climate and how do these factors influence climate?

Attainment Target 1 :	Objectives:
Understand the process and forces that have influenced the physical and built environment **THEME:** The physical environment and its impact on human activities **ICT Attainment Targets:**	● Develop working definitions and use correctly the concepts: climatic zones, altitude, latitude, climate change ● Classify areas into climatic zones ● Label a diagram showing the climatic zones of the world ● Name and locate on a world map the climatic zone in which Jamaica and rest of the Caribbean are located ● Name and describe the type of climate experienced in Jamaica and the rest of the Caribbean ● Interpret simple climate graphs ● Locate and name two countries in each climatic zone

❖ COMMUNICATION &COLLABORATION- Use technology to communicate ideas, information and work collaboratively to support individual needs and contribute to the learning of others. ❖ DESIGNING AND PRODUCING - Use technology to design and develop 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 judgments. ❖ DIGITAL CITIZENSHIP - Recognize the ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behavior.	● Compare the characteristics of the main climatic zones ● Formulate questions about why climate varies in different places and use evidence from various sources to explain how the interaction of factors determines the climate of places (latitude, altitude, and distance from the sea) ● Examine information from multiple sources on how human activities are determined by the climatic zone in which they live and justify their adaptations ● Gather evidence from multiple sources about the effects of climate change in the Caribbean the design strategies to mitigate the impact of climate change on territories ● Evaluate sources used by distinguishing between fact and opinion ● Participate in activities and take individual action to reduce the negative impact of human activities on climate

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Examine a globe/wall map/digital map of the world and identify the five main lines of latitude and name the climatic zones. Use a marker to identify and name two countries in each zone. Use a marker to identify and name Jamaica and its climatic zone. Draw the main lines of latitude on a blank map and name the climate zones. Use colours to shade the climatic zones on the map. Create a key for your diagram. Students will then define the term climatic zone. Or use an electronic drawing tool to draw and label a diagram showing the three main climatic zones. Use separate colours to differentiate between each climatic zone. Print and display work in class on the bulletin board or in a scrap book.	Developing map reading skills	Map of the world with key to identify the climatic zones. Two countries located and named in each climatic zone. Jamaica is located and named in the tropical zone.

Students will examine climate graphs for places in each climatic zone. (See examples of climate graph below.) They will then describe the rainfall and temperature pattern for each graph. Students will use temperature and rainfall data to identify wet and dry seasons, hot and cold seasons for each location. Students will then use the information to create a table showing when each season is experienced in each climatic zone.	Interpreting graphs Creating tables	Colours used on the map must shows heat concentrated at the equator and poles receiving little light hence little heat.
Climate graph for Kingston, Jamaica Figure 3 Climate graph for Reykjahlid in northern-central Iceland		
Read focus questions about the effect of latitude on climate e.g. "Why is Jamaica warm? Why are the North and South Poles cold all year round?" Students will then participate in a demonstration to answer the question/s. Students will need a globe or model of the Earth (ball, grapefruit) and a light source (flashlight, cellular phone). Students will shine the light on the equator while the Earth is rotating and revolving. They will note their observations and make deductions about the distribution of heat. They will observe the amount of light at the equator and at the North and South Poles. Students will then deduce the amount of heat at equator and at the poles. They will write their responses to the questions and draw diagrams to show how latitude affects climate.	Conducting investigations Making predictions Drawing conclusions	Correct responses should include a description of the temperature (hot, warm, cold etc.) and the relationship between the amount of light and temperature. Diagrams must show the Earth, the Sun, the equator, and differences in temperature based on the location of the overhead Sun.

Students will examine a weather map to determine the differences in temperature of places within the same latitudinal zone. http://www.weatherlink.com/map.php Students will compare the temperature of places near the coast and far inland on continental land masses in the same latitudinal zone. Students will compare the temperature of several stations on the continents at the coast and in the interior in order to identify a pattern. Students may also suggest reasons for the variations within the pattern. Students will then put forward explanations for the patterns observed. They will then conduct online/offline research to check their explanations as to how Jamaica's climate is influenced by the sea (Marine or maritime influence). Students will then write a paragraph explaining how distance from the sea affects temperature of a place and why Jamaica experiences a Tropical Marine climate.	Identifying patterns Making deductions	Paragraph should give description of the effect of the sea/ocean on the temperature of coastal areas. . Paragraph must explain that places close to the sea do not experience extremes in temperature and how the Caribbean Sea influences Jamaica's temperatures.
Table 1: Average Temperature in February 	Location	Height/Altitude	High ^{0}C	Low ^{0}C
---	---	---	---
Kingston	65m	30	21
Montego Bay	12m	28	20
Morant Bay	22m	28	22
Port Antonio	2m	28	19
• Cinchona Gather information from tables • Identifying trends and relationships Gardens	1585m	20	12
Blue Mountain Peak	2256m	15	14		Gathering information from tables Identifying trends and relationships	Statements should clearly state the relationship between altitude and temperature. They must include temperature in degrees Celsius and height in metres.

Students will examine the table to identify the relationship between the height (altitude) of a place and its temperature. Students will answer questions such as what happens to temperature as altitude increases. Students will write statements that describe the relationship between altitude and temperature.		
Conduct research using online and offline sources to explore how humans, plants and animals adapt to conditions in different climatic zones. They should a) describe the main features of the climate, e.g. temperature and precipitation (rainfall/snowfall etc.) ; b) Use a creative chart/table to provide a descriptive summary of how people adapt to the climatic conditions in the three main climatic zones. Use the following headings as a guide: food, shelter, clothing, activities (economic, recreational) adaptations of animals – migrate, hibernate, covering of fur, adaptations of plants – shed leaves, small leaves, short growing season, and in the polar region no plants	Drawing conclusions Conducting research Organizing information	Information in the table or chart should be organized using appropriate headings with the correct information below the heading
Brainstorm and develop concept map for the term climate change. Work in collaborative groups and conduct online/offline research into one of the evidences/effects of climate change; drought; coastal erosion; flooding; hurricanes. Research should include the name of the country and place in the country where the effect is occurring or has occurred, a description of the change/s, pictures may be included, interview residents/conduct online/offline research to find out what the area was like before and how the change/s has affected them. Students will then propose measures to adapt to climate change.	Collecting data Proposing strategies	Strategies proposed should be related to evidence/effects identified. Students should explain how strategies will be implemented.

Learning Outcomes

Students will be able to:

- ✓ State concisely the meaning of concepts
- ✓ Use concepts correctly in given situations
- ✓ Given a diagram/map, label the climatic zones of the world

- ✓ Briefly describe the temperature and rainfall patterns for each climatic zone
- ✓ Identify and give brief explanations of three factors which influence the climate of a place
- ✓ Name and locate on a map of the world the climatic zone in which Jamaica and the rest of the Caribbean are located
- ✓ Given a labeled map of the world correctly identify two countries in each climatic zone
- ✓ Read and interpret information on maps, diagrams and tables
- ✓ Create tables from given information
- ✓ Write statements that show clearly the impact of climate on human activities
- ✓ Put forward simple measures that may be implemented to adapt to climate change
- ✓ Advocate for actions to reduce the negative impact of human activities on climate

Points to Note	Extended Learning
- There are many factors that influence climate. In this Unit, students are asked to study three of these factors. These factors do not operate in isolation. They work together to determine the climate of a place. - Teachers should ensure that students have access to technology and observe and practice online safety and behavior - The use of videos and other visual presentations may enhance the lessons of this Unit.	Students can conduct online/offline research to find out the other factors that affect the climate of a place. Students may also conduct research on the work done by climatologist.

Resources:	Key vocabulary	
Atlas/globe/wall map Flash light Crayons and markers scrap book cartridge paper	Climate Altitude Latitude Marine/Maritime Tropical	Humid/frigid/torrid/arid Climatic Zone/ belt Tropic of Cancer Tropic of Capricorn Equator

Digital map Computer and any other available technologies internet http://www.wunderground.com/cgi-bin/findweather/getForecast?query=MKJS http://www.bbc.co.uk/climate/evidence/ http://know.climateofconcern.org/index.php?option=com_content&task=article&id=115	Temperate Temperature Polar	Arctic Circle Antarctic Circle

Links to other subjects:

Language Arts, Science, Mathematics

About the Unit

In this Unit, students will learn about the rotation and revolution of the Earth and the effects of these movements on planet Earth. They will examine effects such as day and night, seasons and the varying length of day and night and how these affect human activities. Students will be engaged in collaborative research, demonstrations and problem solving activities as they gain greater insights into how the planet on which they live operate.

Prior Learning
Check that students:
- Know the seasons, the planets, the meaning of orbit
- Know the lines of latitude and longitude

UNITS OF WORK GRADE 6   TERM 3 Unit 2_(3 weeks) __

Focus Question: How do the movements which the Earth makes as it orbits the sun impact us?

Attainment Target 1:

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

THEME: The physical environment and its impact on human activities

ICT Attainment Targets:

❖ **COMMUNICATION &COLLABORATION**- Use technology to communicate ideas, information and work collaboratively to support individual needs and contribute to the learning of others.

❖ **DESIGNING AND PRODUCING** - Use technology to design and develop 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

Objectives:

- Define and use correctly the following terms/ concepts: hemisphere, rotation, revolution, axis, orbit, year, day, sunrise, sunset, equinox, solstice, season
- Distinguish between rotation and revolution of the Earth
- Ask questions about the movements of the Earth, gather information from multiple sources and use evidence found to answer questions
- Explain how rotation causes day and night
- Explain how the revolution and tilt of the Earth's axis causes the seasons and variation in the length of day and night.
- Interpret tables and diagrams
- Analyse information from diverse sources and make deductions about the effects of day and night and the seasons on man's activities in the different hemispheres

- Distinguish one season from the next season

conduct research, aid critical thinking, manage projects, solve problems and make informed judgments.	• Evaluate sources by distinguishing between facts and myths/misconceptions
❖ **DIGITAL CITIZENSHIP** - Recognize the ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behaviour.	• Display willingness to acquire new information and use it to understand the world in which we live
	• Contribute ideas and listen to the ideas of others to complete assigned tasks

Suggested Teaching and Learning Activities Students will:`	Key Skills	Assessment Criteria
Work in collaborative groups to demonstrate the rotation of planet Earth. Each group will need oranges/ grapefruits/foam balls, and pencil/ piece of wire/skewers. Students will use the skewer/pencil/wire to pierce the orange/grapefruit/foam ball at the top, run it through the centre of the orange and exit at the bottom. Students will then spin (rotate) the orange (Earth) on its Skewer (axis). Students will then be asked to describe axis and rotation. They will then list two other things that rotate on an axis. Students will conduct online/offline research to find out the direction in which the Earth rotates and the time it takes to complete one rotation. Students will identify axis on the globe and use the globe to demonstrate rotation.	Observing for information	Description of rotation must include movement or spinning around or on an axis, duration (day) and direction. Description of axis must include a central line about which an object spins or rotates

Suggested Teaching and Learning Activities Students will:`	Key Skills	Assessment Criteria
Students will then demonstrate the revolution of the Earth using the orange/foam ball/grapefruit with its axis and a much larger spherical object e.g. a basketball/football. The football/basketball should be fixed in the centre and a means of moving the Earth around the sun while it is rotating be developed by the students. Students will explain the method they devised. Students will then conduct online/offline research to find out the duration of one revolution and the direction in which the Earth rotates. Then students can demonstrate rotation and revolution using their bodies. One student will stand in centre representing the sun while another will move around the student in the centre (Sun) while rotating (spinning). Students will then give examples of other things that revolve. Students will then write sentences explaining the revolution of the Earth and draw a picture of it. Following this, students will use online or offline source to view video clips on the Earth's movements in relation to the sun.	Problem solving Navigate digital content on websites and storage devices	Sentences about revolution of the Earth should include a description of the movement, word orbit, the duration and the direction. Drawing must show the size of the Earth in relation to the sun and the correct direction of movement of the Earth around the sun

Suggested Teaching and Learning Activities Students will:`	Key Skills	Assessment Criteria
Participate in whole class discussion about what causes day and night and seasons. Students will put forward their answers to these questions. Then they will examine online/offline sources for answers which they interrogated. Work in collaborative groups to demonstrate what causes day and night. Students will need a flashlight/electric lamp, a globe or a large spherical object to represent Earth. Students use a marker to identify a country on the globe or a spot the spherical object. Turn on the flashlight/lamp and focus the light on the country or spot that was marked. Ask students to say what the country is experiencing- day or night. The sun (lamp/flashlight) will remain stationary while the globe or spherical object spins on its axis. Students must spin objects in the direction that the Earth rotates. Globe should be turned slowly for students to understand sunrise and sunset. Students will turn globe or spherical object until it is no longer facing the sun (flashlight/lamp) and answer questions about the time of day being experienced. Draw diagrams to show how day and night occurs. Write a paragraph explaining how day and night occurs. Students will put forward explanations about why all places on Earth do not experience day and night at the same time, what would happen to plants, animals and humans if Earth only experienced day or night, and how humans, plants do and animals adapt to night time and daytime. Conduct online/offline research to answer questions such as Do plants sleep? What are nocturnal plants and animals? Write a jingle, poem, song about how day and night affects plants, animals and humans	Conducting investigations	Paragraph must clearly outline how day and night occurs. Response must also include reference to sunrise and sunset. There should be at least two drawings each with a country or place identified. One diagram showing the place experiencing night and the other showing the same place experiencing day. Jingle/poem/song must include information about how plants, animals and humans respond to and/or affected by night and day.

Suggested Teaching and Learning Activities Students will:`	Key Skills	Assessment Criteria
Work in collaborative groups to conduct online/offline research on the seasons in different hemispheres. Each group will conduct research on a city in a particular climatic zone. Each group will locate the city on a map, state its latitude including the hemisphere in which it is found. They will find out the seasons experienced in the country, the time of year the seasons are experienced. Use pictures to assist with description of and distinction between the seasons. Organise the information presented by each group in a table	Gathering and organising information	Table must be organised to show the seasons in each climatic zone and when each hemisphere experiences the seasons. Brief descriptions along with pictures must be given for each season.
Listen to resource person who has lived in North America, England or any other country in the temperate latitude speak about the seasonal changes and how animals, plants and people prepare for these seasons. Students should prepare and ask questions about dress, shelter, travelling, food and recreational activities during the various seasons (pictures, videos showing different seasons may be included in the presentation). After presentation, students should discuss ways in which climatic conditions and activities differ in temperate latitude from those which prevail in tropical countries like Jamaica. Students will write a summary about how people adapt to changing seasons in different countries.	Summarising information	Summary should include at least three ways in which people living in the temperate latitudes adapt to seasonal changes

Suggested Teaching and Learning Activities Students will:`	Key Skills	Assessment Criteria
Examine the table showing the sunrise and sunset for selected cities | City	Sunrise December 23	Sunrise June 21	Sunset December 23	Sunset June 21	Length of day December	Length of day June | |---|---|---|---|---|---|---| | Reykjavik, Iceland | 11:22am | 2:55am | 3:30pm | 12:03am | 4hr 8mins | 21hrs 8 mins | | Havana, Cuba | 6:54 am | 6:44am | 5:43pm | 8:18pm | | 13hrs 33mins | | Cape Town, South Africa | 5:33 am | 7:52am | 7:57pm | 5:45pm | 14h 25mins | 9hrs. 54mins | | Wellington, New Zealand | 5:45am | 7:47am | 8:54pm | 4:58pm | 15hrs 10mins | 9hrs 10mins | Use a marker to locate places listed in the table on a globe. Put forward suggestions about what causes the length of day and night to vary. Demonstrate with the aid of a globe and a lamp why the length of day varies as the Earth revolves. Lamp must be placed in the centre representing the sun and the globe with places marked will be moved around the Sun. Draw diagrams to explain the diagrams showing what happens at different points in the year. (June, December, March, October) as the Earth moves around the Sun. Conduct online/offline research on the following terms – solstice, equinox Conduct research in groups, using online or offline sources, then categorize and relate some of the effects of the revolution of the Earth on the way people live in different parts of the world e.g. the way they build their homes, the clothes they wear, the crops they grow, the animals they rear and other activities in which they engage. Write short stories or draw pictures/collect pictures to show how people adapt to different climatic conditions.	• Deducing information • Classifying	Diagrams must show the Sun in the centre with the Earth at different times of the year. They must also show the approximate location of each place and state whether the place is experiencing long/short day or long/short night at a particular time of the year. Stories/pictures must reflect the lifestyle and activities of people living in different climatic zones.

Suggested Teaching and Learning Activities	Key Skills	Assessment Criteria
Students will:`		
Learning Outcomes Students will be able to: ✓ Write precise explanations for the terms and concepts ✓ Clearly distinguish between rotation and revolution of the Earth ✓ With the aid of diagram(s), explain how rotation causes day and night ✓ Given diagrams or tables, explain how revolution and tilt of the Earth causes seasons and varying length of day and night ✓ Gather information from tables and diagrams ✓ Briefly describe the effects of seasons, and day and night on social and economic activities ✓ Given multiple sources, analyse the information provided ✓ Identify facts and myths when presented with both ✓ Navigate digital content on the internet and other devices to find information		

Points to Note	Extended Learning
• Students must use at least three sources to conduct research. These may be online or offline. Students must be taught how to evaluate sources by know how to distinguishing between facts and myths. • Teachers should ensure that students practice online safety as well as proper behaviour while on the internet.	Conduct research about life above the Arctic Circle Record the time the sun sets and rises, what people do for a living and how they adapt to the climate.

Resources	Key vocabulary	Leap year
Globes Internet Computer and any other available resources **https://www.youtube.com/watch?v=hWkKSkI3gkU** **https://www.youtube.com/watch?v=eV4nk9or9SE** **https://www.youtube.com/watch?v=l64YwNl1wr0** **http://www.slideshare.net/awboan/rotation-vs-revolution** **http://www.theguardian.com/lifeandstyle/2009/nov/01/longer-night-shorter-days-impact** **http://www.theguardian.com/lifeandstyle/2009/nov/01/winter-north-pole-night** **http://www.livescience.com/25202-seasons.html** **http://spaceplace.nasa.gov/seasons/en/** **http://www.sunrisesunset.com/predefined.asp**	Rotation Revolution Sun rays Orbit Axis Equinox Solstice Day Night Year	Dawn Dusk Summer Winter Autumn Equator Hemispheres Tropic of Cancer Tropic of Capricorn
Links to other subjects Language Arts, Mathematics, Visual Arts, Science		

About the Unit

In this Unit, students will learn about some of the different ways in which human activities affect the atmosphere. Students will explore the sources of atmospheric pollution and examine its impact on social and economic activities by studying local and international cases. They will interrogate and evaluate the actions of governmental and non-governmental organisations in protecting the atmosphere. They will also develop an understanding of appropriate practises and show greater respect for their environment.

Prior Learning
Check that students:
• Have an understanding of the effect of human activities on land and water.
• know that Earth is the only planet which is presently known sustain life

UNITS OF WORK GRADE 6 TERM 3_Unit 3   (3 weeks)

Focus Question: How do some human activities affect the atmosphere?	
Attainment Target 2: Develop an understanding of interdependent relationship between humans and the environment. **THEME:** Diversity, interdependence, and sustainability in nature and society	**Objectives:** • Define and use correctly the following terms; atmosphere, ozone, greenhouse effect, global warming, acid rain • Recall the definition of pollution, pollutant • Generate questions about the importance of the atmosphere and use evidence from multiple sources to provide answers • Assess multiple sources by distinguishing between facts and myth/misconceptions related to atmospheric pollution • Analyse the costs and benefits of individual and collective decisions and actions on the atmosphere • Evaluate multiple sources by distinguishing between facts and opinions related to the impact of a polluted atmosphere on humans and human activities • Use evidence to support arguments which show the importance of maintaining the Earth's atmosphere.

	• Analyse the purpose and enforcement of local laws and international agreements that are in place to protect the atmosphere and propose amendments to these or suggest new laws/agreements • Assess the role of citizens, the government and non-governmental organisations in protecting the atmosphere • Work cooperatively in groups to complete assigned tasks • Demonstrate respect and show sensitivity for the environment

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Conduct online/offline research and create concept maps for the terms – atmosphere, ozone, greenhouse effect, global warming acid, rain. Use concept web to link the terms	Concept mapping Organising ideas	Concept map should include examples and attributes of each term
Ask questions about the atmosphere including what they want to know generally about the atmosphere and specially the importance of the atmosphere to human. The questions will be recorded on the board. Questions may be grouped and students placed in collaborative groups to conduct online/offline research to answer assigned questions. Each group will present their answers to the class in a format chosen by the group	Formulating questions	Questions must be clearly stated and must require students to conduct research in order to answer them. Presentations must fully address questions asked and publication details of sources provided.
Work in collaborative groups and conduct online/offline research on air pollution. Critique each source by distinguishing between facts and myths and misconceptions. Each group will produce a poster/brochure/power point presentation on the facts and myths of air pollution.	Analysing information and sources	Poster/brochure/power point presentation must clearly outline the facts on air pollution and dispel myths about causes of air pollution
List the products, services and activities they are engaged in over a one week period. They will then map these activities to means of production, emissions,	Making informed choices	Graphic organisers must show clear link between consumption patterns

and waste produced. Students will work in collaborative group do a similar mapping for school and community. Then will then use graphic organiser to show the costs/contribution to air pollution and the benefits of services and products to the group, school and community. Each group will then make suggestions about changes they can make to lifestyle and consumption patterns to reduce their contribution to air pollution.		and air pollution. Suggestions must link change in consumption patterns and lifestyle to reduction in air pollution
Work in collaborative groups to conduct online/offline research on the impact of pollution on humans and human activities. Each group will conduct research on a particular case local/international (Case studies – burning of city dump at Riverton City, dust from bauxite mining, chemical spills, exhaust from factories, burning of garbage in communities, air pollution in industrialised countries e.g. China). The case study should include the source/cause of the pollution, the impact on human health, economic and social activities as well as measures in place to deal with the pollution. Pictures and other visual aids may be included.	Evaluating cause effect relationship	Case studies must focus on a particular place; include effects of air pollution on humans and human activities; measures in place to deal with the pollution.
Work in collaborative groups to analyse an environmental law or international convention which deals with air pollution. They will determine the purpose or intention of the law or convention and discuss its fairness, and enforcement. They will then make recommendations or amendments to the law or convention, critique how it is enforced and the degree of compliance or non-compliance. Write letters to the editor of the newspaper or the minister outlining their recommendations	Analysing Using evidence to evaluate	Letter should include all the conventions of letter writing. The law or convention must be clearly stated and concerns and recommendations carefully explained.

Students will conduct a survey among school or community members to determine the level of awareness of the law among the population. They will present their findings which should include statistical diagrams.	Gathering information	Statistical diagrams must be appropriate and accurate

Learning Outcomes

Students will be able to:

- ✓ Give accurate definitions and explanations of the terms and concepts
- ✓ Provide clear explanations about the importance of the atmosphere to humans
- ✓ Compile a list of the sources of air pollution after consulting multiple sources
- ✓ Draw conclusions about how human activities affect the atmosphere after examining a few case studies
- ✓ Using evidence from several cases describe in detail how people and social and economic activities are affected by atmospheric pollution
- ✓ Propose feasible strategies to reduce the level of atmospheric pollution
- ✓ Present arguments in support of or against measures that have been implemented to reduce atmospheric pollution
- ✓ Make reasoned statements about the importance of the atmosphere to humans
- ✓ Examine the actions and activities of governments and non-governmental organisations and judge the effectiveness of their actions and activities
- ✓ Participate in and practice environmentally friendly activities

Points to Note	Extended Learning
• The greenhouse effect and ozone depletion are not the same. Ozone depletion refers to a reduction in the concentration ozone in the atmosphere whereas the greenhouse effect refers to the trapping of the sun's warmth by greenhouse gases in the lower atmosphere.	Conduct a case study on a country (islands in the Pacific) that is being adversely affected by climate change. Give the name and location of the country, (a map may be included). Describe the ways in which climate change is affecting the country such as sea level rise, changes in temperature, biodiversity and the population. Examine coping Mechanisms adopted by the people.

• Greenhouses gases are important in the atmosphere. Without greenhouse gases to trap the Sun's heat the Earth would be too cold.	
Resources **http://eschooltoday.com/pollution/air-pollution/what-is-air-pollution.html** http://www.mona.uwi.edu/cardin/virtual_library/docs/1177/1177.pdf http://climatekids.nasa.gov/greenhouse-effect/ https://www3.epa.gov/climatechange/kids/basics/today/greenhouse-effect.html Magazines and newspapers Pictures Pamphlets NGOs- reports, pamphlets, booklets Resource person from relevant local or regional organization Relevant environmental laws	**Key vocabulary** Atmosphere Resources Exploitation Pollution Pollutant Carbon dioxide Greenhouse effect Global warming Sustainable development Acid rain Ozone layer Chlorofluorocarbons/Hydrofluorocarbons Aerosols

About the Unit

In this Unit, students will begin to explore regional integration. They will examine the activities of regional organizations and the role of Caribbean nationals in promoting integration. Students will consider regional issues and problems and propose solutions to these.

Prior Learning
Check that students can: • Name countries of the Caribbean • Know who is a neighbour • Know aspects of Caribbean history and culture

UNITS OF WORK GRADE   6   TERM _3__Unit 4_(3 weeks)

Focus Question: How can we benefit from cooperating with our Caribbean neighbours?	
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 Integration Attainment Targets: ❖ COMMUNICATION &COLLABORATION- Use technology to communicate ideas, information and work collaboratively to support individual needs and contribute to the learning of others. ❖ DESIGNING AND PRODUCING - Use technology to design and develop creative products to demonstrate their learning and understanding of basic technology operations	**Objectives:** ● Define and use correctly the following terms; neighbour, cooperation, region, integration, multi-lateral, bi-lateral, common market ● Using mathematical skills to construct and interpret a timeline showing the stages of regional integration through which the Caribbean has passed ● Locate the member states of CARICOM on a map of the Caribbean ● Categorize Caribbean countries in a variety of ways ● Examine multiple sources and describe similarities and differences among Caribbean people and discuss the implications for integration of Caribbean countries ● Identify regional organizations, describe their functions and use evidence to assess how these organizations foster integration (CARICOM, CDEMA, CXC, UWI, West Indies Cricket team)

❖ 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 judgements. ❖ DIGITAL CITIZENSHIP - Recognise the ethical, social, cultural and legal issues and implications surrounding the use of technology and practice online safety and ethical behavior.	● Identify the variety of resources found in CARICOM countries that are used to provide goods and services ● Identify the goods and services traded among CARICOM member states and on the international market ● Explain why countries trade and assess the costs and benefits of intra-regional and international trade to CARICOM member states ● Identify an existing regional problem, research multiple perspectives on the problem and its impact on the Caribbean and propose ways of solving the regional problems identified. ● Recognize the role of Caribbean citizens in resolving regional issues. ● Compile and arrange alphabetically a list of sources including, author, title, type of publication, publisher and date of publication ● Recognize the importance of cooperation in achieving individual and collective goals

Suggested Teaching and Learning Activities Students will:	Key Skills	Assessment Criteria
Brainstorm to develop concept maps for the terms. They will then formulate a definition for each term. Discuss how cooperating with neighbours can help to solve a problem in the community	Brainstorming	Concept map must include attributes and examples of each term. Definitions must be comprehensive
Conduct online/offline research to find out the stages and associated dates in the integration movement. Students will then develop a scale using the appropriate time measurement (months, years, decades etc.) Then align dates with significant dates in the integration movement.	Constructing timelines	Timeline must be drawn using appropriate scale, with dates correctly aligned to significant events

Examine maps of the Caribbean in their atlas and then complete blank maps of the Caribbean showing members of CARICOM. They will use atlas and other sources to develop categories for grouping Caribbean countries. Students will classify Caribbean countries using categories developed	Classifying	Map of the Caribbean must show all countries that are members of CARICOM. Map must also have a title, key, scale and border
Work in collaborative groups to conduct online/offline search to identify similarities and differences among Caribbean countries headings such ; 	Country	Language	History	Landscape	Type of government	Climate
---	---	---	---	---	---
Jamaica					
Barbados					| Students will then discuss findings in their groups and take a position on Caribbean integration supported by evidence from research	Making comparisons Drawing conclusions	The position on integration taken by each group must be supported by evidence gathered from research and reflected in the table.
Work in collaborative groups to conduct research on a selected regional organization. Conduct online/offline research to find out the history of the organization and structure and functions of the organization. Identify and analyze at least two activities carried out by the organization and explain how these contribute to regional integration. Students may use a variety of methods to present their findings.	Analyzing and drawing conclusions	Presentations should include the name, history and structure of the organization. At least two activities must be clearly identified and analyzed to show how they contribute to integration
Work in collaborative groups to identify a regional problem. Students will conduct online/offline research to determine the causes of problem and the impact on the Caribbean. Students will then brainstorm in their groups to identify solutions to the problem	Problem solving	Solutions to the problems must be explained in detail and must be feasible

Learning Outcomes

Students will be able to:

- ✓ Give accurate definitions for terms
- ✓ Briefly explain the stages of Caribbean integration from West Indies Federation to the Caribbean Single Market and Economy
- ✓ Given a map of the Caribbean, locate and name the member states of CARICOM
- ✓ Place countries of the Caribbean into a variety of groups based on given criteria
- ✓ Compare Caribbean countries in terms of history, culture, economy
- ✓ Name goods and services traded among CARICOM member states
- ✓ Explain the need for intra-regional and international trade among Caribbean member states
- ✓ Name regional organizations and outline their functions
- ✓ Assess the contribution of regional organizations to regional integration
- ✓ Identify Caribbean problems and describe their impact on the region
- ✓ Propose solutions for regional problems

Points to Note	Extended Learning
• Regional cooperation will be revisited at the secondary level hence this Unit must be treated as introductory and be taught at the appropriate age level.	Collect newspaper clippings on issues related to Caribbean countries. Organize the clippings in a scrapbook using the headings – areas of cooperation, challenges to integration, and opportunities for cooperation. Students comment on each section of the scrapbook.
Resources Newspaper/magazine articles/clippings Pictures Internet Resources Scrapbook Jamaica Journal Multi Media projector	**Key vocabulary** Neighbour Cooperation Region Integration CARIFTA CARICOM

Pamphlets, Films, Charts Computer Text editing software Speakers Internet	CSME Interdependence Integration multi-lateral agreement bi-lateral agreement common market Trade Goods Development Custom duties
Links to other subjects Language Arts, Visual Arts, Civics	

GRADE 6

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 6

SUBJECT	TERM 1	TERM 2	TERM 3
Mathematics	**Number (5 weeks)** • Representation of Sets • Number value: exponential form • Use of Calculator	**Number (4 weeks)** • Number properties • Computing with fractional numbers: addition, subtraction, multiplication and division. • Representing shared portions (ratio and percentage).	**Number (3 weeks)** • Problem Solving Procedures
	Measurement (2 weeks) • Scale drawing • Units of time • Perimeter	**Measurement (3 weeks)** • Units of area and surface area. • Derive formulae in measurement situations: volume.	**Measurement (3 weeks)** • Applying measurement formulae. • Parts of a circle. • Investigating pi.
	Geometry (3 weeks) • Properties of Geometric shapes (2 D's and 3 D's)	**Geometry (2 weeks)** • Compare and contrast geometric shapes. • Congruence • Concept of Reflection within the Cartesian Plane.	**Geometry (1 week)** • Use of protractor.
		Algebra (2 weeks) • Using variables: word problems. • Using variables: number sentences. • Using variables: substitution. • Using Patterns and making predictions	**Algebra (1 week)** • Simple equations
	Statistics and Probability (4 weeks) • Collecting and representing data • Stem and leaf		**Statistics and Probability (3 weeks)** • Interpreting tables and graphs. • Outcomes of an event.

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.

Standards

There are five Strands with distinct Standards within them.

STRANDS					
Number		Measurement	Geometry	Algebra	Statistics and Probability
STANDARDS					
Number Representation Know the value of numerals, associate them with their names, numbers, ordinals and use concrete objects to model patterns, expressions and numbers.	**Number Operation and Application** Use 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.	Use correct units, tools and attributes to estimate, compare and carry out the processes of measurement to given degree of accuracy.	Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment.	Employ algebraic reasoning through the use of expressions, equations and formulae to interpret, model and solve problems involving unknown quantities.	Collect, organise, interpret and represent data and make inferences by applying knowledge of statistics and probability.

Strand: Number			
Standards	**Grade 4**	**Grade 5**	**Grade 6**
	Attainment Targets • Know and use the values of numerals and associate them with their names, numbers and ordinals. • Operate with numbers and number patterns. • Understand and apply fractional ideas. • Explain the processes of the basic operations, use estimation appropriately, and demonstrate proficiency with basic facts.	*Attainment Targets* • Model patterns, expressions and number relationships using concrete objects. • Make and interpret Venn diagrams. • Use computation, estimation and calculators appropriately to solve real world problems including problems with fractions and decimals.	*Attainment Targets* • Use models to explain their conceptual understanding of rational numbers (fractions). • Make and interpret Venn diagrams. • Use computation, estimation and calculators appropriately to solve real world problems including problems with fractions and decimals. • Know the value of numbers and associate them with their names and numbers. • Use ratio to solve real world problems.
	Benckmarks	**Benckmarks**	**Benckmarks**
Number Representation Know the value of numerals, associate them with their names, numbers, ordinals and use concrete objects to model patterns,	Use knowledge of sets to describe the set, name and list their elements/members.	Describe a set and differentiate between the set of real numbers.	Identify members of a set and associate same with the property of the given set.
	Read and write number names, and numerals using the Hindu – Arabic Place Value System up to 7 digits.	Read and write number names, and numerals using the Hindu – Arabic Place Value System up to 8 digits.	Read and write number names, and numerals using the Hindu – Arabic Place Value System to include exponential form.

expressions and numbers.			
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.		Demonstrate an understanding of the use of numbers and types of numbers to include; prime, composite and fractional numbers.	Demonstrate an understanding of the use of numbers; number properties and types of numbers; prime factors and fractional numbers.
	Compute with whole numbers accurately and fluently; use these skills to find answers in realistic problem situations. *Model the number operations: addition and subtraction of two-digit numbers.* *Model the number operations: multiplication of four-digit numbers by up to two-digit numbers.* *Model the number operation: Division of five digit numbers by up to two-digit numbers*	Compute with whole numbers accurately and fluently; use these skills to find answers to realistic problem situations. *Model the number operations: division of five digit numbers by up to three-digit numbers.*	
	Compute with fractional numbers quickly and accurately; 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.	Compute with fractional numbers quickly and accurately; use these skills to find answers in realistic problem situations.

	Model the number operations: addition and subtraction.	*Model the number operations: addition, subtraction and multiplication.*	*Model the number operations: addition, subtraction, multiplication and division.*
	Use approximation and estimation with numbers involving division.	Use approximation and estimation with numbers up to the nearest thousand.	Demonstrate the understanding of percentages in realistic situations. Use ratio as comparison in problem solving and decision making.
	Apply and justify the use of a variety of problem solving strategies in two step problems. Use mathematical tools to reinforce proof and aid computation.	Apply and justify the use of a variety of problem solving steps in identifying missing facts.	Apply and justify the use of a variety of problem solving steps involving decimals and percentages.
		Know and use terms associated with financial institutions.	Demonstrate an understanding of financial institutions and their functions.

Strand: Measurement			
Standard	**Grade 4**	**Grade 5**	**Grade 6**
	Attainment Target • Explain and carry out the processes of estimation and measurement,	*Attainment Target* • Select appropriate units and tools to measure to the desired degree of	*Attainment Target* • Select appropriate units and tools to measure to the desired degree of

	including the selection of appropriately precise units.	accuracy.	accuracy. • Derive informally, and use formulae for measurement activities/situations.
	Benchmarks	**Benchmarks**	**Benchmarks**
Use the correct units, tools and attributes to estimate, compare and carry out the processes of measurement to given degree of accuracy.	Estimate and measure distances, and use these to solve related problems involving conversion between millimetres, centimetres, metres and kilometres.	Estimate and measure distances, and use these to solve related problems involving conversion between millimetres, centimetres, decimetres, metres and kilometres.	Use measurements in the environment.
	Read and write time and know the relationships between units of time.	Read and write time and know the relationships and compute with units of time.	
	Estimate and measure liquid capacity or volume, while converting between millilitres and litres.	Know, use and interpret relationships between units of measurement: liquid capacity or volume.	
	Estimate and measure mass while converting between kilograms and tonne.	Know, use and interpret relationships between units of measurement: mass.	Understand the concept of area; estimate and measure to solve related everyday problems.
	Understand the concept of temperature; estimate and measure using standard units.	Estimate and measure temperature in given situations.	Investigate, estimate and compute the volume of rectangular solids.
	Know the meaning of milli, centi, deci and kilo; choose and use appropriate units of measure.	Associate the measurement of a quantity (distance, volume/capacity, mass, temperature) with the units and instruments best used.	Associate the measurement of a quantity (distance, time, volume/capacity, mass) with the units and instruments best used.
		Estimate and measure perimeter.	

	Estimate and measure distance and area using standard metric units.	Use the formula for area of a rectangle to compute the area of rectangular region; estimate the area of an irregular shape by counting squares.	Investigate the parts of a circle and identify the relationships that exist between them.

Strand: Geometry			
Standard	**Grade 4**	**Grade 5**	**Grade 6**
	Attainment Target • Identify, describe, compare and classify geometric figures and their properties.	*Attainment Target* • Describe the relationships between and among geometric figures and explain spatial relationships. • Select appropriate units and tools to measure angles to the desired degree of accuracy.	*Attainment Target* • Make generalizations about geometric relations and explore geometrical transformations.
	Benchmarks	**Benchmarks**	**Benchmarks**
Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment.	Know that angles are measured in degrees and that one whole turn is 360°; compare and order angles less than, greater than or equal to 90°from different orientations.	Recognize horizontal, vertical and intersecting line segments.	Explore concepts of angle formation, naming and measuring.
		Estimate and draw acute, right, obtuse or reflex angles; use a protractor to measure and draw an angle to a suitable degree of accuracy.	
	Explore the ideas of symmetry in geometric figures and shapes.	Identify common shapes and objects, and classify them by noting their	Explore the ideas of symmetry in geometric figures and shapes found in the environment.

		properties; including their line symmetry.	
	Describe the location and properties of geometric shapes after a slide, flip or turn.	Describe positions using cardinal points and understand the concept of reflection.	Understand and use the concept of reflection within the Cartesian plane.
	Make and explore geometric shapes: polygons, non-polygons and compound shapes; and apply knowledge of their properties to problem solving situations.	Make and explore geometric shapes: non-polygons and polygons not exceeding 8 sides; and apply knowledge of their properties to problem solving situations.	Make and explore geometric shapes and solids, and apply knowledge of their properties to problem solving situations.
	Model and explore prisms (cubes and cuboids) by noting their properties and nets.	Model and explore pyramids (triangular and square base) by noting their properties and nets.	Model and explore polyhedron (tetrahedron and octahedron) by noting their properties and nets.

Strand: Algebra			
Standard	**Grade 4**	**Grade 5**	**Grade 6**
	Attainment Target • Explain the meaning and use of simple formulae. • Use open sentence to express relationships among quantities, model and explain the solution of simple equations, using diagrams and concrete materials.	*Attainment Target* • Identify and explain basic algebraic concepts. • Use open sentences to express relationships among quantities, model and explain the solution of simple equations, using diagrams and concrete materials.	*Attainment Target* • Interpret expressions and equations involving variables.
	Benchmarks	**Benchmarks**	**Benchmarks**
Employ algebraic reasoning through the use of expressions, equations and formulae to interpret, model and solve problems involving unknown quantities.	Generate and describe patterns and develop rules associated with them.	Investigate, describe and represent patterns; and develop generalization.	Investigate patterns, create algebraic expressions and make predictions.
	Represent and analyse algebraic expressions and equations.	Use operation symbols to complete number sentences; identify the order of operations given algebraic expressions.	
	Find the number that the symbol (a letter of the English alphabet or other pictures) represents to make a mathematical sentence true.	Substitute a number for a variable in a simple mathematical sentence.	Use substitution in formulae, algebraic sentences and inequalities in problem solving with up to two variables.
		Investigate changes in variables in algebraic expressions and equations.	Use arithmetic operations to solve simple equations and word problems.
		Understand and apply algebraic thinking in problem situations.	

Strand: Statistics and Probability			
Standard	**Grade 4**	**Grade 5**	**Grade 6**
	Attainment Target • Collect, organize, graph, describe and interpret data in a problem-solving context. • Identify and apply the mean averages as a measure of central tendency. • Explore the concept of chance.	*Attainment Target* • Explore complex problems by gathering statistics from real-world situations. • Make and interpret a variety of graphs, charts and tables. • Distinguish among and apply the appropriate measures of central tendency (mean, median, mode) and dispersion (range). • Explore the concept of chance.	*Attainment Target* • Make and interpret a variety of graphs, charts and tables. • Explain the relationship between a probability and the event that gives rise to this number.
	Benchmarks	**Benchmarks**	**Benchmarks**
Collect, organise, interpret and represent data and make inferences by applying knowledge of statistics and probability.	Distinguish between and identify a population and a sample.	Identify the characteristics of sampling techniques.	Identify patterns, describe and predict outcomes from data collected.
	Collect, organize, represent and present data.		
	Find and interpret the mean and median of a set of discrete data.	Discuss the uses of tables and graphs; draw simple graphs and interpret data represented in these graphs.	Discuss the uses of tables and graphs and solve related problems using data
	Interpret data presented in bar graphs, line graphs, pictographs and pie charts.	Estimate, calculate and interpret the mean, mode, median and range of a set of discrete data.	
	Understand and apply probability concepts when making predictions.	Understand and apply probability concepts; identifying possible outcomes of an experiment.	Understand and apply probability concepts; identifying all possible outcomes of an experiment.

UNIT OF WORK GRADE 6 TERM 1 UNIT 1
Strand: Number

Suggested Time: 5 weeks

About the Unit
In this unit students will
- Identify members of a set and associate same with the property of the given set.
- Read and write number names, and numerals using the Hindu – Arabic Place Value System to include exponential form.
- Demonstrate an understanding of the use of numbers; number properties and types of numbers: prime, composite and fractional numbers.

Focus Question 1: What are the special symbols and language I use when I work with sets?	**Benchmark:** Identify members of a set and associate same with the property of a given set.
Standard_Number Representation: Know the value of numerals, associate them with their names, numbers, ordinals and use concrete objects to model patterns, expressions and numbers **Sub-title:** Sets	**Mathematics Objectives:** - Identify members of finite and infinite sets. - Associate the members of a set with the properties of that set. - Name and list members in the intersection or union of two sets. - Draw Venn diagrams to show the intersection or union of two sets. - Use the symbols associated with set operations – intersection and union.
ICT Attainment Target: **COMMUNICATION & COLLABORATION -** use technology to communicate ideas, information and understanding for a variety of purposes **RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING**- Students appreciate digital tools and resources to plan and conduct research, aid critical thinking, manage projects, solve problems and make informed decision.	**Attainment Target:** Make and interpret Venn diagrams.

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.	

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Students will: • Use two rings e.g. () drawn or otherwise to enclose a variety of objects. Sort objects using just one ring (inside or outside) then two rings to discover the need to overlap them and discover the idea of intersection among two sets. (Allow students to critically analyse each stage). Use drawing tools in word processing software to create and sort objects and shapes based on teacher given scenarios. • List and count the members in various subsets of an assortment of Venn diagrams (including non-general ones). Describe these intersections in words and in terms of set algebra. E.g. A ∩ B or A U B • Solve a variety of problems involving: the set language, groups to which they belong, symbols and the listing of sets. Use online social medium such as blogs to share and critique solution to a variety of Venn Diagram; using set language. • In groups using sets statements written in words, rewrite each using set notations. Share with other groups e.g. the letter **"s"** is a member of the set of letters in the word SETS: **s** ∈{s, e, t, s}. Repeat process with other letters and words, numbers, shapes etc. • In groups, create equivalent set cards (using pictures, words/letters and numbers). Shuffle cards together then arrange them face down in a 6 x 4 grid. Take turns to turn over two cards at a time. If the cards match (i.e. show equivalent sets) the students keep them. Continue until everyone has had a chance. The player with the most cards wins when there are no more cards on the grid. • In pairs create cards of infinite and finite sets e.g. counting numbers, factors of 12, and letters in the word MANGO including empty sets. Exchange set of cards with other	● Sorting ● Drawing Venn diagrams ● Reasoning ● Interpreting a given Venn diagram ● Solve problems ● Cooperative Learning ● Operate electronic device ● Use productive tools to communicate information	• Objects are grouped and labelled accurately with similar attributes. • Elements correctly categorized by sets ● Elements of sets are correctly placed in Venn diagrams ● Use of correct notation to represent intersection and union of sets ● Evidence of logical steps shown in solving problems

groups. Sort the cards into two groups: Finite sets and Infinite sets. Record information in tabular form and then share with the entire class. • Allow students to sort a given list of foods into the relevant food groups. • In groups examine the characteristics of given objects (e.g. set of different plants), then organize and represent them using a Venn diagram. Have students critically analyze the Venn diagram. • Challenge students to create Venn diagrams of items other than food. Students can also create "Venn collages" in which pictures are used to illustrate grouped items as opposed to words or numbers.		
Learning Outcomes Students will be able to: ● Place objects on a Venn diagram correctly. ● Solve problems associated with sets. ● Distinguish between finite sets, infinite sets, disjoint set, intersecting sets and null/empty sets. ● Participate in group activities.		

Points to Note	**Extended Learning**
➢ Ensure that students are comfortable with the use of the following set notations: ● $\cap$ - intersection ● $\cup$ - union ● { }-brackets ● $\in$ is an element of or member of ➢ Ensure that students are able to identify all the elements of a universal set. ➢ Emphasize precision in describing a given set. For example, Set A={2, 4, 6, 8} may be described as *"a set of even numbers."* However, a more precise description is *"the set of even numbers between 1and 10"* or *"the set of even numbers less than 10"*	• Investigate where in real life set is used. For example, allow students to categorize items on a shopping list. • Allow students to represent on a Venn diagram, situations in which there are no elements in the intersection and to identify the result as a disjoint set. • Allow students to use the Venn diagram to represent the relationship between a food web and a food chain. This should help students to make the linkage that a food chain is a subset of a food web.

Resources	Key vocabulary
Attribute pieces, Worksheet, Strings, Equivalent set cards, Computers and any other available resources, Internet**.	Element, member, Finite, Infinite set, Intersection, Equivalent set, Union, Equal set, Disjoint sets, Venn diagram, Symbols, Null Set.
Link To Other Subjects	Social Studies, Geography, History, Language, Sciences (Physics, Biology, chemistry), Visual Arts

Focus Question 2: How do I write numbers in different number systems?	**Benchmark:** Read and write number names, and numerals using Hindu – Arabic Place Value System to include exponential form.
Standard_Number Representation: Know the value of numerals, associate them with their names, numbers, ordinals and use concrete objects to model patterns, expressions and numbers. **Sub-title:** Exponents	**Objectives:** • Read, write and use numbers, using the principle of place value, in the Hindu - Arabic system of numeration. • Write numbers in exponential form.
🖥 **ICT Attainment Target:** **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.	Attainment Target: Know the value of numbers and associate them with their names and numbers.

Suggested Teaching and Learning Activities	**Key Skills:**	**Assessment Criteria**
Students will: • In groups, using sets of 0-9 digit cards and a place value chart, shuffle cards and place the top card face up on the table. Write the digit in the column of their choice on their place value table. Take turns repeating for another six cards. **NOTE:** *A player may not move a digit once they have written it down. When all the players have made a seven digit number, the player with the smallest [or largest, as the case may be] number wins.*	• Form numerals • Write numbers in words • Present numbers on place value table • Work in groups • Solve problems	• Place value of digit correctly identified and appropriately placed on place value chart

● With teacher's guidance, draw a place value chart (7 columns, labelled ones to millions) on cartridge paper displayed on board. Take turns writing their numbers from group activity above on chart displayed on board (e.g. 8 904 762). Read each number aloud, and then write number in words (i.e. eight million, nine hundred four thousand, seven hundred sixty-two). ● In groups, using sets of cards showing whole numbers up to 7-digits written in numerals and the corresponding numbers written in words, shuffle cards together and then arrange them face down in a 6 by 4 grid. Take turns to flip over two cards. If the cards match (i.e. show the same number) the student keeps them. **NOTE**: *The winner is the player with the most cards when there are no more cards in the grid.* ● Revise how to write a number using expanded notation e.g. 4 763 921 expands into 4 000 000 + 700 000 + 60 000 + 3 000 + 900 + 20 + 1. Write out each number formed in previous activity in the place value chart, first in words, then in expanded notation. Write numbers in order from least to greatest. Discuss strategies for ordering numbers (e.g. first by the number of digits, and then by comparing the value of each digit in each place from greatest place value to least place value). ● View video tutorial on Place Value up to Millions then use a spreadsheet software to practice to reinforce concept. ● Practise division facts from time tables. ● In standing circular formation, throw a beanbag to another student and call out a statement requiring a division operation, for example "63 divided by 9". The student catches the beanbag giving the correct answer, 7 then throws the ball to a calling out another question. **NOTE**: *When a student answers a question incorrectly, he sits. The last person who remains standing is deemed the winner. Adjust the difficulty of the questions to suit students' abilities.* To increase the challenge, incorporate a timed element, challenging students to complete the activity within a given time. ● Revise the concept of common factors. List the factors of sets of numbers e.g. 24, 36, 18. Then identify the common ones and determine the highest of those which are common. Now review the term Highest Common Factor (HCF). Identify HCF of sets of numbers i.e. HCF of 24, 18 and 36 (6).	● Expand numbers ● Practise division	● Value of digits accurately identified for numbers up to 8 digits ● Accurately represent written or spoken numbers numerically ● Accurately represent numbers written numerically in written or spoken numbers words ● Accurately write numbers in expanded form ● Accurately write numbers in exponential form ● Evidence of logical steps shown in solving problems

- Manipulate interactive online "Factor and multiples game" to enhance multiplication. - With teacher's guidance, discuss prime factors. Investigate the factors of numbers and then identify those that are prime numbers e.g. 24 (2 and 3). Now identify prime factors of two or more numbers e.g. 24 and 36 (2 and 3). - Solve real-life problems involving HCFs. For example: There are two Grade 6 classes at Gina's school. There are eighteen students in one class and twenty-four in the other. Each class has to divide into equal-sized groups to make teams for Sports Day. (a) *What is the largest number of students that each group will have?* (b) *How many groups will there be in each class?* - In groups, using sets of number cards, shuffle cards together and place them face down in a pile on the table. Take turns to turn over the top card. The student who turned over the card writes a division sentence using the number on the card as the divisor. For example, if they turn over a card and 7 is shown, they might write 42 ÷ 7 = 6**. NOTE**: *Students score 1 point for each digit in a correct answer up to a maximum of 3 points.* The calculator is used to check answers when needed – especially for larger division facts e.g. 2 800 ÷ 7 = 400.		
Learning Outcomes Students will be able to: - Present numbers as numerals; - Write numbers in words; - Complete place value chart with numbers; - Solve problems related to real-life situations; - Write numbers in expanded form; - Write numbers in exponent form; - Complete tasks cooperatively in groups. - Participate in discussion forums to communicate and collaborate safely with pair solutions for a variety of mathematics problems. - Use word processing software to produce stimulate critical thinking about sets		

Points to Note	Extended Learning
• Ensure that students recognize that each place value represents a power of ten. • Help students to appreciate that they are composing and decomposing numbers when writing numbers in expanded form. • Ensure that students make the link with each digit and its place value, and the value of the digit itself.	• Encourage students to draw an extended place value chart with nine columns (places up to hundreds of millions). Write numbers with up to 9 digits in numerals and in words. • Introduce students to scientific notation (e.g. 2.5×10^8). Explain how scientific notation works, and explain that it is a very useful method of representing and working with very large numbers. Then give students large numbers written in standard notation to express in scientific notation, and vice versa. • Allow students to search through business magazines and science logs for very large numbers that are presented using scientific notation. Make entry in their journals on why very large numbers are presented in this form.

Resources:
    • Place value chart
    • Sets of cards with 0-9 digit
    • Cards with whole numbers/words up to 7-digits
    • Beanbag
    • Timer
    • Calculator
    • Business magazines/logs
    • Science journals/logs
    • journals
    • computer and any other available technologies
    • worksheet
    • Internet
    • Blogs
    • Word processing software
	Key vocabulary:
	    • Hindu-Arabic number system
	    • Whole
	    • Exponent
	    • Scientific notation
	    • Expanded form
	    • Standard form
	    • Factors/common/HCF
	    • Prime numbers/factors
	    • Composite
	    • Product

Link To other Subjects	Social Studies, Geography, History, Language, Sciences (Physics, Biology, chemistry) Visual Arts

UNIT OF WORK GRADE 6 TERM 1 Unit 2

Strand: Measurement

Suggested Time: 2 weeks

About the Unit

 In this unit, students will:
- Estimate and measure distances to include scale drawing.
- Know the relationships between units of time on the 12-hour and 24-hour clocks.
- Measure and calculate perimeter.

Focus Question: How do I calculate and use the various measurements around me?	Benchmark: Use measurements in the environment.
Standard Measurement: Use the correct units, tools and attributes to estimate, compare and carry out the processes of measurement to a given degree of accuracy.	**Objectives:** ● Interpret a simple scale drawing and calculate actual distances using the scale on a road map or floor plan. ● Use the 24-hour clock in problem situations. ● Calculate the perimeter of irregular polygons and regular polygons ● Calculate the measurement of one side of a polygon given the perimeter and the lengths of the other sides.
ICT AT(s): COMMUNICATION AND COLLABORATION - Use technology to communicate ideas, information and understanding for a variety of purposes. RESEARCH, CRITICAL THINKING, PROBLEM SOLVING AND DECISION MAKING - use technology to develop a logical process for decision making and problem solving.	Attainment Target: Select appropriate units and tools to measure to the desired degree of accuracy.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Students will: ● Be engaged in discussion about scales used on a map/scale drawing - how written, their importance in real life and how to interpret them. ● Work in pairs to measure their heights. ● Represent their height using a scale, where 1 cm on a stick figure represents 20 cm in actual height (1: 20). ● In groups, calculate actual distances from scales on given maps or from projected maps of different countries via web search. ● Investigate, discuss and explain uses of the 24-hr clock. Identify situations where this feature is used in the society. Make comparison with regular 12-hr clock as well as write times using the 24-hour clock. ● Write a list of a.m. times in 12-hr clock notation and convert to a 24-hr clock time. **E.g.** 1:00 p.m. = 1300 hrs (13:00 hrs).	● measure, scale drawing, cooperate with others, problem solving ● identify situations, compare times, develop algorithm ● estimate ● measure ● experiment ● problem solving ● calculate perimeter ● Work in groups ● navigate software ● use search engine safely to perform single topic searches	Accuracy in: ● Calculation of distances ● Time conversions ● Calculation of perimeter ● Calculation of the length of unknown sides in polygons ● Estimation ● Problem solving ● Active group participation
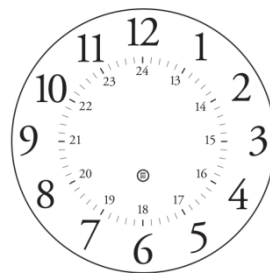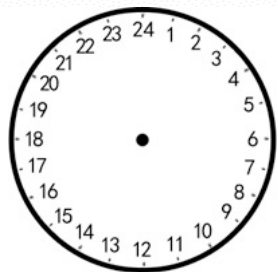
● Develop rule for converting p.m. time to 24-hr clock time.

0:00 = 12:00 AM	12:00 = 12:00 PM
1:00 = 1:00 AM	13:00 = 1:00 PM
2:00 = 2:00 AM	14:00 = 2:00 PM
3:00 = 3:00 AM	15:00 = 3:00 PM
4:00 = 4:00 AM	16:00 = 4:00 PM
5:00 = 5:00 AM	17:00 = 5:00 PM
6:00 = 6:00 AM	18:00 = 6:00 PM
7:00 = 7:00 AM	19:00 = 7:00 PM
8:00 = 8:00 AM	20:00 = 8:00 PM
9:00 = 9:00 AM	21:00 = 9:00 PM
10:00 = 10:00 AM	22:00 = 10:00 PM
11:00 = 11:00 AM	23:00 = 11:00 PM

● In groups, estimate the perimeter of a variety of polygons (regular and irregular) in the classroom; e.g. books, table, desk, etc.

● In pairs, measure the sides of polygons in their classroom, polygons brought by teacher or themselves and use the measurements obtained to calculate the perimeter of those figures.

● Experiment, in groups, how to find the length of an unknown side in any polygon, given; the polygon is drawn to scale, its perimeter, and the length of other sides.

Learning Outcomes:
Students will be able to:
- Develop, read and interpret scale drawings;
- Express time in both 12-hr and 24-hr format;
- Estimate and calculate the perimeter of regular and irregular polygons;
- Problem solve with pairs to arrive at solutions for given tasks;
- Calculate unknown dimensions of regular and irregular polygons given perimeter and the lengths of other sides.
- Complete tasks cooperatively in groups.
- Navigate digital maps to explore units of measurement

Points to Note	Extended Learning
• Link scale drawing activities with Social Studies by allowing students to calculate the distance between parish capitals in Jamaica, distance from Jamaica and countries in the continents • The scale is denoted in the form of a ratio. The first number which is normally a one, represents the size on the drawing, while the second number represents the size in the real world.	• Research and write an essay providing details of three occupations that depend on the use of the 24-hr clock. • Challenge students to cite evidence in determining the profession where scale drawing is most important. • Let students use web sites for scale drawing which later show designs as three-dimensional objects. www.sourceforge.net • Student will visit or interview resource persons from parish council to talk about policies and standards that govern the construction industry. • Make a model of a garden in any polygonal shape using a given perimeter.

Resources:
  • Rulers
  • Height chart
  • World map
  • Map of Jamaica
  • Regular and irregular polygons
  • Internet
  • Computer
  • Multimedia projector and any other available technologies
	Key vocabulary:
	  • Ratio
	  • Real estate
	  • Blueprint
	  • Scale drawing
	  • Regular polygons
	  • Irregular polygons
	  • 24-hr clock
	  • Two-dimensional

Link To other Subjects	Social Studies Geography History Language Sciences (Physics, Biology, chemistry) Visual Arts

UNIT OF WORK GRADE 6 TERM 1 Unit 3

Strand: Geometry
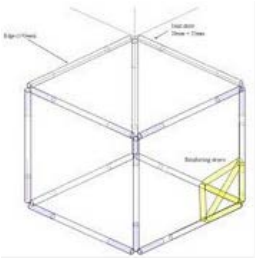
Suggested Time: 3 weeks

About the Unit

In this unit, students will
- Make and explore geometric shapes and solids, and apply knowledge of their properties to problem solving situations.

Focus Question 1: What are the properties of solid figures?	Benchmark: Make and explore geometric shapes and solids, and apply knowledge of their properties to problem solving situations.
Standard Geometry: Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment.	**Objectives:** • Recognize faces, edges, vertices of a solid and classify solids according to the number and shape of their faces. • Describe, design or create three dimensional shapes. • Represent and solve problems using geometrical models. • Describe the physical world in terms of geometric concepts and talk about mathematical findings.
ICT AT(s): COMMUNICATION AND COLLABORATION – participate in discussion forums to communicate and collaborate safely with people inside and outside the country. **DESIGNING AND PRODUCING - Using** word processing software to produce original document incorporation organisational features.	Attainment Target: Make generalizations about geometric relations and explore geometrical transformations.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Students will: ● Examine models of solids (polyhedra) that are used in real-life situations e.g. milk boxes, and tins. Sort and group solid shapes. (These can be provided by teacher or collected by students. Discuss the number and shape of the faces and edges and the number of vertices. Develop a table displaying their findings. ● Construct a variety of polyhedra either by sketching and assembling nets or use drawing tool in word processing software or any simple graphic software to construct different polyhedra (eg. Using line segments from a word processing drawing tool to construct a cube.) ● Highlight the different faces by colouring and explaining (written or orally) how each polyhedron could be used in the real world, for example, as Christmas decorations and buildings. ● In groups, create some of these "real world" items. Share and compare finished products. ● In groups, identify, discuss and name things in the environment which can be described using, geometric shapes e.g. trunk of a tree, drum, glue stick, towel paper rolls, tin of paint, the Jamaican $1, $5, $10 and $20 coins, die (prisms) the top of a mountain suggest a pyramid. ● Talk about the differences between two and three-dimensional objects. ● Using a cube investigate the number of squares on one of its face. ● Explain the strategy used to ascertain the number of squares on the face of a cube. ● Determine the total number of squares on a given cube. 	● Discriminate and differentiate solids ● Tabulate properties of Solids ● Construct solids ● Compare ● Discuss ● Work in groups ● Solve problems ● Operate electronic devices ● Insert illustrations ● Communicate information using online journal	● Completion of table showing faces, edges and vertices ● Identification and description of Polyhedron in the environment ● Performed accurate Comparison ● Work cooperatively in Group ● Problem situations solved.

Learning Outcomes:

Students will be able to:

- Use plane shapes to create a solid.
- Classify/group solids according to their properties from a given set.
- List, identify and compare aspects of geometric shapes in the environment.
- Construct at least one polyhedron
- Investigate relationships with faces, edges and vertices of a solid.
- Design three dimensional solids using sticks, straws, strips of cardboard, etc.
- Identify the 'net' for a specific solid.
- Engage in real-life problem situations.
- Work cooperatively in groups to complete given tasks.
- Participate in discussion forums to communicate information about two and three-dimension objects.
- Use word processing software to produce drawings of various polyhedron.

Points to Note:	Extended Learning
- Compare and contrast the definition of a face versus a surface. - Pay attention to the relationship among the faces, edges and vertices of the different classes of solids.	- Encourage students to cut and paste pictures depicting various polyhedra as used in real-life situations into their scrapbooks. Label each correctly. - Allow students to make journal entries explaining what they learned during the activities above. - Encourage students to use recycled 3D shapes from the environment to design a robot and give an outline as to what the robot was created for.
Resources: - Sticks - Straws - Nets of polyhedra - Solid shapes - Boxes - Magazines	**Key vocabulary:** Polygons, Lines of symmetry, Rhombus, Polyhedron/polyhedral, Prism, Pyramids, Nets, Sphere, Vertex/vertices, Edges, Faces, Cube, Cuboid Quadrilateral, Isosceles, Scalene, Parallelogram, Prism, Cylinder, Sphere, environment, recycle, design, robot, pollution, preserve, etc.

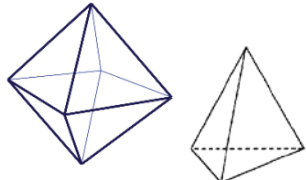| - Newspaper - Tins - Journals - Scrapbooks - Internet - Word processing software - Computer and any other available technologies	

UNIT OF WORK GRADE 6 TERM 1 Unit 3

Strand: Geometry

About the Unit

In this unit, students will:

- o   Identify and distinguish between the various properties of selected polyhedra.

Focus Question 2: How are the characteristics of geometric solids similar and different?	Benchmark: **Model and explore polyhedron (tetrahedron and octahedron) by noting their properties and nets.**
Standard Geometry: Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment. **Sub-theme: Properties of Polyhedral** **ICT Attainment Target (s):** 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 produce creative multimedia products to demonstrate their learning and understanding of basic technology operations.	**Mathematics Objectives:** • Draw and describe nets of prisms: triangular base • Identify and create solids that are polyhedral (tetrahedron, hexahedron, and octahedron). • Classify solid shapes (prisms, pyramids and polyhedron) according to their properties. Attainment Target: Make generalizations about geometric relations and explore geometrical transformations.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria

Students will:
• Draw and describe the net of a triangular prism when given the actual solid, using the following categories;
    ○ Number of edges
    ○ Number of faces
    ○ Shape of faces
    ○ Shape of cross section
 	
• Fold the nets of square based and triangular based pyramids to create the solids. They will glue the bases of two square based pyramids together to create octahedron .
 	
    Discussion should be based on the number of visible faces
 	
• Classify various solids using the following categories.
	• Classify
	• Drawing
	• Distinguish between properties
	• Construct nets of solids
	• Describe properties of solids
	• Engage in group activities
		• Draw required net.
		• Accurately describe solid
		• Categorize according to properties.

Name of solid	Number of edges	Number of vertices	Number of faces	Shape of faces

Learning Outcomes

Students will be able to:

• Accurately draw and describe nets of select solids;

• Identify and create solids that are polyhedral;

• Correctly classify solid shapes (prisms, pyramids and polyhedron) according to their properties.

Points to Note	Extended Learning
• Use concrete models of examples and non-examples of polyhedra to aid students as the lessons progresses. • Students should be given adequate opportunities to explore polyhedra in order to concretise their understanding of their properties. • Explore the features of the prism against those of the pyramid. • Explore with students the appropriateness of the use of the word 'apex' versus 'vertex'.	• Have students roll polyhedra and trace connected faces of the solids to create different nets of the same solids. Ask students to describe the nets they produce, stating why the nets may look different but produce the same solid. • Place polyhedra and non-polyhedra in a bag. Have students place one hand in the bag to feel for a solid. Students must describe the solid, stating vertices, faces (number of and shape) and edges, to the class and determine which polyhedra or non-polyhedra it is. The student must show the solid to the class and then replaces it in the bag.

Resources:
- Solids
- Multimedia projector
- Nets of solids
- Internet-generated devices (smartphones, tablets, laptops etc.)
- Charts/Tables

Links to other subjects:
- Visual Arts (Shapes)
- Science (Physics/Engineering: Designs)

Key vocabulary:
- Polyhedra, Tetrahedron
- Cubes/cuboids
- Octahedron, Hexahedron
- Faces, Edges, Vertices
- Pyramid
- Prism
- Nets
- Solids
- Properties/Characteristics

UNIT OF WORK GRADE 6 TERM 1 Unit 4

Strand: Statistics and Probability

Suggested Time: 4 weeks

About the Unit

Prior Learning

Check that students:

- Understand the concepts population and data;
- Are able to explain idea of a sample
- Are able to develop questionnaire and use them to collect data
- Are able to represent data using bar graphs, pie chart, pictograph, etc.

In this unit, students will:

- Identify patterns, describe and predict outcomes from data collected
- Discuss the use of tables and graphs and solve related problems using data.

Focus Question:	**Benchmark:**
In what ways can I represent and interpret information? Attainment Target: Make and interpret a variety of graphs, charts and tables.	- Identify patterns, describe and predict outcomes from data collected. - Discuss the use of tables and graphs and solve related problems using data.
Standard_Statistics and Probability: Collect, organise, interpret and represent data and make inferences by applying knowledge of statistics and probability. **ICT Attainment Target: COMMUNICATION & COLLABORATION -** participate in discussion forums to communicate and collaborate safely with people inside and outside the country.	**Objectives:** - Collect data using direct observation, experiments, interviews and questionnaires. - Identify patterns and trends in data and make inferences from these patterns and trends. - Represent data using Stem and Leaf plot. - Discuss appropriate uses of various tables and graphs. - Solve problems in which data is given by means of a graph or diagram.

Suggested Teaching and Learning Activities	Key Skills	Assessment
Students will: ● In groups, or as a whole class, develop instruments for data collection with the assistance of teacher. ● In pairs, collect data for 10 minutes during their break period on any trend that can be observed at such time. For example, the number of students who purchased fruit juice compared to those who purchased sodas. ● In groups, conduct interviews in class or among classes to find out other students' favourite fruits, nationality, favourite colour, number of siblings, favourite national hero, and so on. ● In groups, present data collected using bar graphs, pictographs, histogram, line graph and pie chart. Ask each group questions for clarity after presentations have been made. Rate groups' presentations using established criteria. ● Discuss the importance of Stem-and-Leaf plot. Use test or game score data to create Stem-and-Leaf plots as a whole class, in small groups and individually. For example, The following scores were obtained by 9 players on a cricket team: 25, 10, 0, 3, 16, 45, 30, 16, 5. Represent the information on a Stem-and-Leaf plot. ● Watch an online math video tutorial on creating a Stem and Leaf plot. Use any data collected to create their own, using an online interactive Stem and Leaf plotter. Use the same information to create a bar, pie or pictographs via Spreadsheet. STEM LEAF 0 0 3 5 1 0 6 6 2 5 3 0 4 5 ● Make group presentations on how to create, how to interpret and when best to use a pie chart, histogram, bar graph, line graph, and pictograph. Engage in online discussions via social media, created by teacher, to confer with local and international students about the usage of different *statistical charts* and diagrams. ● Assist the schools' Principal to plan a recycling programme. Collect data about what the school has used in the past and how much could be saved in the future. Data should be	Observe details/events ● Collect data ● Represent data ● Interpret graphs ● Solve problems ● Present and explain data orally ● Make oral presentations ● Read and interpret graphs ● Write summaries ● Work in groups ● Design and produce ● Browse and search ● Operate electronic devices	● Presentations accurately done ● Data analysed using appropriate representation ● Collage created using appropriate material ● Appropriate summary of findings reported ● Work cooperatively in groups ● Evidence of logical steps shown in problem solving ● Appropriate vocabulary used

represented on suitable graphs. Observe and discuss data presented to identify trends. Use words such as: fluctuate, increase, decrease, and so on, to make their descriptions. ● Read and interpret information presented in graphs. Answer questions based on data presented in graphs. ● Cut variety of graphs from newspapers, magazines, etc. to make a collage. Use information presented in graphs to write summaries. ● Do an interactive online quiz for reinforcement.		
Learning Outcomes: Students will be able to: ● Observe for details; ● Represent data in a variety of forms; ● Give oral presentations; ● Rate peers' work; ● Ask questions for clarity; ● Select appropriate graphs for presenting data; ● Evaluate the appropriateness of graphs for representing data; ● Read and interpret data presented in graphs; ● Generate summaries from graphs; ● Engage in problem solving situations; ● Complete tasks cooperatively in groups. ● Work in groups to use social media to engage in statistical discussion.		

Points to Note:	**Extended Learning:**
● From data presented on various lists, graphs and tables, students may be required to identify and calculate mean, mode, median and range. ● Link statistics to data collecting areas of Science, Social Studies, Religious Education etc. ● Emphasise the representation of information on the Stem and Leaf plot.	● Research information on the following statisticians: David Harold Blackwell, Sir Ronald Aylmer Fisher, Gertrude Mary Cox, Florence Nightingale David, John Wilder Tukey and David R. Brillinger. ● Challenge students to work in groups in designing their portfolios on various ways in which statistics is used in their daily activities as well as in other real-life situations.

Resources:	Key vocabulary:
• Pupil-made questionnaires • Newspapers • Magazines • Portfolios • Glue • Paper • Scissors • Online math video tutorial on Stem and Leaf plot • Computer and any other available technologies • Internet	• Stem-and-leaf plot • Bar graphs • Pie charts • Pictograph • Line graph • Data • Tables • Graph • Histogram

Link To other Subjects	Social Studies Geography History Language Sciences (Physics, Biology, chemistry) Visual Arts

UNIT OF WORK GRADE 6 TERM 2 Unit 1

Strand: Number

Suggested Time: 4 weeks

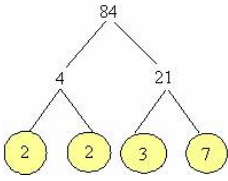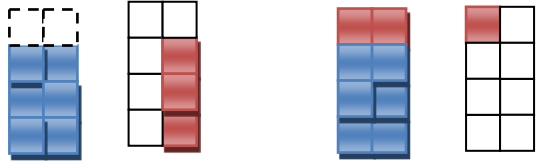**About the Unit**

In this unit, students will:
- Demonstrate an understanding of the use of numbers; number properties and types of numbers; prime factors.
- Compute with fractional numbers quickly and accurately; use these skills to find answers in realistic problem situations.
- Represent shared portions (ratio and percentage).

<table>
<tr>
<td>Prior Learning
Check that students:
Know types of numbers.
Identify the factors and multiples of a number.
Describe types of fractions.
Compute whole numbers.</td>
</tr>
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Focus Question 1: What should I know about numbers in the Hindu-Arabic number systems?	Benchmark: Demonstrate an understanding of the use of numbers; number properties and types of numbers; prime factors and fractional numbers.
Standard - Number Representation: Know the value of numerals, associate them with their names, numbers, ordinals and use concrete objects to model patterns, expressions and numbers. **Sub-title: Number Properties including fractional numbers.** Attainment Target: Use computation, estimation and calculators appropriately to solve real world problems including problems with fractions and decimals.	**Objectives:** - List all the prime factors of a given number. - Write a composite number as a product of: (a) Primes (b) Primes in exponential form. - Identify the Highest Common Factor (H.C.F.) of two numbers. - Differentiate between multiples and factors. - Identify the reciprocal of a whole number or fractional number. - Use the four basic operations to compute with fractional numbers.
ICT Attainment Target: **DIGITAL CITIZENSHP –** Students 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

Students will:
• Complete "Prime Number Sieve" using the hundred board: starting with the number four, colour all other numbers that are multiplies of two (even numbers). The uncoloured numbers are prime numbers.
• Use web search to find "Prime Numbers between 1 and 100" game and play to locate all Prime Numbers up to 100.
• Select a coloured number from the same hundred board and circle all the factors(excluding 1) for this number. Which of the circled number is not coloured? What two statements can be made about these circled uncoloured numbers? - These are the prime factors of the number chosen. Extend activity to find prime factors for other numbers.
• Use colour-coded factor trees to write a composite number as a product of its prime.
 	
84
4   21
2   2   3   7   84 = 2 x 2 x 3 x 7
 	
• Use online resources to play: "Factor and Multiplication Jeopardy" game in groups of four.
• writing composite numbers as products of primes in exponential form: 2^2 x 3 x 7
• List multiples of given pairs of numbers, selecting factors that are common noting the one with the greatest value(H.C.F.)
• Play factor and multiple games.
• Play fraction games(fraction bingo/fraction dominoes) to review fractional numbers
• Use models (e. g. pattern blocks) to review addition and subtraction of fractions. Extend activities to include multiplication and division.
 	
$$\frac{3}{4} + \frac{3}{8} = \frac{6}{8} + \frac{3}{8} = \frac{9}{8} \text{ or } 1\frac{1}{8} \text{ as illustrated.}$$
	• List prime factors
	• Write products of primes
	• Write products of primes using exponents
	• Compute with fractions
	• Work in groups
	• Use selected ICT tools
		• Correctly identify the prime factors from the factors of a given number
		• Correctly represent a composite number as:
		   ○ a product of its prime factors
		   ○ a product of its prime factors in exponential form
		• Correctly identify common factors of a set of numbers and identify the highest common factor
		• Accurately add, subtract, multiply and divide fractional number
		   Correctly identify and use the correct

		operation for any given problem

Learning Outcomes

Students will be able to:
- ✓ Differentiate between prime and composite numbers;
- ✓ Write composite numbers as a product of primes;
- ✓ Write composite numbers as a product of primes in exponential form;
- ✓ Identify the highest common factor from list of common factors generated;
- ✓ Make observations about the use of factors and multiples;
- ✓ Compute with fractions;
- ✓ Work cooperatively in groups.
- ✓ Observe moral principles when using digital tools to play games that reinforce multiplications facts

Points to Note	Extended Learning
2 is the only even prime number. 1 is neither prime nor composite - Guide students to discover that the use of the HCF will simplify a fraction to its lowest term - Allow students to represent operations with fractional number using concrete objects and pictorial representations before the use of algorithmic computations. - Allow students to discover their own methods for computing factional numbers.	- Challenge students to use their knowledge of H.C.F to solve worded problems e.g. Samantha has two pieces of cloth. One piece is 72 cm wide and the other piece is 90 cm wide. She wants to cut both pieces into strips of equal width that are as wide as possible. How wide should she cut the strips? - Encourage students to research the industries in which H.C.F are most likely used and how it utilized.
Resources: - Hundred boards - Games - Factor trees - Crayons - Fraction models e.g. fraction blocks - Computer and any other available technologies Internet	**Key vocabulary:** Exponent, Prime factor, Multiples Greatest Common Factor(G.C.F.) Highest common Factors (H.C.F.) Composite numbers, Number system, Hindu-Arabic System, Reciprocal.

Prior Learning

Check that students can:

- Express fractional numbers in decimal forms beginning with those having denominators of 10, 100, and 1000.
- Place in serial order any set of decimal fractions.
- Add or subtract decimal numbers to three decimal places.
- Find the product of a whole number and a decimal number to three places of decimals.
- Solve problems (including worded problems and money) requiring the addition or subtraction of decimal numbers.
- Estimate products when one factor is a decimal number less than 1.
- Multiply a decimal number by 10, 100 and 1000.
- Rename two or more fractional numbers with unlike denominators to show the same denominator.
- Compare fractional numbers in any form.
- Add or subtract unlike fractions including mixed numbers with or without renaming.
- Write story problems to generate the sum and difference of decimals and compute the answers.
- Write and solve (worded) problems which require decimal computations.
- Round a mixed number to the nearer whole number.
- Round a decimal number to the nearer whole number, tenth or hundredth.
- Solve problems which require operations on fractional numbers.
- Find the product of two proper fractions.

Focus Question 2:	Benchmarks:
How can I represent shared portions?	- Use ratio as comparison in problem solving and decision making. - Demonstrate the understanding of percentages in realistic situations.

Standard - Number Representation:	Objectives:
Know the value of numerals, associate them with their names, numbers, ordinals and use concrete objects to model patterns, expressions and numbers. **Sub-title:** Shared-portions Attainment Target: -Use ratio to solve real world problems. -Use computation, estimation and calculators appropriately to solve real world problems including problems with fractions and decimals.	• Use ratio to compare quantities. • Write a ratio to compare the numbers of items in two sets or two parts of a single set. • Write a ratio using the formats 1: 5, 1 to 5, or 1/5. • Write equivalent ratios for a given ratio. • Solve problems which require the use of equivalent ratios. • Apply the concept of ratio to percentage forms and use the symbol % correctly. • Tell what percentage of a set or object is shown. • Write a percentage as a fraction with a denominator of 100, or, in its simplest form and/or as a decimal. • Solve problems requiring the conversion of fractions to percentages and vice versa. • Recognise that 100% is a whole. • Express one number as a percentage of another number that is a multiple 10. [measurement and money may be used]. • Calcuate a given percentage of a number, amount of money, measure of mass, capacity, etc. • Calculate the entire amount when a percentage of the amount is known. [Multiples of 5].

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment

Students will:
 	
• Use concrete/semi-concrete materials, to model the concept of ratio. With teacher, discuss:
    I.   Items in a set
    II.   Comparing quantities
    III.   Equivalent ratio
    IV.   Expressing ratio in terms of percentage.
• Explore the format of writing ratio in terms of:
    I.   a : b
    II.   a to b
    III.   a/b.
• Use activities which involve recipes such as "Three Peas Salad" to consolidate the concepts mentioned.
• Explore in groups:
    I.   percentage
    II.   uses of percentage in their own experiences (e.g. grades at school, interest at bank) to explore the concept of percentages.
• In groups investigate and explore the use of percentage as fractions as well as decimals e.g. $48\% = \dfrac{48}{100} = 0.48$.
• Use shading of parts of the "100 squares grids" as in "Caribbean Primary Mathematics"- Level 6, pp. 96, 97, to discuss and calculate percentages of sets, money and measure (using the correct symbols).
• Hold up a counting stick/object or draw a horizontal line with 100 divisions on board with teacher's guidance. Count on from zero in 9s pointing to the next division as they say each number e.g. 0, 9, 18, 27, … etc. Count back again. Repeat a few times gradually increasing the pace.
	• Use ratio
	• Write ratio
	• Model ratio
	• Solve problems
	• Work in groups
	• Write equivalent ratios
	• Convert ratios to percentage
	• Convert percentage to fractions
	• Calculate ratios
	• Calculate percentages
	• Use calculator
		• Accurately use ratios to show different relationships between quantities (i.e., part to whole, whole to part, or part to part)
		• Correctly identify/generate equivalent ratio
		• Efficiently use the principle of equivalent ratio to solve problems
		• Clearly explain proportional reasoning in a variety of context
		• Accurately solve problems involving proportions
		• Accurately calculate the percentage given a ratio
		• Accurately represent percentages as a

		fraction and /or decimal
		• Accurately use knowledge of fraction to solve problems involving ratio

- Share 40 counters among some of their classmates such that for every 1 counter a male takes, a female takes 3 counters. Discuss the total number taken by males to the total number taken by females. Create equal groups using counters among the same gender to establish other equivalent ratios. Example: 10 : 30, 5: 15, 2:6.
- Illustrate how ratios can be written as fractions and percentages. Show how they can be simplified.   For example, 8 shaded squares out of a total of 40 squares is:
    - I.   As a ratio of shaded to un-shaded: 8:32 or 4:16 or 2:8 or 1:4.
    - II.   As a fraction of the total: 8/40 or 4/20 or 2/10 or 1/5.
    - III.   As a percentage of the total: 8/40 = 20/100 = 20%.
- Review the concept of equivalent fractions and introduce the concept of equivalent ratios. Express two quantities as a ratio in its simplest form. For example: A boy is 15 years old and a girl is 12 years old. Write the following ratios in their simplest forms:
    - a.   The boy's age to the girl's age,
    - b.   The girl's age to the boy's age.
- In pairs, engage in solving real-life ratio problems, for example:
    - A.   In a class, there are 25 Grade 5 students and 15 Grade 6 students. Write in their simplest forms, the ratios of:
        - I.   Grade 5 students to Grade six students,
        - II.   Grade 6 students to Grade 5 students.
    - B.   There are 27 students in Mr. Hall's class. They are divided in the ratio 5:4 – girls to boy. How many girls and how many boys are in the class?
- In pairs, using a set of 1-20 number cards, shuffle cards and deal two cards face-up on the table to form a ratio (e.g. dealing 4 and 18 would give the ratio 2:9). Write the ratio in their books. Then write the ratio in its simplest form (if it isn't already) and list five equivalent ratios.
- Solve word problems which ask them to divide a certain quantity according to a given ratio. For example:

Evidence of logical steps shown in solving problems

A. Share 96 sweets among Mark, Sue and Bev so that Mark gets twice as many as Sue, and Bev gets one and a half times Mark's share.
B. Share 54 marbles in the ratio 2:3:4 respectively.

- Use coloured beads or counters to model each ratio above. Then solve word problems by making copies of the ratio until the correct total quantity is reached.
- Practice matching simple fractions (e.g. ½, ¼, 1/5, 1/10, 1/20, 1/50, 27/100) to percentage amounts using coloured pencils and decimal paper divided into hundredths.
- In groups of four, using 36 blank cards, write fractions in its lowest terms to represent matching percentage cards i.e. ½ = 50%, 1/5 = 20%, 27/100 = 27% etc. Shuffle cards together and deal 6 cards to each player. Place remainder of cards in a face down pile. Take turns to:
    I. Draw a card
    II. Play a set of three matching cards if they have them
    III. Discard a card face up.

NOTE: Players may choose to draw a card from the top of the deck or from the top of the discarded pile. The first player to make two sets of three cards wins the game.

- Draw fraction diagrams modelled by teacher. Calculate the percentage of each diagram that is shaded and write the answer on a separate sheet of paper. Then swap diagrams and calculate the percentage of each diagram that is shaded.
- Divide class into teams of six. On a sheet of paper, write the number 1. Next to it, write a percentage expressed as a mixed number i.e. 45 ¼%. In 30 seconds, convert the percentage to a decimal and write it down (i.e. 0.4525). Do the same with three other percentages written in mixed number. Pass paper on after each question so that everyone gets a chance to write their response Keep a note of each question and response After 10 questions, confer to decide on answers using calculator. Then exchange papers and mark each other's answers.
- In groups, using sets of percentage cards, number cards, and a calculator, shuffle each set of cards separately and place them in two face-down piles. Take turns to turn over the top card from each pile i.e. 45% and 80 and all players find the

percentage of the number (e.g. find 45% of 80). Then check answers on the calculator.
• Discuss and use as many clippings from newspapers/magazines as possible involving discounts, sales, finding a percentage increase or decrease, and finding the percentage of sales tax in a price. Simulate a shopping experience which requires the application of the concepts taught.
    For example: A clothes store having a massive sale.
              A recent increase in GCT from 16.5% to 20% etc.
    I.   An item used to cost \$120. The discounted price is \$90. What was the percentage of the discount?
    II.   Last week a loaf of bread cost \$185. This week's its price is 10% higher. What is the new price?
    III. Last week a litre of milk cost \$130. This week its price is 5% lower. What is the new price?
• Cut and paste articles on percentages from newspapers, magazines and other articles in their scrapbooks. Write in their journals their understanding of each percentage amount being displayed in articles.
• In groups, make a chart depicting the conversion of percentages to ratios to decimals to fractions i.e. 50% = 3:6 = 0.5 = ½.		

Learning Outcomes Students will be able to: • Compare ratios; • Form ratios; • Model rational amounts; • Engage in problem solving situations; • Take part in group activities cooperatively; • Create equivalent ratios; • Convert ratios to percentages and vice versa; • Convert percentages to fractions, decimals and vice versa; • Calculate percentage amounts/quantities.		

Points to Note	Extended Learning

● Ensure that students identify that proportion is a statement of two equivalent ratios.
● Ensure that students understand that a percentage is the rate per 100 units.
● Percentages are used in many everyday life situations e.g. in sales, discount prices mortgages etc.
● Percent is derived from the Greek term "Centum" which means out of 100.
● Link aspects of ratio and percentage to activities in Science, Social Studies, Religious Education, Physical Education etc.
	• Allow students to write their own word problems involving ratios. Share their problems with the class, asking the class to solve them.
	• Allow students to create their own problem solving on real-life situations on finding percentages of quantities. For example:
	   I. Isabella is 1.5 metres tall. Her younger brother is 65% of her height. How tall is he?
	   II. Mother bought a bag of Irish potatoes weighing 0.75kg. She uses 90% of the potatoes to make chips. What weight of potatoes is left?
	   III. A baker pours out ¾ litre of coconut oil from a container to bake buns. He uses 25% of it. How much oil did the baker use?
	• Allow students to create their own portfolios showing how they would calculate percentages of amounts as used in their daily activities. For example:
	   I. What percentage of their pocket money is used for lunch?
	   II. What percentage of their weekly allowance is used for travelling?
	• What percentage of their monthly allowance is saved?

Resources:
  • Counting sticks/objects
  • 4 x 10 rectangular grid
  • Ruler
  • Sets of 1-20 number cards
  • Coloured beads or counters
  • Sets of 24 cards, 12 showing fractions in their simplest form whose denominator is a factor of 100 and 12 showing matching fractions with a denominator of 100, for each group of four students
  • Decimal paper
  • Coloured pencils/crayons / Sheets of paper / Calculator
  • Scrapbook
  • "Math kit" / Journals /Portfolios / Number cards
  • Clippings involving percentages from newspapers and magazines
  • Cartridge paper
	Key vocabulary:
	  • Ratio
	  • Percentage
	  • Equivalent
	  • Fraction
	  • Decimal
	  • Problem solving

Check that students can:

- Convert from mixed number to improper fraction and vice versa.
- Divide a whole number by one, two or three digit number.
- Estimate the answer to division problems and judge the reasonableness of computed answers.
- Apply the inverse relationship between multiplication and division.

Suggested Time: 1 week

About the Unit

In this unit, students will:

- Compute with fractional numbers quickly and accurately; use these skills to find answers in realistic problem situations.
- Model the number operations: addition, subtraction, multiplication and division

Focus Question 3:	**Benchmark:**
How can I manipulate fractional numbers? Attainment Target: Use computation, estimation and calculators appropriately to solve real world problems including problems with fractions and decimals.	Compute with fractional numbers quickly and accurately; use these skills to find answers in realistic problem situations. Model the number operations: addition, subtraction, multiplication and division.
Standard - Number: **Number Operation and Application** Use 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:** Division using decimal fractions	**Mathematics Objectives:** ● Divide a fraction, mixed number or a decimal fraction by a whole number. ● Divide a whole number by any fractional number. ● Divide a decimal fraction by a power of ten. ● Divide a decimal fraction by another decimal fraction to two or three places of decimals. ● Solve problems involving division of fractional numbers. ● Compute with whole numbers, common and decimal fractions using the four operations.
ICT Attainment Target (s): **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.	

Suggested Teaching and Learning Activities – Focus Question 3	Key Skills	Assessment
Students will: ● Engage in a discussion on whether they cook at home or not. ● Say what they cook and if they follow a recipe or not. ● Share if they have ever had to double, triple, or halve a recipe. ● Multiply and divide a recipe to feed groups of various sizes. ● Use unit rates or proportions and think critically about real world applications of a baking problem. ● Create their own classroom survey or use previously generated questions to study the class and describe the set [class] in fractional parts. This lesson requires that students identify fractions in real-world contexts from a set of items that are not identical. For example, what fraction of the class is male/female? ● In groups, select a question from the survey and be given envelopes that contain as many scrap pieces of paper as there are students in the class. Record their groups' question and answer choices, if appropriate, on the envelopes. For example, if the students ask about gender, they should include two choices, male or female. If it is not possible to identify all the possible choices, the students should leave their question in an open-ended format. For example, a question about types of pets should be left open-ended, as one might not be able to anticipate the variety of pets represented in the class.	● Divide fractions ● Multiply fractions ● Reason ● Problem-solve ● Engage in meaningful discussions ● Work collaboratively ● Write in Journals ● Create portfolios ● Compute using operations ● Prepare PowerPoint	● Use the knowledge of fraction to accurately complete recipes ● Model division of fraction using concrete objects and pictorial representation ● Correctly divide whole number by fraction and vice versa ● Evidence of logical steps shown in solving problems

● Before starting the survey, have the students remove all the paper from their group's envelope and leave it at their table. Conduct the survey by passing the envelopes around the room and giving each student a chance to respond. Use these slips to record and submit their answer to each survey question. Begin the survey by having group members respond to the question on their envelope, writing their answer on a slip of paper and placing it in the envelope. When finished with that question, pass their envelope to the next group, and so forth, until all the students have had a chance to respond to all the questions. (If the students in your class would benefit from getting up and moving around the room, instruct the students to leave the envelopes at each table and move from table to table to answer the questions.) ● Once data are collected, in groups, tally the responses in their envelope, record the number and represent the quantity as a fraction, for example, 12 out of 24 students (12/24 or 1/2) have brown eyes. In groups, reduce their fractions to lowest terms by finding the greatest common factor. For example, suppose 18/24 (or 3/4) of the class owns a pet. The greatest common factor for 18 and 24 is 6. The students might find it helpful to list all the factors for the numerator and the denominator, 18 and 24 in this example, and locate the greatest common factor. This can be done strategically by checking in order each pair of factors that when multiplied yield a particular product. For example, to exhaust all the factors of 18, one would begin with 1×18, then 2×9, then 3×6. Since 4 is not a factor, the student would move on to 5 and then to 6. Six has already been generated with 3×6. When the student begins to duplicate factors, they know they have exhausted the list. ● Divide the numerator and denominator by the greatest common factor to reduce the fraction. For example, for 18/24, the students should divide both the numerator and denominator by 6 to reduce the fraction to 3/4. ● In groups, organize their data in a chart and share it with the class. Then, record all fractional representations and choose to record appropriate statistics on their chart, for example, mean, median, range, and mode for numerical data.	● Create menu ● Organize ideas ● Think critically ● Deduce ideas ● Share and compare ● Present ideas ● Conduct survey ● Collect data ● Represent data ● Reduce fractions	

● In groups, create their bar graph using the Bar-Grapher by selecting the option to input their own data. ● After creating their graphs, label the data in fractional parts and reduce all fractions to lowest terms. For example, this chart should be labelled with dog being 15/26, cats being 8/26 or 4/13, birds being 2/26 or 1/13, and 1/26 iguana. Share and compare their graphs with the class and discuss how they used fractions in collecting the data depicted on each graph.		

Learning Outcomes

Students will be able to:
- Accurately divide fractions by mixed number, decimal fractions and whole numbers;
- Divide whole numbers accurately by fractional numbers;
- Correctly divide decimal fractions by powers of ten;
- Accurately divide decimal fractions by decimal fractions to two or three places of decimals;
- Actively engage in solving problems involving division of fractional numbers;
- Accurately compute with whole numbers, common and decimal fractions using the four operations.

Points to Note	Extended Learning
● Allow students to investigate different methods of dividing fractional numbers with the aid of manipulative and pictorial representation ● Ensure that students discover the reason for reciprocating when using the division algorithm	● Allow students to bring in their own recipes for chocolate chip cookies. Ask them to find the amount of each ingredient needed for a different number of servings. Ask students to write a journal entry about the way math was applied in this lesson and the other skills that they needed or learned.
Resources: ● Multimedia Projector ● Internet-generated devices (smartphones, tablets, laptops etc.) ● Accessories (connections, softwares) ● Measuring cup and spoon ● Sand ● Large mixing bowl ● Feeding Frenzy Activity Sheet (https://illuminations.nctm.org/uploadedFiles/Content/Lessons/Resources/6-8/FeedingFrenzy-AS.pdf)	**Key vocabulary:** ● fraction ● mixed ● proper ● improper ● divide ● multiply ● problem-solve ● menu ● recipe

| Feeding Frenzy Answer Key (https://illuminations.nctm.org/uploadedFiles/Content/Lessons/Resources/6-8/FeedingFrenzy-AK.pdf) Journals Portfolios Scrapbooks Five to six envelopes (one envelope for each small group) Scrap paper the size of a standard adhesive note (enough for each envelope to contain one slip for each student in the class) Survey Activity Sheet (https://illuminations.nctm.org/uploadedFiles/Content/Lessons/Resources/3-5/FunFractions2-AS-ClassSurvey.pdf) Bar Grapher (http://illuminations.nctm.org/Activity.aspx?id=4091) | ratios proportions survey data graphs endangered species |

Links to other subjects:
- Home and Family (Food Preparation, Recipes/Menus, Culinary Designs)
- Business Basics (Money Management)
- Science (Integrated: Mixtures, Chemical Reactions, Endangered Species)
- ICT (Research, Graphs)
- Language Arts (Journal Entries)
- HFLE (Social grouping)
- Visual Arts (Designs)

UNIT OF WORK GRADE 6 TERM 2 Unit 2

Strand: Measurement

Suggested Time: 3 weeks

About the Unit

In this unit, students will:
- Understand the concept of area;
- Estimate and measure to solve related everyday problems;
- Investigate, estimate and compute the volume of rectangular solids.

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Prior Learning

Check that students:
- Know and understand the concept of perimeter.
- Can identify different polygons.
- Know the properties of polygons with up to 10 sides.

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| Focus Question:	Benchmarks:
How do I derive and use formulae in measurement situations?	- Understand the concept of area; estimate and measure to solve related everyday problems. - Investigate, estimate and compute the volume of rectangular solids.
Standard Measurement: Use the correct units, tools and attributes to estimate, compare and carry out the processes of measurement to given degree of accuracy. Attainment Target: Derive informally, and use formulae for measurement activities/situations.	**Objectives:** - Explore the tiling of a plane using different shapes. - Identify shapes which will cover a plane exactly and those that will not. - Differentiate between the size and use of the following units: square centimetre, square metre, hectare and square kilometre. - Name and measure regions, compute the area of regions shaped as rectangles and right- angled triangles individually; in combination or as the surfaces of three dimensional objects. - Solve problems involving area measures. - Develop the idea of a 'unit solid'. - Build unit solids of volume 1 dm^3 and 1m^3. - Calculate the volume of a rectangular prism when given the number of unit solids in one layer and the number of layers. - Investigate and use the formula for the volume of a rectangular prism to solve problems.

ICT Attainment Target		
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. **DESIGNING AND PRODUCING** - Students use digital tools to design and produce creative multimedia products to demonstrate their learning and understanding of basic technology operations. **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.		

Suggested Teaching and Learning Activities	Key Skills	Assessment Criteria
Students will: ● In pairs, use one or more shapes to create patterns as they explore the tiling of a plane. ● Watch an online video tutorial on "Area and Perimeter" then generate songs, games, dramatizations, mimes and dance to differentiate both concepts. ● In groups, estimate how many 1 square-centimetre (1cm^2) or 1 square-metre (1m^2) tiles can cover a given squared, rectangular or triangular region. Cover region with unit square to test their estimations or use drawing tools in word processing software to create and prove that 144 square units is all it takes to fully populate the area of a 12 by 12 square. ● Select and paste predesigned furniture (made by teacher from cardboard, cartridge paper or any suitable material) on square paper. Students should then trace the outline of their rooms (bathroom, kitchen, bedroom, etc.), record their dimensions and the area of each room. ● Work with a partner to calculate the area of shaded and un-shaded portions of polygonal shapes.	● Differentiate, estimate, create ● Trace ● Outline ● Measure ● Calculate ● Record ● Solve problem ● Hypothesize ● Test hypothesis ● Calculate area of shaded and un-shaded portions ● Calculate surface area ● Construct solids	● Patterns created accurately ● Estimations done appropriately ● Accurately Recorded dimensions and areas ● Accurately completed Calculations ● Calculate volume of rectangular prism accurately

8 cm

15 cm

4 cm

30 cm
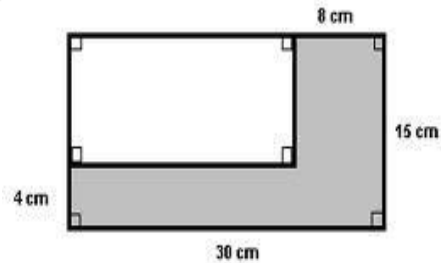
- Use cut-outs of the top view of various furniture as well as a squared paper (which represent the floor) to design layout of a room. Arrange given cut outs on the squared paper.
    - Record the dimensions of each furniture,
    - Determine the amount of surface coverage occupied by each furniture.
    - Determine the amount of available space left in the room.

- Assume the role of a gleaner page designer. They will arrange articles and advertisements cut-outs from newspaper on a blank sheet so that the maximum area is used. Students should bear in mind that the amount of money made by a newspaper company highly depends on the number of advertisements in the paper.

- Use a combination of 2-Dimensional shapes to form 3-Dimensional objects and calculate the surface area of 3-D objects created or use drawing tool in word processing software or any simple graphic software to construct 3-Dimensional object from 2-dimensional (eg. Using squares from a word processing drawing tool to construct a cube.)

- Build unit solids from nets supplied by teacher in small groups.

- Match objects on a list (e.g. letter size paper, plot of land (small and huge) with the appropriate unit to measure their areas.

- Use volume and the dimensions of solid objects to generate formula for calculating the volume of such objects. Apply formulae to find the volume of similar solids of different dimensions.

- Create an electronic portfolio with information/pictures/drawings, poems etc. about identifying, differentiating and finding area of 2-D and 3-D shapes.

● Work cooperatively ● Observe trends ● Create algorithm ● Browse and search ● Insert illustrations ● Observe moral principles when using digital materials	● Constructed appropriate solids ● Problem solving completed in a logical order ● Work collaboratively in groups

Learning Outcomes:

Students will be able to:
- Use shapes to create patterns (tessellation);
- Use appropriate units in measurement situations;
- Calculate area and volume;
- Differentiate between volume and surface area;
- Construct solids;
- Problem solve situations involving areas/perimeters/polygons/solid shapes;
- Engage in group activities cooperatively.
- Recognize and acknowledge ownership of video tutorials online
- Use word processing software to produce 3-dimension shapes using 2-dimensional drawing objects

Points to Note	Extended Learning
• Volume may be linked with Science by allowing students to place objects (e.g. die, interlocking cubes, Rubik's cube, stones etc.) in measuring cylinder/cup containing water. Use different colour rubber bands to mark off initial water height and the new height after objects are placed in water. Record the heights, calculate the difference in heights to arrive at the volume of the object. • Link tessellation with abstract art/ elements and principles of design in visual arts. Allow students to use a variety of colours when creating designs.	• Pupils may research information on Archimedes' principle. • In pairs, allow students to cut and paste pictures from magazines, newspapers, and the Internet depicting solid shapes used in real-life situations e.g. buildings, furniture etc. Then associate and label each appropriately i.e. cube, pyramid, sphere etc. • Allow students to make their own solid shapes using strawboard, paste/glue, poster paint and paint brushes. Label each correctly then add them to their "Math Kit". • Encourage students to make journal entries on what they have learned from the activities above. Share responses with the class.
Resources: • Square paper • Predesigned furniture	**Key vocabulary:** • Volume • Area

• Unit tiles • Poster paints / Strawboard • Paint brushes / Ruler • Nets of solids • Glue /Journals /Scrapbooks • "Math Kit" • Magazines/newspapers • Computer • Internet • Word processing software • Printer and any other available technologies	• Surface area • Dimension • 2-dimensional • 3-dimensional • Edge • Vertex • Face • Tessellate • Hectare

UNIT OF WORK GRADE 6 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 shapes found in the environment
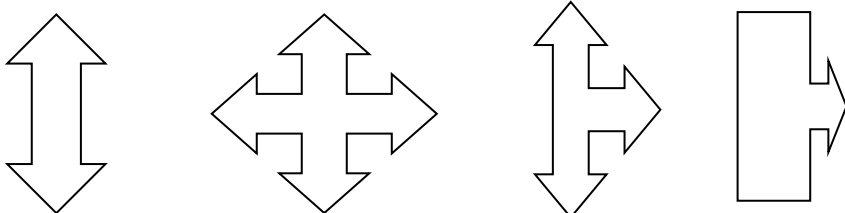
Focus Question 1: What are the properties of the various plane figures around us? Attainment Target: Make generalizations about geometric relations and explore geometrical transformations.	Benchmark: Explore the ideas of symmetry in geometric figures and shapes found in the environment.
Standard Geometry: Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment. **Sub-theme:** Symmetry	**Objectives:** • Identify and count the lines of symmetry in compound plane figures. Describe congruence in plane and solid shapes. • Distinguish between similar and congruent figures (triangles and quadrilaterals).
DESIGNING AND PRODUCING - Students use digital tools to design and produce creative multimedia products to demonstrate their learning and understanding of basic technology operations.	

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Students will: • Examine 'package photographs' of various sizes and discuss similarities and differences. Establish and discuss the terms 'similarity and congruence.'	• Compare shapes • Identify line of symmetry	• Correctly identified Congruency of plane shapes

• Discuss the properties of shapes congruent. Discuss examples as well as non- examples of objects within the environment which are congruent. • Use geo-board and elastic band to create geometric shapes. Use other elastic bands and establish the lines of symmetry within each shape. • In groups, create a design for grill work using patterns which are symmetrical with at least two (2) lines of symmetry • Create designs by using plain paper and paint/ink to explore the idea of congruency and symmetry in art using ink blobbing techniques. Discuss the designs forms highlighting congruency and symmetry. • In groups, given several plane shapes, use plane paper to cut-out shapes that are congruent to the ones given. Or use drawing tools in word processing software to create 2- Dimensional shapes and show using line segments the number of lines of symmetry each has, example: • Be given various shapes to and asked to identify those which are congruent/not congruent but bear some likeness e.g. Two triangles having three sides, however the lengths of their sides are not the same. • Collect a variety of plane shapes and solid figures, then in groups compare and classify them in various ways. Have discussion including rationale for the particular classification.	• Investigate congruency • Discuss findings • Classify • Create patterns • Work in groups • Solve problems • Insert illustrations	• Accurately identified Lines of symmetry on objects and plane shapes. • Appropriately explained the concept of congruency • Worked collaboratively in groups • Performed problem solving task in a logical order
Learning Outcomes: Students will be able to: • Identify properties that make shapes congruent.		

- Identify congruent shapes and objects. - Classify and justify classification of grouping of shapes - Explain congruency - Identify lines of symmetry in shapes and also recognize that diagonal lines are also lines of symmetry in some shapes for example the square. - Engage in problem real-life problem situations. - Complete tasks cooperatively in groups. - Use word processing software to produce drawings 2- Dimensional shapes		

Points to Note:	Extended Learning:
- The lines of symmetry in any plane shape, is the line that **cuts/divides** the shape in two equal parts when folded along that line. - The line of symmetry in an object is that **imaginary** line where you could fold the image and have both halves matching exactly. - The mirror line is not a line of symmetry when it does not cut/divide the object in to equal parts.	- Use the flags of the Caribbean and flags of the world to identify the number of lines of symmetry. - Identify objects in the environment that have line of symmetry. For example, - Explore other geometric shapes in the environment as well. - Instruct students to complete the "Symmetry Scavenger Hunt" in where they will find classroom objects that are symmetrical. Ask students to share their findings and talk about those that do not have line of symmetry and why.

Resources:	Key vocabulary:
- Paint - Plane paper - Solids - Plane shapes - Mirrors - Graph sheets	- Symmetry/symmetrical - Congruent - Identical - Plane shapes

About the Unit
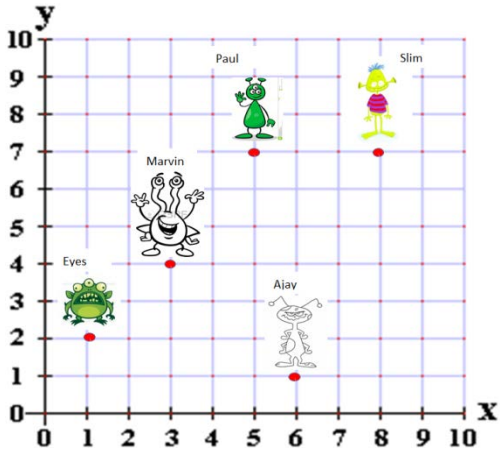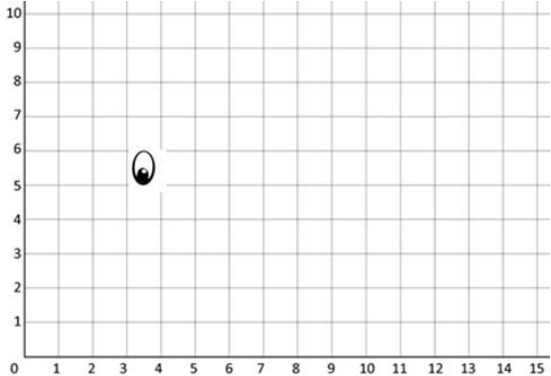
In this unit, students will:
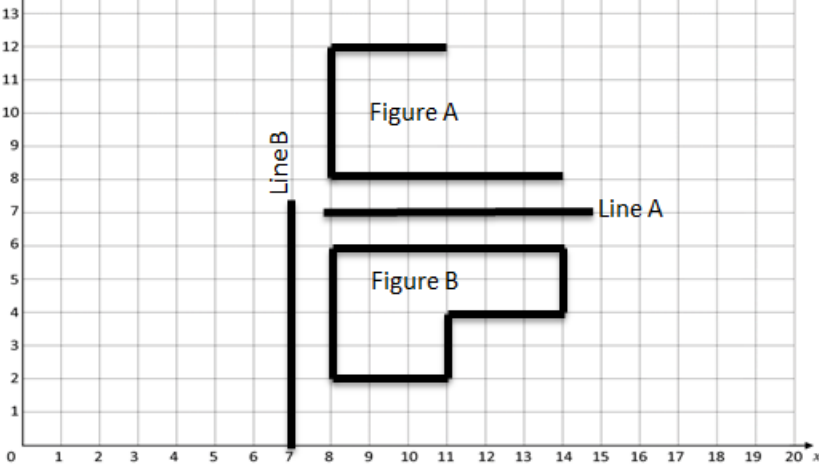- o Use Cartesian plane to explore, identify, and reflect plane shapes or designs in quadrants.
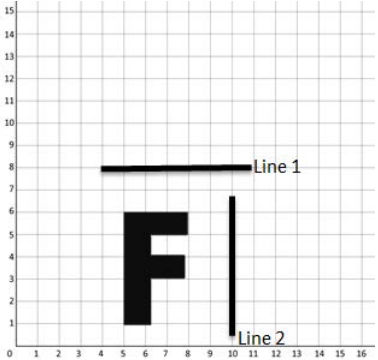
Focus Question 2: How do I use the Cartesian plane? Attainment Target: Make generalizations about geometric relations and explore geometrical transformations.	**Benchmark:** **Understand and use the concept of reflection within the Cartesian plane.**
Standard: Geometry: Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment. **Sub-theme: Cartesian Plane** **ICT Attainment Target (s):** DESIGNING AND PRODUCING - use digital tools to design and produce creative multimedia products to demonstrate their learning and understanding of basic technology operations. 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.	**Mathematics Objectives:** • Explore how a coordinate system identifies location and use the first quadrant of the Cartesian plane to plot points. • Perform reflection of a shape or design in a horizontal or vertical line in the first quadrant of the Cartesian plane.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Students will: • Use coordinates to identify the location for each named alien • Plot, then connect the following points to reveal a picture on the Cartesian plane A (1,5), B (2,3), C (4,2), D (6,1), E (8,1), F (11,3), G (14,1), H (12,5), I (14,9), J (11,7), K (8,9), L (6,9), M (4,8), N (2,7)	• Plotting points • Identifying locations • Reflecting an image in a horizontal and vertical line. • Making generalization	• Correctly locating an object using the coordinates • Accurately plotting points on a grid • Accurately reflecting object in a horizontal and vertical line • Generalizations about the image of an object under a reflection.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria

- Use Lines A and B as mirror lines, reflect the given object across each.

- Complete Figure A to show a reflection of Figure B across Line A.
- Reflect Figure B using Line B to form Figure C.
- What do you notice about the distance of each figure from the mirror line?
- Are the figures the same size? Justify your response.

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
• Identify from the given list below a possible reflection of F in Lines 1 and 2.		
Learning Outcomes Students will be able to: • Locate an object given the coordinates. • Plot points on a grid. • Reflect object in a horizontal and vertical line. • Make generalizations about the image of an object under a reflection.		

Points to Note	Extended Learning
Direction As **x** increases, the point moves further **right**. When x decreases, the point moves further left. As **y** increases, the point moves further **up**. When y decreases, the point moves further down. Writing Coordinates The coordinates are always written in a certain order: horizontal distance first, then vertical distance. This is called an "**ordered pair**" (a **pair** of numbers in a special **order**). The numbers are usually separated by a comma, and parentheses are put around the numbers e.g, **(3,2)** Example: (3,2) means 3 units to the right, and 2 units up Example: (0,5) means 0 units to the right, and 5 units up. In other words, only 5 units up.The Origin	• Encourage students to write meaningful reflections in Journals on their learning experiences. • Allow students to create PowerPoint presentations using information from their research on Cartesian Plane.

The point (0,0) is given the special name "The Origin", and is sometimes given the letter "O".

Abscissa and Ordinate

You may hear the words "Abscissa" and "Ordinate" ... they are just the x and y values:

- Abscissa: the horizontal ("x") value in a pair of coordinates: the horizontal coordinate of a point in a plane, the Cartesian coordinate system obtained by measuring parallel to the x-axis.

- Ordinate: the vertical ("y") value in a pair of coordinates: the Cartesian coordinate obtained by measuring parallel to the y-axis.

Four Quadrants
When we include negative values, the x and y axes divide the Cartesian plane into 4 pieces:
Quadrants I, II, III and **IV. They are numbere**d **in a counter clockwise** direction.
In **Quadrant I** both x and y values are positive,
In **Quadrant II** the x value is negative and the y value is positive,
In **Quadrant III** both x and y values are negative, and
In **Quadrant IV** the x value is positive and the y value is negative.

Resources:	Key vocabulary:
• Cartesian plane	• **Reflection**
• Object to be reflected	• **horizontal**
• Multimedia projector	• **vertical**
• Internet-generated devices (smartphones, laptops, tablets etc.)	• **plot**
• Graph sheets/Grid paper	• **Transformations**
	• **Coordinates**
	• **Quadrants**

Links to other subjects:
- Geography (Locations, Cardinal Points)
- Visual Arts (Shapes)
- Language Arts (written explanations)

UNIT OF WORK GRADE 6 TERM 2 Unit 4

Strand: Algebra

Suggested Time: 2 weeks

Prior Learning
Check that students:
- Are familiar with the concept algebra;
- Are knowledgeable of open and closed mathematical sentences;
- Are able to find variables using addition and subtraction.

About the Unit
In this unit, students will:

- Use substitution in formulae, algebraic sentences and inequalities in problem solving.

Focus Question 1: How can I use symbols in solving real world problems? Attainment Target: Interpret expressions and equations involving variables.	Benchmark: Use substitution in formulae, algebraic sentences and inequalities in problem solving with up to two variables.
Standard - Algebra: Employ algebraic reasoning through the use of expressions, equations and formulae to interpret, model and solve problems involving unknown quantities. **ICT Attainment Target (s):** 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.	**Objectives:** - Use substitution in formulae, algebraic sentences and inequalities in problem solving. - Use operation symbols to complete number sentences. - Substitute a number for a variable in a mathematical sentence with up to two variables.

Suggested Teaching and Learning Activities	Key Skills	Assessment Criteria
Students will: - Observe teacher-supplied cards with examples of equations, expressions, inequalities, open sentences, closed sentences and variables. In small groups, write a definition for	● Define terms ● Discuss	● Correct representation

each term in their own words. Participate in whole class discussion about the terms. Write further examples of equations, expressions, open sentences, closed sentences.

- In groups, make algebra songs or acoustic poems including the use of terms such as: equations, variable, operations, and expressions and present them to the class. Create class anthology of algebra songs and poems.

- Play the game "**I THINK OF A NUMBER**". The teacher will ask a representative from each group to come to the front of the class. The representatives will be given particular commands which should be done mentally. For example, the teacher may say *"Think of a number greater than 10; add 2 to it, then minus 5. What is your result?"* The representatives will share their results. Then other members of each group should try to guess the number that their group representative had thought of. For each correct response the teacher will award points to the groups. The group with the most points wins the round. **NOTE:** The teacher may increase the complexity of the operations as is appropriate for his/her class.
- Complete charts by solving given equations. Example:

3 times a number (Q) plus 4 equals (L)					
Q	5	7	9	11	13
L	19	25			

- Examine tables for trends, then use trends/patterns identified to write equations and calculate unknown values. Example:

F	2	6	8	12	15			28
P	7	11	13		23	30		

- Be placed in groups and instructed to write expressions for other groups to evaluate. For example, a group may say: *"If T=3 and B=9, what is the value of TB?"* The target group should quickly substitute the values of T and B in the expression to arrive at the answer: 3×9=27. Students should also give worded problems for their peers to solve.

- Mental calculations
- Problem solving
- Problem writing
- Identify trends
- Write equations
- Work in groups

of equations and expressions

● Closed sentences and open sentences accurately identified

● Appropriate and relevant songs and poems created

● Accuracy of responses to games

● Accuracy of equations for given situation

● Tables completed accurately

● Accuracy of symbols for Mathematical Statements

● Work collaboratively in groups

• Discuss the meaning and use of these inequality signs: ≤, ≥, <, >. Examine inequalities and explore the range of values that a variable can have. Example: M × 2 ≥ 18 (M multiplied by two is greater than or equal to 18). In this inequality the value of M could be greater than or equal to 9. • Discuss the order of operations in statements that have more than one operation. Use knowledge of order of operations to identify appropriate symbol(s) that will make mathematical statements true.		• Appropriate vocabulary used
Learning Outcomes: Students will be able to: • Define basic terms associated with algebra; • Write equations from observed patterns; • Write possible values to satisfy inequalities; • Solve equations; • Create their own mathematical expressions; • Substitute number values for variables; • Work cooperatively with peers.		

Points to Note:	**Extended Learning:**
• Emphasize the difference between an algebraic expression and an equation. • Highlight the difference between equality and inequality. • Division and multiplication are done first depending on the order in which they appear from left to right; that is, if multiplication comes first in the problem it should be done first. • Addition and subtraction are done after multiplication and division; if the addition comes before the subtraction when reading from left to write, do the addition before the subtraction. • If the problem has a bracket or parenthesis, you should solve what is in the brackets first. • Link aspects of algebra with activities in Science, Social Studies etc.	• Students may follow the link below to have fun with algebra. Teachers may also work through the activities with students. http://www.sheppardsoftware.com/math games/fruitshoot/FruitShootCompareM.h tm • Work in pairs to create inequalities that represent real-life situations. For example, the largest number of cars that can be parked in a parking lot at any given time: *Lily made at least 8 cookies. How many cookies could she have made?*

The Sailors and Coconuts Problem

As a group, work to solve the following problem. Explain your strategy and the reason you chose that strategy.

Three sailors were marooned on a deserted island that was also inhabited by a band of monkeys. The sailors worked all day to collect coconuts but were too tired that night to count them. They agreed to divide them equally the next morning. During the night, one sailor awoke and decided to take his share. He found that he could make three equal piles, with one coconut left over, which he threw to the monkeys. Thereupon, he put his own share in a pile down the beach, and left the remainder in a single pile near where they all slept. Later that night, the second sailor awoke and, likewise, decided to take his share of coconuts. He also was able to make three equal piles, with one coconut left over, which he threw to the monkeys. Somewhat later, the third sailor awoke and did exactly the same thing with the remaining coconuts. In the morning, all three sailors noticed that the pile was considerably smaller, but each thought that he knew why and said nothing. When they then divided what was left of the original pile of coconuts equally, each sailor received seven and one was left over, which

	they threw to the monkeys. How many coconuts were in the original pile?
Resources: • Number cards • Charts/tables • Computer/laptop • Internet • Multi-media projector • Soft wares • Accessories	**Key vocabulary:** Algebra , Constant , Open sentence, Closed sentence, Expression/statement Variable, Inequality , Equation

About the Unit

Prior Learning
Check that students can:
- Write algebraic expressions from worded problems.
- Represent patterns in tabular form.

In this unit, students will:
- Investigate patterns, create algebraic expressions and make predictions.

Focus Question 2: How can I create generalizations from given patterns? Attainment Target: Interpret expressions and equations involving variables.	**Benchmark:** Investigate patterns, create algebraic expressions and make predictions.
Standard_Algebra: Employ algebraic reasoning through the use of expressions, equations and formulae to interpret, model and solve problems involving unknown quantities. **Sub-theme: Algebraic Expressions** **ICT Attainment Target (s):** 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.	**Mathematics Objectives:** - Calculate common differences between consecutive terms in patterns and use these to make predictions. - Investigate tables of values to develop algebraic expressions to represent any term in a simple numeric pattern and use these expressions to make predictions.

Suggested Teaching and Learning Activities – Focus Question 1		**Key Skills**	**Assessment Criteria**
Students will: • Investigate this scenario in which they are given two options to choose the one that yields more money.		• Making observation • Making Prediction • Generalizing • Reasoning and proof • Identifying relationships • Manipulating variables • Modelling &	• Correctly identify common differences • Complete number patterns accurately
Option 1 On day one you are given $85 and for the next six (6) days you receive $240 each day.	**Option 2** On day one you are given $350 and for the next six (6) days you receive $160 each day.		

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Guided Questions: 1. Which is the better option? 2. On which day are the options the closest? 3. On which day does the better option becomes more than the other? 4. How much money would you receive on the 7th day for each option? • Model the responses for the options using suitable illustrations. • Write an algebraic expression for the amount of money they would receive on any given day for both options.	representation • Using variables to represent a quantity • Conjecturing • Justifying conclusion • Computing • Solving equation • Making comparison	• Expressions for number patterns correctly written • Correct solutions for simple equation • Conclusion Justified • Problem modelled appropriately

Learning Outcomes
Students will be able to:
   o Create algebraic expressions
   o Write equations from patterns
   o Make predictions from pattern		

Points to Note	Extended Learning
• Provide multiple opportunities to develop a full understanding of number patterns • Establish the relationship between consecutive terms in number pattern	• Consider this measurement problem with its connection to this unit. The problem here is to find all the rectangular areas that can be enclosed by a perimeter of 24 centimetres. The problem can now be tiered to meet the students readiness levels: **Tier 1**: Students construct rectangles using grid paper. The students record perimeter (24 cm), length, width & area in a table of values and look for pattern. **Tier 2**: Students used the table of values to create ordered pairs for dimensions and areas. They will plot these ordered pairs on a graph and investigate relationships. They could investigate which dimensions result in the greatest area and decide if their solution can be generalised. **Tier 3**: Students could be asked to create a rectangle with an area of $36cm^2$. Then asked how many different rectangular shapes are possible? Is there a pattern? Which dimension result in the least perimeter? Finally, can we generalise the solution?
Resources: • Grid/graph papers , • square paper tiles • internet & computers • pattern cards • cards with algebraic expressions	**Key vocabulary:** • Numeric pattern • Variable • Algebraic expression • equation • common difference
Links to other subjects Observation, conjecturing, drawing conclusion and making prediction are useful skills for Science & Social Studies	

UNIT OF WORK GRADE 6 TERM 3 Unit 1

Strand: Number

Suggested Time: 3 weeks

About the Unit

In this unit, students will:
- Demonstrate an understanding of financial institutions and their functions.

Prior Learning
Check that students:
● Can identify financial institutions and are knowledgeable their functions.
● Describe terms used in savings and loans.
● Tell the importance of being honest.

Focus Question:	Benchmark:
How can I make better use of my money?	Demonstrate knowledge of financial institutions and their functions.
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.	**Objectives:** ● Show knowledge of financial institution. ● Identify types of financial institutions. ● Complete bank deposit and withdrawal slips.
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.	Attainment Target: Use computation, estimation and calculators appropriately to solve real world problems including problems with fractions and decimals.

• **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.	

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
Students will: • Prepare a questionnaire to get information about the functions of financial institutions – at least two pieces of information. Use questionnaire to collect information from people within their communities about their knowledge of the roles and functions of financial institutions or in groups conduct an online or offline research on the roles and functions of financial institutions. With teacher assistance create a digital story on the functions of financial institutions for class discussion. • In groups, gather information from a reputable financial institution as it relates to the various costs it would incur to build a profitable hotel. Build a high-profit yielding hotel using snap cubes. Discuss and note that building costs, rules and regulations, taxes, and income are all variables that will be required to take into consideration. • Listen and observe while representatives from the various financial institutions make presentations on their roles and functions, as well as their products and services. Ask pertinent questions for clarifications after presentations. These presentations can be captured using image capturing device and played back for class discussions. • Participate in group simulation exercises where they will pretend to be clients and workers from different financial institutions (commercial banks, building societies, credit unions, insurance companies, etc.). Use appropriate terminologies and demonstrate instances of honesty.	• Prepare questionnaire • Collect data • Listen and observe for details • Role play scenes • Prepare brochure • Complete bank forms • Work in groups • Solve real-life situations • Share and compare • Debate moot • Role-play • Create PowerPoint • Conduct electronic search • Observe moral principles • operate electronic devices • design and produce • design hotels • apply concepts • create models of hotels • investigate • draw conclusions • critique • analyse	Accuracy in: • Simulation Brochure • Complete withdrawal/ deposit forms • Group participation • Problem solving • Journal entries • Role-play depicting knowledge of financial • Use Power point presentation / charts to illustrate types of financial institutions

• Pretend to be proprietors/founders of a financial institution. Prepare brochures to provide details of the products and services offered by their respective institutions.	• organize data	
• Complete sample withdrawal and deposit slips/forms using scenarios provided by teachers.		
• Engage in discussions on real-life situations in which a company/country is faced with financial problems. Debate the moot: "A country should export more and import less in order to avoid financial woes".		
• Create PowerPoint Presentations on the moot above highlighting key ways in which companies/countries can prevent financial problems. Compare and share presentations with the entire class. Make journal entries on what they have learnt from other groups' presentations.		
• With teacher's guidance, role-play a scenario in Gordon House in which the annual budget is being read. Take sides on whether or not the budget for the up-coming fiscal year is enough to manage the country's affairs and what they would have done if they were the Minister of Finance. Make journal entries on what they have learnt from this experience.		
• Use drama modes "Tableau / still pictures" and "Thought tracking" to create scenes in a financial institution.		
Learning Outcomes Students will be able to: ● Prepare questionnaire; ● State the roles of financial institutions; ● Identify types of financial institutions; ● Complete withdrawal/deposit forms; ● Solve real-life situations; ● Debate moot effectively; ● Create and present PowerPoint;		

● Role-play budget debate; ● Make entries in journals; ● Work cooperatively. ● Plan and Conduct research using the internet		

Points to Note:	**Extended Learning:**
• There are various types of banks, to which they all functions differently. Example: Commercial banks, Central banks, Agricultural banks, Cooperative banks and World banks. These are some of the types of banks that should be investigated. • There are different ways of making deposits and withdrawals from the bank. Eg. Electronic, manual, over the counter, etc.	• Change the number of cubes, as few as 10-15 cubes for slower kids, and maybe up to 100 cubes for quicker students. • Also, for slower kids, have *Excel* file readily available on computers so kids can go back and forth between checking their profit margin and tweaking their hotel design — so no calculations are needed on their part, they just need to be able to know how to count the different types of rooms. • Quicker students can *create* a spreadsheet; it's great practice for understanding how cells work and formulating equations. • Adjust the time for individual and group work based on your expectations. • Modify, take away, or add to the rules and guidelines. • Change any of the costs/income/tax numbers. • Change how you reward accuracy or penalize mistakes. • Ask each group to estimate and rank the profit margins of other teams' hotels just by looking at them (like on a -5 to +5 scale, -5 for biggest loss and +5 for biggest profit). • Ask, "What if all costs and tax remain the same, but now the incomes for the rooms are all reversed so that 4-window-1-roof earns only $125 while 1-window-0-roof

earns $600? How would you build your hotel using the same rules?"

- Formative: while they are working, ask student groups to "think aloud" as they experiment;

- Randomly check methodology used by students for calculating profits;

- Summative: Have students calculate the profit or loss from 3D pictures of smaller hotels;

- Have students explain how they systematically determined per-cube costs based on location of each cube in the hotel.

- Plan and execute Field trips to financial institutions.
- In groups, make a collection of financial articles depicting financial layouts in a portfolio.
- Cut and paste pictures of various currencies from the internet into their scrapbooks and label each appropriately.
- Allow students to research further on the roles and functions of financial institutions.

| Resources:

Websites**:**
http://www.forbes.com/sites/quora/2013/02/28/what-does-it-take-to-start-a-hotel/

50 Snap Cubes/Cuisenaire blocks/Building blocks per team, stored in zip bags

Rules and Guidelines Reference Sheet | ● Financial articles/newspapers/magazines
● Scrapbooks
● Portfolio
● Various countries' currencies taken from the internet
● Props for role-play
● Computer image capturing device
● Multimedia projector and any other available Technologies | **Key vocabulary:**
● Interest
● Invest/investment
● Loan
● Savings
● Saving account
● Building societies
● Commercial banks
● Insurance company
● Credit unions
● Deposit | ● Withdrawal
● Mortgage
● Rate
● Principal
● Central bank
● Bank of Jamaica
● Tax
● Finance
● Tableau |

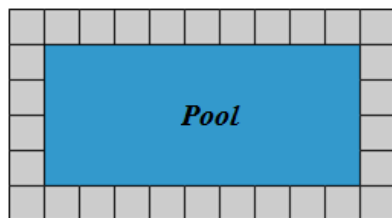|			
Building Costs, Tax, and Income Reference Sheet Scoring Activity Sheet Scoring Excel Spreadsheet, for the teacher Document camera (optional) Internet-generated devices e.g. tablet, iphones, laptops, smart phones e.g. • Copies of withdrawal and deposit forms ● Resource persons from financial institutions ● Paper ● Crayon ● Computer/laptop ● Internet ● Journal **Links to other Subjects**: • Social Studies • Science • Language Arts • Visual Arts • Information Technology			

About the Unit

In this unit, students will:

- Generate arithmetic and algebraic ideas in the form of stories, patterns, designs, and models to build deductive reasoning and critical-thinking skills in solving real world problems.

Focus Question 2: What real life problems can I solve using arithmetic and algebra?	Benchmark: Apply and justify the use of a variety of problem solving strategies involving decimals and percentages.
Standard_Number: **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: Problem solving** **ICT Attainment Target (s):** **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:** ● Write story problems to generate calculations involving decimals, using the four operations. ● Identify the 'hidden question' in a two-step problem. ● Write and solve mathematical sentences for a two-step problem. ● Generate number patterns and identify their rules using algebra. ● Solve problems requiring the use of percentages. Attainment Target: Use models to explain their conceptual understanding of rational numbers (fractions).

Students will:		
• Begin the day's lesson with a story, such as (Introductory Activity) *Last night, I dreamt that I saw a beautiful swimming pool. It had exquisite tiles all around it. So this morning, I asked my landlord if he would install a pool in the backyard of my apartment. At first, he thought I was crazy, but I told him I'd make him a deal. I told him that if he built my dream pool, I would install the tiles around the edges of the pool. So, he made a deal with me. He told me that he'd install a pool with an area of 36 square metres.* • Be asked, "If my pool has an area of 36 square meters, using only whole numbers, what are the possible dimensions of the pool?" Elicit from students all possible dimensions of the pool: 1 metre by 36 metres, 2 metres by 18 metres, 3 metres by 12 metres, 4 metres by 9 metres, and 6 metres by 6 metres. • Led to understand that you are on a budget, so their help is needed in determining the least number of tiles that could be used around the outside edge of the pool. The teacher would use an overhead projector to display a 4 metres by 9 metres pool. Students would be informed that each tile represents a 1 metre by 1 metre tile. Students would then predict the number of tiles that would be needed to complete the swimming pool's border. • Record guesses, on the board, for the number of tiles needed. Have students reach a consensus regarding the number of tiles that will be necessary, or engage them in an activity where they would discover this in their groups as part of the learning activities below. (*For a 4 metres by 9 metres pool, the class should conclude that the border will consist of 30 tiles: the perimeter of the pool is 26 metres, and one tile is needed for each metre of perimeter; in addition, 4 tiles are needed at the corners, as shown below.*)	• Identify patterns • Engage in meaningful discussions • Write algebraic expressions • Create patterns • Create designs • Problem-solve • Work collaboratively • Construct models • Represent findings • Write in Journals	• Correctly interpret mathematical sentences in order to correctly evaluate using the appropriate operation. • Apply reasoning to identifying and use an appropriate approach to a worded computation question. • Correctly create and/or identify number Patterns • Appropriately write mathematics statements to model mathematical expressions • Solve problem solving task involving percentages

Pool

• Be guided by the teacher as they work in groups of four to investigate the number of tiles needed for pools of various perimeters with an area of 36 square metres. For each group's exploration, provide directions as follows:
 	
    o Design and build various rectangular pools using the given area.
    o Record the number of tiles needed for your pool in each instance.
    o Look for a pattern in the data collected.
    o Develop an algebraic expression that relates the length and width to the number of tiles needed.
 	
• Be allowed to devise their own way of working together. Alternatively, the teacher would assign the following roles to members of the group: *Writer,* who is responsible for filling in the group's assigned chart; *Cutter*, who is responsible for using the scissors; *Sticker*, who is responsible for using the glue; and the *Speaker*, who will present the group's findings to the class.
 	
• In their groups, be assigned one of the pool sizes, from the above activity. They will construct a model of the pool using their supplied resources and use centimetre unit cubes to form a border around their pool.
 	
• They may also use 1 cm by 20 cm strips (see url in resources) or grid paper to investigate pools of sizes other than the one they were assigned. As students are working, the teacher will move about and will use effective questioning to help the
	• Write story problems
	
	• Generate number patterns
	
	• Deduce information
	
	• Logically arrange information
	
	• Share and compare information
	
	• Research information
	
	• Predict outcomes
	
	• Make meaningful descriptions
	
	• Measure

groups identify the relationship between the length and width of the pool and the number of tiles required.

- After about 15-20 minutes, in groups, present their findings. *(Depending on the number of students in your class, this may mean that two speakers are presenting the same material, or it may mean that some sizes will not have been assigned.)*

- Use the pattern observed in the experiment to develop a possible algorithm for finding the perimeter of the pool. After students present their findings, identify one of the expressions that they have not discovered or highlighted, and ask them to consider whether or not this alternative method is equivalent to their expression. For instance, the teacher may say, *"I was thinking that I would add the length and the width, double that result, and then add 4. What do you think about that method? Could it work? Justify your answer."*

- After their explorations, have students explore a list of expressions (as below) and share their findings.

  - $2l + 2w + 4$
  - $2(l + w) + 4$
  - $2(l + w + 2)$
  - $2(l + 2) + 2(w + 2) - 4$
  - $(l + 2)(w + 2) - lw$

- Translate their method into an algebraic expression. Discuss the order of operations.

- Demonstrate how the algebraic expression found by their group is equivalent to the suggested alternate expression. *(Teacher may wish to repeat this step if several groups found different expressions. This discussion may allow for an explanation of*

the distributive property, the order of operations, the associative and commutative properties, and other topics.)

- Be asked questions, such as: *"Which pool size would require the fewest number of tiles?"* Conclude that the 6 metres by 6 metres pool will require 28 tiles, and that this is the fewest number needed for any 36 square metres pool.

- Be engaged in a class discussion: "*Which pool would produce the longest swim lap?*" Students may suggest that the 1 metre by 36 metres pool is best, because it is the longest. Through questioning, allow students to see that a pool of that size would not be wide enough. Students may argue for the 2 metres by 18 metres and 3 metres by 12 metres pools as the best choices. *Note: While 4 metres by 9 metres and 6 metres by 6 metres would be wide enough, they would not be long enough for swimming laps.*

Weighing Your Car:

- Discuss weight and pressure as a whole class: Engage in discussions such as -
    Would it hurt more if a cat stepped on your toe or if a cow stepped on your toe?
    How much weight do think would be on your toe in each case?

- Justify why they think the weight of the cow would hurts their toe more than that of the cat.

- Guess the amount of air pressure in the tyre of a given car. Ask students to share how they think this pressure could be measured.

Guided Questions
Would knowing the pressure in a car tyre tell us anything about the weight of the car?
 	
Why do large vehicles have larger or more tyres?
 	
- Arranged in mixed ability groups of four persons. Assign a role to each member in the group.
  1. Record all information on the Activity Sheet (*see Appendix*). Teacher will ensure that each student completes their own Activity Sheet.
 	
  2. Measure the *footprint* of a given tyre and report this information to the *recorder*. Have students find the *surface area of the footprint* using the area formula*.*
 	
  3. Use a tire gauge to measure the air pressure in each tyre of a given car and report the information to the recorder; to find the weight that the tyre supports, multiply the surface area by the air pressure reported - *for each tyre*. (Do the multiplication on the chart without a calculator.)
 	
  4. Add together, the weight of all four tyres in order to get the total weight of the car.
 	
- Assist each other when needed and verify accurate results on all measurements and calculations. Then, answer Questions 1 and 2 on the **"How Much Does a Car Weigh?"** Activity Sheet (*see Appendix*).
 	
- See how close they came to the weight of the car, by checking the owner's manual or looking at the specification plate on the inside of the driver's side door.		

Learning Outcomes Students will be able to:	

- Coin story problems generated to calculate decimals, using the four operations;
- Solve two-step problems;
- Solve mathematical sentences for a two-step problems;
- Generate number patterns using algebra;
- Problem-solve using percentages;
- Collaboratively complete activities in groups;
- Engage in meaningful discussions.

Points to Note	**Extended Learning**

• When writing story problems for students, explore words that lend itself to the operations. Note that some words have to be looked at within its context. Eg. "more".
 	
Sentence 1: Miles has 10 marbles, if he purchases 15 **more**, how many marbles does he now have?
 	
Sentence 2: If Ornella is 45 years old and her brother is 60. How many **more** years is her brother older than her by?
 	
• Students may have learned in science that *Pressure = Force ÷ Area*. This means that pressure is a measure of how the applied force is distributed over an area. In our case, the force is the earth's gravitational force on the car (i.e., the weight of the car.) This weight is distributed over the ground by the surface area of the tire touching the ground.
	• **Encourage** students to share their expression for the number of tiles. For Design n, the length of the pool is n + 1, and the width is n. Consequently, numerous expressions could represent the number of tiles needed for the border of Design '**n**':
	
	  • 2(n + 1) + 2n + 4
	  • 4n + 6
	  • 2(2n + 3)
	  • 2(n + 1 + n + 2)
	  • (n + 3)(n + 2) - n(n - 1)
	
	• **Encourage** students to use the expressions to confirm the number of border tiles for Design 6 and Design 11.
	
	• **Allow** students to make entries in math Journals to express their ideas regarding what they learned about algebra and the power of algebra.

Note*: To calculate the surface area of the part of the tyre that touches the ground by multiplying the length and width of the footprint. Your answer should be in square inches. Repeat the steps above for each of the car's four tires. Add the weight of all the tyres together to get the total weight of the car.*

- Have students use the weight of a car as identified by a manufacturer to predict how much weight each tyre supports.

Resources:	Key vocabulary:
- Internet-generated devices (laptops, smartphones, tablets etc.) - Accessories (connections) - Multimedia projector - Transparencies with 1 cm grids - Approximately 30 unit algebra tiles (http://www.learner.org/workshops/algebra/workshop1/tiles.pdf) for a set of printable algebra tiles) 1 large piece of poster board with a 1 cm grid - Markers 1 cm by 20 cm strips (http://www.learner.org/workshops/algebra/workshop1/centostrip.pdf) for a set of printable 1 cm strips) - Unit cubes - Glue stick - Grid paper - Approximately 40 unit algebra tiles - Notebooks/Journals - portfolios - scrapbooks	- patterns - algebraic expression - decimals - percentages - designs - models - problem-solve - area - perimeter - surface - pressure - weight - surface area - tonnes - inches - footprint of tyre - square units

● Strips of poster board ● Ruler ● Tire gauge ● <u>How Much Does a Car Weigh? Activity Sheet</u> ● Tire ● Car	

Links to other subjects
- Science (Integrated/Engineering: Construction, Pressure/Weight)
- Home and Family (Materials)
- Visual Arts (Patterns)
- Language Arts (Journal Entries)
- ICT (Graphic/Patterns/Designs)
- HFLE (Cooperative/Social Grouping)

UNIT OF WORK GRADE 6 TERM 3 Unit 2

Strand: Measurement

Suggested Time: 3 weeks

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Prior Learning
Check that students:
- Know the basic parts of a circle.
- Are able to use a compass.

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About the Unit

 In this unit, students will:
- Investigate the parts of a circle and identify the relationships that exist between them
- Associate the measurement of a quantity (distance, time, volume/capacity, and mass) with the units and instruments best used.

Focus Question 1: What are the relationships between the parts of a circle?	**Benchmark:** Investigate the parts of a circle and identify the relationships that exist between them.
Standard: Measurement Use the correct units, tools and attributes to estimate, compare and carry out the processes of measurement to a given degree of accuracy. Attainment Target: Derive informally, and use formulae for measurement activities/situations.	**Objective(s):** • Identify parts of a circle. [Radius, diameter, centre, circumference, sector]. • Investigate numerical relationships between the circumference of a circle and its radius and diameter. • Solve problems involving the estimation and calculation of the circumference of a circle. • Use a pair of compasses to draw circles to create designs.
ICT Attainment Target: **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.	

Suggested Teaching and Learning Activities	Key Skills	Assessment Criteria
Students will: • Estimate the age of schoolyard trees. Measure circumference of trees in order to find diameter and calculate age of local trees using a growth rate table. • View teacher-created presentation on the Circle. Discuss the attributes of the different parts of the circle - radius, diameter, chord, segment, sector, etc. in their own words through observation or in groups browse and discuss online information about parts of a circle. • In pairs, use rulers to measure the lengths of diameters and radii in five circles of different sizes. Record their measurements then compare to establish relationships between the diameter and its radius. Calculate the measurement of radius or diameter of different circles using established relationship. • Mark off the length of the diameter of four different sized circles and experiment to find the relationship between the circumference and the diameter of each using a piece of string, flexible ruler, etc. Use derived relationship to calculate the circumference of given circles (group activity). **N.B.** Teacher should explain to students that the relationship established gives the value pi (π =22/7). • In groups, use their compass to draw circles of specified radius on square paper or grid sheet. • In pairs, create colourful abstract art pieces using arcs, sectors, circles, etc.	● Calculate ● Tabulate ● Measure ● Report ● Categorize ● Identify patterns ● Estimate ● Graph ● Make observations ● Summarize ● Use concepts to solve non-routine problems ● Formulate ● Investigate ● Draw conclusions ● Connect ● Critique ● Analyse ● Prove ● Discuss ● Investigate parts of a circle ● Compute circumference, radius, diameter ● Solve problems ● Construct circles ● Work in groups	• Accurately established relationships between radii and diameters • Calculations of Circumference, Diameter/ Radius done accurately • Work collaboratively in groups • Completion of problem-solving situations in logical order • Accurately constructed circles

	● Conduct electronic search	

Learning Outcomes:
Students will be able to:
- Identify and describe different parts of a circle;
- Calculate the diameter of a circle given its radius and vice versa;
- Compute the circumference of a circle given its radius or diameter;
- Engage in problem solving situations;
- Complete activities cooperatively in groups.
- Create colourful art pieces
- Plan and conduct research on the parts of a circle

Points to Note:
- The relationship between the circumference and the diameter produces "Pi" as 3.14 / $\frac{22}{7}$
- The establish sectors of the circle to be major and minor sectors

Extended Learning:

- Journal Entry– Tell friends how they would determine the age of a tree that is on your tree table.

- Go for a hunt to find the oldest tree in their schoolyard or neighborhood. Justify information by providing work to calculate the age. Provide a photo if possible.

- Journal Entry - How can a tree that has a longer diameter be younger than a tree with a shorter diameter? Find an example using the tree table used in the lesson.

- Read about cross dating and how wooden objects can be dated based on dendrochronology. Explain the math involved to the class through an oral presentation or Power Point presentation.

- If it's possible to visit a local park, look for a downed tree and count the rings to check its age. Also find its diameter. Find other trees in the same general area of the same type. Using

	what they know about the age of the downed tree, see if they can compute the age of the live trees using a ratio or proportion equation.
	• Write arguments for and against the moot "**A circle is not a polygon**".
	• Encourage students, in groups, to cut and paste pictures depicting the use of circles in real-life situations in their scrapbooks i.e. hula hoops, basketball ring etc.
	• Allow students to use circles to design table mats. Then add completed mats to their "Math kits".
	• Encourage students to make entries in their journals on the experience gained from the activities above.
Resources: • Websites: http://mdc.mo.gov/your-property/your-trees-and-woods/backyard-tree-care/how-old-tree https://www.portblakely.com/pb-tree-farms/environmentaleducation/teachers/handouts/how-old-is-that-tree • Tree identification guide	**Key Vocabulary:** • Radius • Diameter • Chord • Sector • Segment • Circumference

- Tree markers – wire clothes hangers covered with paper (from dry cleaner)
- Cross section of a tree (if available)
- String
- Markers
- Yardsticks
- Calculators
- Clipboards (optional)
- Overhead projector or interactive whiteboard
- Small whiteboard
- Whiteboard marker and eraser
- Ranger Talk or Lumberjack Talk Activity Sheet
- Ranger Table or Lumberjack Tables
- Tree Rings Overhead
- Ranger Talk or Lumberjack Talk Overhead
- Circles
- String
- Flexible ruler
- Compass
- Ruler
- Square paper
- Grid sheet
- Crayons
- Plain paper
- Safety scissors
- "Math Kit"
- Magazines/newspapers
- Journals
- Scrapbooks
- Computer
- Multimedia projector and any other available technologies

- Quadrant
- Arc
- Pi (π)
- Protractor
- Compass
- Circle
- Polygons

Links to other Subjects:

- Science
- Social Studies
- Language Arts
- Information Technology

Focus Question 2: How can I use various measurements around me?	**Benchmark:** Associate the measurement of a quantity (distance, time, volume/capacity, mass) with the units and instruments best used.
Standard Measurement: Use the correct units, tools and attributes to estimate, compare and carry out the processes of measurement to a given degree of accuracy.	**Objective(s):** • Calculate any one of the measures of distance, time and rate of travel (average speed) given the measures of the other two. • Apply the principles of measurement to road safety.
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.	Attainment Target: Select appropriate units and tools to measure to the desire degree of accuracy.

Suggested Teaching and Learning Activities	Key Skills	Assessment Criteria
Students will: • In groups, develop skills in collecting and recording data using real-world situations of bouncing tennis balls. Use data collected to formulate relationships between dependent and independent variables in their experiment i.e. distance, time and speed. • View video clips on varying speed limits then explain the information presented on road signs. Discuss the implications of driving over the speed limit within a specified zone. Further discuss how knowledge of speed limits can help us to arrive at our destination on time without having to exceed the speed limit. • In groups, dramatize good safety practices that should be used by pedestrians and other road users in small groups. Critique presentations done by their peers. • In pairs, use average speed to calculate the distance covered by a vehicle over a particular time. (Distance = average speed × time) • In groups, make deductions of how to calculate time and average speed through examination of the formula: Distance = average speed × time. Calculate time or average speed given any two components.	● Recall ● Tabulate ● Record ● Report ● Graph ● Estimate ● Make observations ● Compare ● Investigate ● Apply concepts ● Formulate ● Discuss ● Dramatize ● Cooperate ● Critique ● Analyse ● Prove ● Make deductions ● Calculate ● Work in groups ● Solve problems ● Operate electronic devices	● Accurate Calculations of distance, time and Speed when given any two. ● Active group participation ● Problem solving achieved by application of different strategies ● Report of findings

Learning Outcomes:
Students will be able to:
- Observe, understand and explain road signs;
- Practice safety measures;
- Calculate distance, time, average speed;
- Cooperate with peers to complete assigned task;
- Engage in problem solving situations.

Points to Note:

- Speed is derived from the relationship between distance and time. Speed is the rate at which distance is covered.

Extended Learning:

- Encourage students to conduct an experiment where they can investigate, the rolling of objects across different surfaces to determine how the surface impacts the speed of the objects. Surfaces for example, concrete floors, wooden floors and carpeted floors.

- Students can also explore different activities that test their sense of time.

- Students can do the following activities in pairs; in each instance they many want to observe if they overestimate or underestimate the time and try the task again.
  o Clap your hands so you clap exactly one clap per second for ten seconds.
  o Turn a page in a book at exactly one page every two seconds for twenty seconds.
  o Sit still for thirty seconds, letting the timer know by raising your hand when you think thirty seconds has passed.
  o Walk at the speed of one foot per second for fifteen seconds.
  o Walk the length of your classroom in exactly ten seconds. At what speed were you traveling?

- Students can examine how the time required to walk a given distance varies as the length of their stride varies. Often it is

	reported that many students initially misjudged time. A suggestion to overcome this problem is to let them explore the activities in teams: have them sit for an undisclosed time (e.g., 30 seconds) and make guesses about the amount of time that had elapsed. ***Source: Adapted from Jones and Day (1998, pp. 18-19)*** • Allow pupils to undertake a project of Mathematics in Road Safety in small groups. • In groups, allow students to cut and paste various ROAD SIGNS taken from the Internet, magazines, and newspapers into their scrapbooks. Then label each sign appropriately. • Make journal entries on the importance of obeying each ROAD SIGN.

Resources:
 Websites:
 http://www.livestrong.com/article/344741-why-tennis-balls-bounce/
       https://van.physics.illinois.edu/qa/listing.php?id=951
         Bouncing Tennis Balls Recording Sheet
 • Tennis balls, one for each team of four students
 • A clock or watch with a second hand
 • Centimeter graph paper, a spreadsheet program, or a graphing calculator (optional)
 • Road signs
 • Scrapbooks
 • Journals
 • Computer
 • Speaker
 Links to other Subjects:
 • Science
 • Information Technology
 • Physical Education
 • Language Arts
 • Visual Arts
	Key vocabulary:
	 • Pedestrian
	 • Average speed (rate of travel)
	 • Time
	 • Distance
	 • Clock
	 • Watch
	 • Length
	 • Measurement
	 • Road signs
	 • Traffic

UNIT OF WORK GRADE 6 TERM 3 UNIT 3

Strand: Geometry

Suggested Time: 1 week
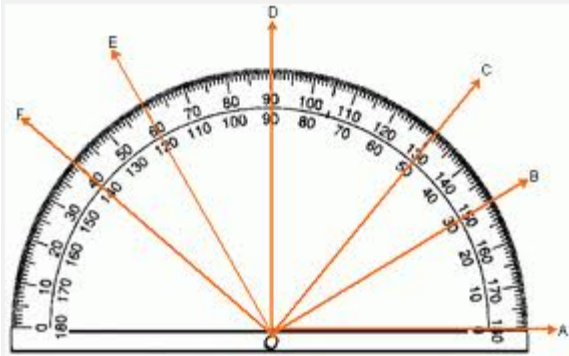
About the Unit

In this unit students will
- Explore concepts of angle formation, drawing, naming and measuring.

Focus Question: How do I use my tools effectively in constructing angles? Attainment Target: Make generalizations about geometric relations and explore geometrical transformations.	**Benchmark:** Explore concepts of angle formation, drawing, naming and measuring.
Standard Geometry: Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment. **Sub-theme:** Angles	**Objective:** • Draw and measure angles using the protractor.
ICT Attainment Target • **COMMUNICATION & COLLABORATION -** Students use technology to communicate ideas and information, and work collaboratively to support individual needs and contribute to the learning of others. • **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.	

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria

Students will:
 	
    • In groups, change the scale of an object, measure and draw angles using a protractor. Create own dartboard. Manipulate dartboard to emphasize properties of angles and angle pairs. Construct circle graphs. Practise to draw circle and measure angles to more accurately create circle graphs.
 	
Task 1: In pairs, use protractor and ruler to construct.
    • a line segments.
    • Indicate with a dot, along the line segment the point at which the angle must be drawn.
    • Place the centre of the protractor at the dot with the baseline along the line segment.
    • Find the required angle on the scale, counting from zero on the baseline and then mark a small dot at the edge of protractor.
    • Join dots with a ruler to form the required angle.
    • Label angle with capital letters, For e.g.
 	
	• Design
	• Construct
	• Create
	• Make observations
	• Draw conclusions
	• Investigate
	• Modify
	• Critique
	• Analyse
	• Draw angles
	• Estimate angles
	• Measure angles
	• Work in groups
	• Solve problem
	• operate electronic device
	• Observe moral principles using digital material
		• Estimated, drawn and measured angles
		
		• Active group participation
		
		• Problem solving achieved effectively
		
		• Finished constructed dartboards

Task 2: In groups, have students play Protractor football. ● Give each student a sheet of paper with the outline of a football field/netball court. ● On the field there are a number of players. One player is at the centre. ● The person in the centre kicks the ball to any player on the field. That player then kicks the ball towards the goal. When this is done an angle is formed. ● Use your ruler to draw a straight line from the centre to a chosen player, then to goal post. ● Use protractor to measure an angle that is formed. Task 3: Draw and measure other angles. ● For e.g. 90°, 135°, 75°, 120°, 45°, 160°, 30°, 175° etc. ● Use interactive protractor from a website to explore different angles and measurement.		
Learning Outcomes: Students will be able to: ● Estimate the size of different angles. ● Draw and measure different angles. ● Completed portfolios with given tasks. ● Work cooperatively in groups. ● Engage in real-life problem situations. ● Use selected ICT tools to explore angles		

Points to Note:	Extended Learning
● The commonly used protractors are lined with two sets of numbers ranging from $0^o – 180^o$. Emphasis must be placed on starting at 0° in line with the base and then follow the values around until the line, lines segment or	● Research and explore the use of the clinometer to measure the angles formed from looking up or down at objects.

ray forming the angle is met. That value would be the size of the angle. • Also, explore the use of students' knowledge of the size of the types of angles to assist them in selecting the correct angle size figure from the protractor.	
Resources: • Website(s): http://en.wikipedia.org/wiki/Bullseye_%28target%29 • Protractor • Compass • Ruler • Calculator • 12"×12" sheets of cardstock or paper • Paper in various colors • Markers or colored pencils • Scissors • Glue • Rules of darts (optional) • Regulation dartboard for reference (optional but very useful) • Regulation Dartboard Overhead (if a real dartboard is unavailable) • Hitting Your Mark Activity Sheet • Hitting Your Mark Answer Key • Protractor • Compass • Ruler • Sheets of plane paper • Computer and any other available technologies • Internet	**Key Vocabulary:** • Angle • Protractor • Degree • Revolution • Supplementary • Complementary • Compass • Acute • Obtuse • Straight • Reflex • Adjacent • Interior • Exterior • Corresponding • Alternate **Link to other Subjects:** • Science • Visual Arts • Physical Education • Information Technology • Language Arts

UNIT OF WORK GRADE 6 TERM 3   UNIT 4

Strand: Algebra

Suggested Time: 1 week

About the Unit

In this unit, students will:
- o   Use arithmetic operations to solve simple equations and word problems.

Focus Question: How do I derive the solution of an equation? Attainment Target: Interpret expressions and equations involving variables.	**Benchmark:** Use arithmetic operations to solve simple equations and word problems.
Standard_Algebra: Employ algebraic reasoning through the use of expressions, equations and formulae to interpret, model and solve problems involving unknown quantities **Sub-theme: Simple Equations** **ICT Attainment Target (s):** 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.	**Mathematics Objectives:** - Determine the solution to a simple equation with one variable. - Solve word problems involving the four arithmetic operations with one or two digit numbers.

Suggested Teaching and Learning Activities – Focus Question 1	**Key Skills**	**Assessment Criteria**
Students will:	• Inferring • Communicating • Analysing • Problem solving • Observing • Generalizing	Oral responses done accurately Algebraic equations accurately constructed

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria

• Place different combinations of unit weights and an "unknown" weight on the balance so that equilibrium is attained. For example,
 	
    represents the unit weight and
 	
    represents the unknown weight
 	
• Be guided to write an equation to describe the balanced weights. For example: $2x + 3 = 9$ or $2\blacksquare + 3 = 9$. They will add or remove weights from both sides of the balance, while maintaining equilibrium. At each adjustment, students will write an equation to describe the new situation modeled.
 	
• Be divided into groups at the teacher's discretion. Each group will then be given a balance and a set of marked/known and a few unknown weights. Each group will be asked to try to create a balance situation using at least one of the unknown weights. They will be asked to write an equation to describe the modeled situation. Students will
		Modelling accurately demonstrated

Suggested Teaching and Learning Activities – Focus Question 1	Key Skills	Assessment Criteria
be asked to use weights provided to determine the value of the unknown weight. This will be done by adding or removing weight so that balance is maintained. • Record the mathematical sentences for each step that they took. • Use the scenario below to write an equation: *On Sunday, Steve had $250 in his saving pan. For each of the next 6 days he placed $p into his saving pan. In total he saved $970.* • Write an algebraic equation to represent the total amount of money Steve saved. • Find the amount of money Steve saved each day.		
Learning Outcomes Students will be able to: • Solve algebraic equations. • Work cooperatively in groups		

Points to Note	Extended Learning
• Multiple representations must be used in modelling responses or solutions. This will aid students understanding and facilitate ease of transition from one topic to the next. • Allow students to share their understanding with their peers as this may aid in clearing misunderstandings.	• At a fair, a group of people pay $60 for tickets in total. The price for a child's ticket is $2 and the price for an adult's ticket is $4. If there were 6 more adults than children, determine the number of persons in the group. • Ricardo had $5 and his brother Marcus had $15. Their father gave them each an equal amount of money. If Ricardo now has twice the amount of money as Marcus, how much money was given to each boy? • You are making a jug of fruit punch which consist of water, lime juice, mango juice and pineapple syrup in precise amounts. There is a small problem however, there are only two measuring cups: One holds 150

	ml and the other holds 60 ml (the cups do not have any markings). The mixture requires 120 ml of lime juice, 180 ml of mango juice and 240 ml of syrup. Using the measuring cups you have, explain or show how you would measure out the ingredients. Using 'a' to represent the 60 ml container and 'b' to represent the 150 ml container, create simplified algebraic equations to represent the amount of each ingredient.
Resources: • Realia for modelling • Objects of varying masses • Beam balance • Multi-media projector • Internet-generated devices (Laptops, tablets, smartphones etc.) • Tables/charts	**Key vocabulary:** • Variable • Equation • Expression • Quantity • Constant

Links to other subjects:
- Business Basics (Money Management)
- Science (Integrated: Models)
- Visual Arts (Shapes/Designs0
- Home and Family (Culinary Arts)
- Language Arts (Written expressions)

UNIT OF WORK GRADE 6 TERM 3 Unit 5

Strand: Statistics and Probability

Suggested Time: 3 weeks

Prior Learning
Check that students: • Understand the concept of probability

About the Unit

In this unit, students will:

- Understand and apply probability concepts;
- Identify all possible outcomes of an experiment.

Focus Question: How do I measure and use probabilities?	**Benchmark:** Understand and apply probability concepts; identifying all possible outcomes of an experiment.
Standard_Statistics and Probaility: Collect, organise, interpret and represent data and make inferences by applying knowledge of statistics and probability. **ICT Attainment Target (s):** 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, 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.	**Objective(s):** • State the probability of a simple event. • State the range of probability values. • Perform and report on a variety of probability experiments. • Formulate all possible outcomes of an experiment. For example, tossing a fair coin, rolling a fair die. • Make inferences and draw conclusions based on experiments and collected data. Attainment Target: Explain the relationship between a probability and the event that gives rise to this number.

Suggested Teaching and Learning Activities	Key Skills	Assessment
Students will: • In groups, research the havoc that wildfire can cause. After learning about the factors that contribute to the spreading of a wildfire, use a probability model to determine the portion of an area that might be destroyed by a wildfire. • **View a video tutorial on "the introduction to probability"**. Then discuss the meanings of the terms probability, outcome, possible event, impossible event and certain event. • In groups, classify the following terms under the headings - possible, impossible, certain: favourable, improbable, good chance, unlikely, definite, likelihood, never, no chance, always, poor chance, cannot, equally, likely etc. State whether each can have a probability that is zero, less than one or one. Provide examples of events that can be classified as impossible, possible and certain. • In pairs, carry out an experiment for a company that wants to have a patty eating contest with children. Advise the company of the shortest or most appropriate time period (1 minute, 2 minutes, etc.) for the contest. In addition, write a letter to the company advising them of your proposal for the contest. Give reasons for the proposal. • Define the term 'fair chance'. • Design probability experiments with fair chances – with teacher's guidance. • Explore and find all possible outcomes from the toss or roll of one or two coin(s) or die (dice). Draw table to show all possible outcomes.	• Classify • Discuss • Make observations • Draw conclusions • Research • Compare • Investigate • Critique • Analyze • Apply concepts • Cite evidence • Experiment • Problem solve • Represent • Express probability in a variety of ways • Create poems • Work in groups	• Accurately classify probability terms • Experiments accurately formulated • Drawing logical Conclusions from experiments • Correct representations of possible outcomes • Respond appropriately in problem situations • Work cooperatively in groups • Presentation of poem • Vocabulary terms

● Use the letters in their first names, middle names or surnames to express the likelihood of obtaining a vowel. Express their answers as vulgar fractions, decimal fractions, ratios and percentages. ● In small groups, develop an acoustic poem about probability. Present poem in Probability Poetry sharing session.		appropriately used
Of Learning Outcomes: Students will be able to: ● Use terms associated with probability accurately; ● Express the likelihood of events in fractions, ratios and percentages; ● Calculate the likelihood of particular outcomes on a fair die or coin; ● Apply probability to the solution of problems in their everyday lives; ● Engage in activities that reflect real-life situations; ● Complete given tasks cooperatively in groups.		

Points to Note:	**Extended Learning**
● Help students to understand total possible outcome as the sample space for probability. ● Stress the need to use the appropriate probability term in a given situation.	● **Allow** students to investigate the wildfire scenario with the **Illuminations** <u>Fire Tool</u>. ● **Challenge** students to use the <u>Fire Tool</u> to investigate the percent of the forest that burns for various probabilities. They can enter probabilities of 0.25, 0.5, and 0.75 to replicate the experiment that was done with coins, or they can try other probabilities. Note that the **Fire Tool** uses an example with far more trees than would be reasonable if the experiment were done with coins.

	• **Encourage** students to reconsider the question about the relationship between the probability of the fire spreading and the percent of the forest that burned. Student opinions will likely have changed after conducting the simulations in this lesson. • **Allow** students to research and share information about the following careers that involve heavy use of statistics and probability: actuarial studies, meteorology and epidemiology. • **Encourage** students to make journal entries about real-life activities/experiences which involve the use of probability.
Key vocabulary: • Probability • Certain • Impossible • Possible • Event • Outcome	**Links to other Subjects:** ● Science ● Social Studies ● Information Technology ● Language Arts ● Visual Arts

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
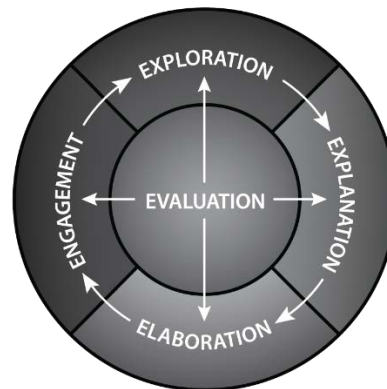
Figure 1. Illustrating one version of the 5E model that conveys the role of evaluation as an interconnecting process that is at the core of the learning experience.

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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Glossary of Terms

TERMS	DEFINITIONS
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 21st century skills such as critical thinking and problem solving, collaboration, communication and ICT.

Assessment	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

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. |
| Points to Note | 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 |
| Extended Learning | These are opportunities for students to utilise the knowledge and skills they would have acquired in the unit in authentic |

	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.

ENGLISH LANGUAGE GLOSSARY

WORDS	MEANINGS
Affix	An *affix* is a morpheme that is attached to a word stem to form a new word
Analysing	Examine (something) methodically and in detail in order to explain and interpret it.
Checklist	A tool that state specific criteria and allow teachers and students to gather information to make judgements about what students know and can do in relation to the outcomes.
Chunking	A method of presenting information which splits concepts (words, sentences etc.) into small pieces or "chunks" of information to make reading and understanding faster and easier.
Comment	Examine how the writer uses different elements (for example, literary device, stage props) to create effect and meaning. The overall effect on the piece of work must also be provided. The effect must take into account the writers purpose, and other elements of the piece of work, for example, theme, structure, diction and tone. **For example**: Comment on the shifts of mood in the scene in which Lady Macduff appears.
Compare	Examine the similarities as well as differences to reach a general conclusion. **For example**: Compare the ways in which the two parents in the poems "Ana" and "Little Boy Crying" demonstrate their love for the children
Compare and Contrast	Examine the similarities, as well as differences to reach a general conclusion. **For example**: Compare the ways in which the two parents in "Ana" and "Little Boy Crying" demonstrate their love for the children.

	It must be noted that the word "compare" used by itself takes into consideration both similarities and differences. However, the word contrast used by itself indicates that only the differences must be provided. **For example**: Discuss TWO ways in which Lady Macduff is contrasted with Lady Macbeth.
Compound predicate	Two or more verbs or verb phrases that share the same subject and are joined by a conjunction.
Compound sentences	A sentence that has at least two independent clauses joined by a comma, semicolon or conjunction.
Compound subjects	Made up of two or more simple subjects that are joined by a coordinating conjunction (such as and or or) and have the same predicate.
Convert	Change or translate to something else as into a different language or language form **For example:** convert JC false homophones heard in speech to appropriate SJE vocabulary
Culture Capsule	A teaching methodology that affords students the opportunity to research a particular culture and compare and contrast the information garnered with their own culture.
Decoding	Translating written words into the sounds and meanings of spoken words
Deduction	The process of reaching a decision or answer by thinking about the stated or implied facts based on information read or heard.
Describe	Provide a detailed account, including significant characteristics or traits of the issue in question. **For example**: Describe Macbeth's conflicting thoughts and feelings as he contemplates the murder.
Discuss	Provide an extended answer exploring related concepts and issues using detailed examples but not necessarily drawing a conclusion. **For example**: Discuss the importance of Katherina's final speech in The Taming of the Shrew
Distinguish between	Clearly determine and explain/describe main differences between ideas, concepts, persons or things **For example:** Distinguish between abstract and concrete nouns

Encoding	Translating spoken words into a sequence of characters (letters) to spell written words
Enunciation	The act of pronouncing words.
Explain	Focus on what, how and why something occurred. State the reasons or justifications, interpretation of results and causes. **For example**: Explain the dramatic significance of this scene.
Explicit	
Expository texts	Texts that presents factual information to the reader
Extend	Make more detailed by adding certain structural elements or parts of speech **For Example:** Extend ideas using subordinate and main clauses
Identify	Extract the relevant information from the stimulus without explanation. **For example**: Identify TWO phrases in the last four lines that create the atmosphere of abandonment.
Illustrate	Provide examples to demonstrate or prove the subject of the question. **For example**: Identify the character traits that can be seen in Amanda from the beginning of the play to this point. Illustrate EACH of the character traits you have identified.
Implicit ideas	Implied rather than expressly stated.
Inference	The act or process of reaching a conclusion about something from known facts or evidence.
Inflectional endings	An **inflectional ending** is a group of letters added to the end of a word to change its **meaning** (es, ing etc).
List	Itemise the requested information. Details are not required. **For example**: List the main points of the opening speech.

Mnemonic devices	**Mnemonic devices** are techniques a person can use to help them improve their ability to remember something. In other words, it's a memory technique to help your brain better encode and recall important information.
Narrative texts	Texts that tell a story with the aim to
Onsets	An **onset** is the part of the syllable that comes before the vowel of the syllable (e.g. c in cat).
Outline	Show or trace the development of something from the point of origin to that specified in the question. **For example**: Briefly outline what happens in the poems "Richard Cory" and "God's Work".
Phonetic rules	The rules that help children make connections between written letters, letter combinations and word sounds.
Predict outcome	Thinking ahead while reading and anticipating information and events in the text.
Prefix	A letter or group of letters added to the beginning of a word to make a new word
Pronunciation	An accepted standard of the sound and stress patterns of a syllable, word, phrase, etc.
Reader's Theatre	A strategy that combines **reading** practice and performing to enhance students' **reading** skills and confidence by having them practice **reading** with a purpose
Reflexive Pronouns	
Rhymes	A repetition of similar sounds (or the same sound) in two or more words, most often in the final syllables of lines in poems and songs.
Rimes	A **rime** is the part of a syllable which consists of its vowel and any final consonant sounds that come after it.

Semantic Feature Analysis	A strategy that uses a grid to help children explore how sets of things are related to one another. By completing and analysing the grid, students are able to see connections, make predictions and master important concepts.
Simple sentences	A sentence consisting of only one clause, with a single subject and predicate. E.g. Susan runs to school.
State	Provide short concise answer without explanation. **For example**: State TWO factors which the fitness proponents recommend that society should emphasise more.
Story grammar	A technique which classifies the components of a story and specifies relationships among its parts.
Structural analysis	**Structural analysis** is dividing words into parts to aid pronunciation and discover what an unknown word means.
Structural clues	**Word structure** describes how **words** can be broken into parts (roots, prefixes and suffixes, compound words etc.) to help students decode and decipher **meaning** of an unfamiliar word.
Suffix	A letter or a group of letters added to the end of a word to change its *meaning (ter, ly, ness*)
Summarise	Present the main points, ideas or concepts in your own words as far as possible.
Syllabication	The act, process, or method of forming or dividing words
Text features	**Text features** include all the components of a story or article that are not the main body of **text** (table of contents, index, glossary, headings, bold words, sidebars, pictures and captions, and labelled diagrams)
Text structure	**Text structure** refers to the ways that authors organize information in **text**.
Transitional words	Words or phrases link sentences and paragraphs together smoothly so that there are no abrupt jumps or breaks between ideas

Visualize	Form a mental image of; imagine, make (something) visible to the eye.
Writing Process	This is an approach to writing that entails the recursive phases of pre-writing, drafting, revising, editing, and publishing.

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SAMPLE LESSON PLANS

SUBJECT: Science
GRADE: 6
DATE:
DURATION: 60 minutes
TOPIC: Properties of Materials
ATTAINMENT TARGET: • Recognise the relationship between energy and matter • Gain an understanding of and apply aspects of the scientific method.
BENCHMARKS: • Know how to safely use, store and dispose of everyday materials and how their properties determine their uses • Make predictions of what will happen based on scientific knowledge and understanding. Suggest and communicate how to test these predictions
SPECIFIC OBJECTIVES: • Generate predictions of material properties based on observations and experience • Suggest how properties of materials influence their uses • Investigate properties of materials using fair tests • Show interest in the outcomes of investigations on material properties
KEY SKILLS: Create, plan and design, manipulate, infer, predict, observe, collaborate, communicate,
KEY VOCABULARY: materials, insulating, conducting, transparent, absorbent, properties
MATERIALS/RESOURCES: different types of rulers, sponge, water, wood, metal, paper, candle, foil, cloth,

CONTENT OUTLINE: Materials can be soft, hard, heavy, flexible, waterproof, absorbent, transparent, insulating or conducting. The properties of materials determine the use to which they can be put.

PRIOR LEARNING: Check that students can:
Group materials into different categories based on identified uses

LEARNING OUTCOME: Students who demonstrate understanding can:
- Identify the properties shown by simple everyday materials and the related uses
- Predict the type of materials needed for specific uses
- Investigate simple materials to determine properties

ASSESSMENT CRITERIA:
    Identified materials correspond to properties/uses
    Logical reasons for material use
    Observed results relate to predictions

PROCEDURES/ACTIVITIES

Engage - *How can I get students interested in this?* Use of an interesting picture. (5 min)

- Students will be provided with an assortment of materials including nail, metal spoon, sponge, foil, plastic, wood, modelling clay, water, paper etc. They will suggest some uses of these materials.

Explore - *What tasks/questions can I offer to help students puzzle through this?* Use of a simple investigation. (10 min)

- Students will observe, feel, bend, break and wet these materials. They will carry out simple investigations on these materials to determine their properties. Students will complete a worksheet to determine the properties of the materials under the headings; name of material, soft or hard, can stretch, can absorb water, can be torn, can become hot, can change shape, can see through it etc.

Explain - *How can I help students make sense of their observations?* Class presentation and discussions. (10 min)

- Students will present their findings to the class. In groups or individually, students will identify a material (object), what it is used for, and the property that determines its use. The properties of the materials will be determined from the discussion of findings by students. Properties (which help to determine uses) will be identified using the following categories: heat conductivity, absorbency, transparency, strength, flexibility etc.

Elaborate - *How can my students apply their new knowledge to other situations?* Application of what they learned. (10 min)

- Students will carry out an investigation to determine the best material to be used to make a flexible ruler. Samples of wood, metal and plastic rulers will be taken from the class. Predictions as to which type is most flexible will be noted by students. They will then carry out the investigation by clamping one end of the ruler to the edge of a table and attaching an object with a predetermined mass on the other end. How far the object is lowered is measured using a ruler. Results will be tabulated and analysed.
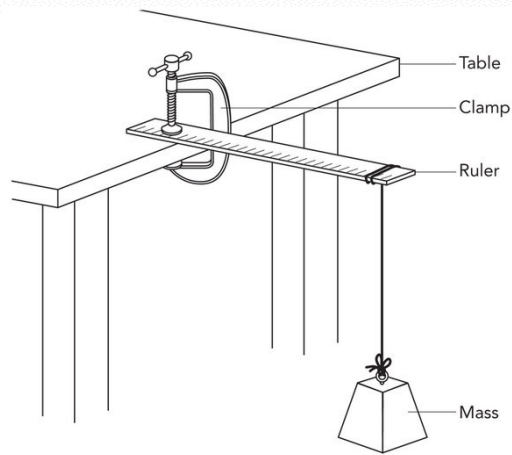
Table
Clamp
Ruler
Mass

- Students will present the results of their investigations to the class. Students will suggest which material was the best for use with a flexible ruler. The predictions and actual results will be compared.

EXTENDED LEARNING:

Investigate the different materials used to make chairs or sporting balls. Identify the materials used and the reason for use. Cite examples of how the chair or sporting ball is used.

LINKS TO OTHER SUBJECTS:

- Resource and Technology, Mathematics

POST-LESSON REFLECTION:

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