



Grade 3 – Measurement Unit Plan

STRAND : MEASUREMENT			
Topics/Objectives	Main Concepts	Teaching/Learning activities	Assessment/Homework Activities
<p>Investigate the relationship between centimetre and metre</p> <p>Estimate, measure and compare distances using metres and or centimetres.</p> <p>Compare lengths using terms such as: - longer than - shorter than and verify by calculating the difference.</p>	<p>Unit</p> <p>Standard units</p> <p>Non-standard units</p> <p>Estimation</p> <p>Length/Distance</p> <p>Metres</p> <p>Centimetre</p> <p>100cm = 1m.</p>	<p><u>Exploring the relationship between the centimetre and the metre</u></p> <p>Establish the metre (metre strip) and the centimetre (centimetre strip) and have students explore the relationship between both by fitting centimetre strips onto portions of or the entire metre strip.</p> <p>Have students estimate the length of objects within the classroom environment and also measure these objects in metres and centimetres. (List should include items with curved surfaces and curved distances.)</p> <p>Allow students to compare estimate with actual measure.</p> <p>Allow students to rename various lengths/distances which measure more than 100cm as metre and centimetre in their school environment.</p> <p>Allow students to determine the most suitable unit to be used (cm/m) to measure the length of given objects.</p>	<p>Measure objects in the home using the metre strips, giving lengths to the nearest metre, in metres and centimetres or in centimetres. For example the height of a door, length and width of TV screen, the distance between the front door of their house and the street on which they live etc.</p> <p>Allow students to make a scrap book showing objects in three different categories: About 1 metre, less than 1 metre and more than 1 metre. <i>Distances should be distinctly identified.</i></p> <p>Give students strips with cm graduations (1 strip with 20cm demarcations.) Ask them to put strips together to form demarcations on height chart they designed. Students should label the chart, determine and mark where 1 metre falls.</p> <p>Place students in groups and ask each group member to measure his/her height. Students should display their findings using a suitable graph/chart.</p>

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<p>Add or subtract measures which use whole numbers of metres or centimetres</p>		<p>Computing with measures</p> <p>Have students solve the following problem: During the lunch break, Mary, John , and Tom found three pencils. Mary’s pencil is 12 centimeters long and John’s pencil is 7 centimeters long. Compare the lengths of Mary’s, Tom’s and John’s pencil using the terms ‘longer than’ and/or ‘shorter than’. Allow students to use diagrams and/or words to explain their thinking and verify by their answers by calculating the difference.</p> <p>What is one possible length for Tom’s pencil?</p> <p>Have students measure the length of various objects, and find the sum. For example, the short distances on the corridors in the school.</p> <p>E.g. $19m + 29m$ a. About 20m b. About 50m c. About 100m</p>	<p>Pictures of items for students to identify which unit to measure in cm or metres TV screen, desks/table tops, tiles, table mats, etc.</p> <p>Take a video to class with items with attributes of length and have them identify and compare those items which can be measured using centimetre and metre. Allow them to complete this task with the assistance of the template below.</p> <table border="1" data-bbox="1768 711 2368 932"> <thead> <tr> <th>Items</th> <th>centimetre</th> <th>metre</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p>Students can be asked to make rulers of different lengths from paper.</p>	Items	centimetre	metre												
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			<p>Investigation</p> <p>Allow students to work in pairs. Have them try to walk a distance of two metres on the playfield. Let them observe a given starting point. Then have them choose an appropriate calibrated instrument to give the distance in (a) centimetre (b) metre</p> <p>Students will rearrange the table so that each item is correctly matched to its appropriate measure.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Types of Object</th> <th style="text-align: center;">Units</th> </tr> </thead> <tbody> <tr> <td>Height of a chair</td> <td>2metres</td> </tr> <tr> <td>Width of the door</td> <td>60centimeteres</td> </tr> <tr> <td>Length of a new pencil</td> <td>1 metre</td> </tr> <tr> <td>Height of chalkboard</td> <td>20centimeters</td> </tr> </tbody> </table> <p>Allow students to determine which of the following lengths is longer, estimate each then measure to verify.</p> <div style="text-align: center;"> </div>	Types of Object	Units	Height of a chair	2metres	Width of the door	60centimeteres	Length of a new pencil	1 metre	Height of chalkboard	20centimeters
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<p>Explore and use the term perimeter.</p> <p>Measure and/or compute the perimeter of various rectangular outlines of objects within the environment</p>	<p>Perimeter</p> <p>Boundary</p> <p>Polygons</p> <p>Distance</p> <p>Edges</p> <p>Total</p> <p>Length</p>	<p>Give students the opportunity to develop an understanding of the term perimeter by having them actively engaged in establishing and outlining various boundaries. Examples of such boundaries may include:</p> <ul style="list-style-type: none"> ✓ Classroom ✓ Desks ✓ Playfield ✓ Text/note books <p>Allow students to identify various shapes (polygons) on different objects in the environment and discuss how they would find the perimeter of each identified shape.</p> <p>Have students determine the perimeter firstly by counting the number of non-standard units which outline the boundaries.</p> <p>Provide opportunity for students to be engaged in a problem solving task which includes perimeter.</p> <p>For Example: Give students a set of 24 paperclips or fudge sticks or cut straws to use as units and allow them to create different- sized rectangles with these items provided. Allow students to record the dimensions of each different rectangle.</p>	<p>Have students paste woollen thread around the outline of various objects in their scrap books. Students should also write the measure of the length of the thread which was used to outline the objects.</p> <p>Allow students to determine the perimeter of popular polygons and hence determine efficient ways of calculating the perimeter of such shapes. Example:</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> • Worksheet B- Activities which require that students explore a given perimeter with various shaped objects. • Give students a list of objects which may be found within the home and ask them to determine the perimeter of various polygons found on these objects. For example: The boundaries of the face of the television set. <p>Allow students to determine the best way of adjoining two '2 units by 1 unit' tables so that they accommodate the greatest possible number of persons, noting that only one individual is accommodated at each unit along any side of a table.</p>

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		 <p>Engage students in a discussion about:</p> <ul style="list-style-type: none">➤ The total number of paperclips/straws/fudge sticks used.➤ The number of paperclips/pieces of straws/fudge sticks used on each side of the rectangle formed.➤ The relationship between the number used on each side and the total number of paper clips.	

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<p>Establish a reference for 1kilometre</p> <p>Use the word kilometre and its symbol</p> <p>Differentiate between the use of the centimetre/metre/kilometre in various measurement situations</p>	<p>Kilometre</p> <p>Metre</p> <p>Measurement</p> <p>Distance</p> <p>Length</p>	<p><u>Differentiate between the use of centimetre/ metre/kilometre in varying measurement situations</u></p> <p>1. Discuss the units of lengths that people use on a daily basis.</p> <p>2. Allow students to estimate the lengths of given items. For example:</p> <ul style="list-style-type: none"> ✓ an object that is a centimetre in length ✓ a strip of paper or a piece of masking tape stuck to the floor that is a metre in length. (Challenge students to justify their estimates.) ✓ Discuss distances along roadways <p>3. Allow students to explore the appropriateness of using units of lengths to measure several classroom objects and record the unit of measure they think is most appropriate for the item measured.</p> <p>For example:</p> <table border="1" data-bbox="970 1057 1771 1190"> <thead> <tr> <th>Object</th> <th>Metre</th> <th>Centimetre</th> <th>Kilometre</th> </tr> </thead> <tbody> <tr> <td>Length of desk</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Length of book</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>4. Engage students in a discussion about the appropriateness of the units explored/ recorded. Let them justify their response.</p> <p>5. Engage students in a problem solving task (<i>See Resource Document</i>)</p>	Object	Metre	Centimetre	Kilometre	Length of desk				Length of book				<p><u>Establishing a reference for 1 kilometre/ Measure for 1 kilometre</u></p> <p>Allow students to write a letter to a friend explaining how they could tell what a distance one kilometre looks like and include some personal references.</p> <p><u>Differentiate between the use of centimetre/ metre/kilometre in varying situations</u></p> <p>Find measurements of centimetre, metre and kilometre in newspapers, road signs, and in other everyday situations. Present the context and measures without the units and ask the students to predict which metric unit of measure was used in each situation. Have them discuss their answers.</p> <p>Allow students to explore finding objects/ pictures from their environment that are suitable for measuring using the centimetre, metre and kilometre and use the information to create a portfolio displaying objects by categories and offering an explanation for objects placed in each category.</p>
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Length of desk															
Length of book															

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<p>Investigate the relationship between gram and kilogram</p> <p>Differentiate between gram and kilogram in various measurement situations</p>	<p>Mass</p> <p>Grams</p> <p>Kilograms</p> <p>Measure</p> <p>Compare</p>	<p><u>Differentiating between grams and kilograms</u></p> <p>Have students interact with objects that have a mass of 1kg and compare them with other objects that have a mass of more than, less than or equal to 1kg. <i>See suggested activity in Resource document</i></p> <p>Understand that $1000g = 1\text{ kg}$ Allow students to work in groups of four to explore that $1\text{kg} = 1000g$. <i>See suggested activity in resource document</i></p> <p>Engage students in measuring situations to verify which unit (kilograms or grams) is more efficient to use in given situations. <i>See suggested activity in resource document</i></p> <p>Estimate measures Give students adequate practice estimating, measuring and comparing masses . (<i>See resource document</i>)</p>	<p><u>Make 1kg</u> Allow students to estimate the number of items of a specific mass that will be needed to make 1 kilogram.</p> <p><u>For example:</u> If  has a mass of 250 grams, how many more  will be needed to make 1kg?</p> <p><u>Scrap Book</u> Have students create a scrap book over a period of approximately one week . Students should collect various pictures of different objects and state the MOST appropriate unit of mass (kilograms or grams) for each object. Students will also write a journal entry in their scrap books stating how they think categorizing the pictures helped them to understand which unit of mass is more appropriate.</p>

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<p>Investigate the relationship between minute and hour</p> <p>Show/ Tell time on clock using 5 minute intervals.</p>	<p>Minutes to</p> <p>Minutes past</p>	<p>Revise/introduce time to students by discussing concepts that tell how we measure time (day, month, year, hour, second, minute, decade, century, etc.) – focus on the minutes</p> <p>a) Ensure that students understand that 1 day = 24 hours 1 hour = 60 minutes 1 minute = 60 seconds</p> <p>b) Get students to estimate and further enhance their understanding of a minute using Learning Activity I. (See Resource attached Resource Document)</p> <p>Allow students to experience /explore/estimate length of time in 5 minute intervals by experimenting with a water clock (See Resource Document page 12 for more details)</p> <p>Allow the students to use unifix cubes or counters to connect groups of five to minutes on the clock face and using efficient counting strategies to tell time. (See Resource Document page 13 for details)</p> <p>Allow students to estimate time on the hour and half an hour using one-handed clocks. (See Resource Document page 14 for details)</p>	<p>Allow the students to draw an hour hand on each clock face. Include placements that are intervals of 5 minutes past the hour and until the hour, half past the hour. For each clock face, the students’ task is to draw the corresponding minute hand on the clock.</p> <p>Allow students to make and take to class an analogue clock face with the hour hand and minute hand.</p> <p>a) Tell students a variety of times and have them show the times on their individual clocks b) Have them hold up their clocks after they have made the correct times c) Call on students to express the time in different ways</p> <p>2. Allow students to complete a schedule of selected favourite television programmes over a period of one week. (See Resource document page attached)</p> <p>3. Allow students to play a game of TIME-O. (See Resource document page 3 and 4 attached)</p> <p>Allow the students to make a Time Diary</p>

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Differentiate between the use of the litre and millilitre in	1000ml =1L	<p><u>Comparison Activity</u> Have students view containers (litre and millilitre capacity) to compare which holds more liquid and tell why. <i>(see page 7 of the resource document for activity)</i></p> <p><u>Differentiating between litre and millilitre</u> Place students in groups Use a metric measuring cup to measure the amount of liquids in the following items which could be found at their homes. Record the Capacity in litres or in millilitres. (Teacher can add or remove items of his/her choice)</p> <table border="1" data-bbox="970 837 1733 1190"> <thead> <tr> <th data-bbox="970 837 1311 922">Items</th> <th data-bbox="1311 837 1478 922">Measure in litre</th> <th data-bbox="1478 837 1733 922">Measure in millilitre</th> </tr> </thead> <tbody> <tr> <td data-bbox="970 922 1311 967">A bottle of soda</td> <td data-bbox="1311 922 1478 967"></td> <td data-bbox="1478 922 1733 967"></td> </tr> <tr> <td data-bbox="970 967 1311 1013">Two bottles of water</td> <td data-bbox="1311 967 1478 1013"></td> <td data-bbox="1478 967 1733 1013"></td> </tr> <tr> <td data-bbox="970 1013 1311 1058">A bottle of oil</td> <td data-bbox="1311 1013 1478 1058"></td> <td data-bbox="1478 1013 1733 1058"></td> </tr> <tr> <td data-bbox="970 1058 1311 1104">Two bottles of syrup</td> <td data-bbox="1311 1058 1478 1104"></td> <td data-bbox="1478 1058 1733 1104"></td> </tr> <tr> <td data-bbox="970 1104 1311 1190">A bottle of pepper mint essence</td> <td data-bbox="1311 1104 1478 1190"></td> <td data-bbox="1478 1104 1733 1190"></td> </tr> </tbody> </table>	Items	Measure in litre	Measure in millilitre	A bottle of soda			Two bottles of water			A bottle of oil			Two bottles of syrup			A bottle of pepper mint essence			<p><u>Litre Exploration</u> Students can be asked to carry out the following experiment at home. They will need a container of water, a syringe, a teaspoon and a standard cup. Have them use a syringe to drop 1ml of liquid in the teaspoon each time counting and recording the drops until it is full.</p> <p>Ask students to fill a standard size cup using any of the two, the syringe or the teaspoon while counting and recording the drops.</p> <table border="1" data-bbox="1763 837 2481 1271"> <thead> <tr> <th data-bbox="1763 837 1999 922"></th> <th colspan="2" data-bbox="1999 837 2239 922">Recording sheet</th> </tr> </thead> <tbody> <tr> <td data-bbox="1763 922 1999 1097">How many 1ml from the syringe fills a teaspoon</td> <td data-bbox="1999 922 2239 1097">How many 1ml from the syringe fills a cup</td> <td data-bbox="2239 922 2481 1097">How many 5ml from the teaspoon fills a cup</td> </tr> <tr> <td data-bbox="1763 1097 1999 1271"></td> <td data-bbox="1999 1097 2239 1271"></td> <td data-bbox="2239 1097 2481 1271"></td> </tr> </tbody> </table>				Recording sheet		How many 1ml from the syringe fills a teaspoon	How many 1ml from the syringe fills a cup	How many 5ml from the teaspoon fills a cup			
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<p>Estimate, measure and record the capacity of various containers in litres and millilitres</p>		<p><u>Benchmarking Activity</u> Have students collect a variety of containers: more than, less than and equal to 1 litre. Have them observe the capacity of the containers and group them according to the following table:</p> <table border="1" data-bbox="970 495 1731 701"> <thead> <tr> <th data-bbox="970 495 1225 570">More than 1 litre</th> <th data-bbox="1225 495 1481 570">1 Litre</th> <th data-bbox="1481 495 1731 570">Less than 1 litre</th> </tr> </thead> <tbody> <tr> <td data-bbox="970 570 1225 613"></td> <td data-bbox="1225 570 1481 613"></td> <td data-bbox="1481 570 1731 613"></td> </tr> <tr> <td data-bbox="970 613 1225 657"></td> <td data-bbox="1225 613 1481 657"></td> <td data-bbox="1481 613 1731 657"></td> </tr> <tr> <td data-bbox="970 657 1225 701"></td> <td data-bbox="1225 657 1481 701"></td> <td data-bbox="1481 657 1731 701"></td> </tr> </tbody> </table> <p>What do you notice about the containers that are less than 1 litre; equal to 1 litre; more than 1litre? Have students draw and name a container which they think is measured in litre and a container which is measured in millilitre if filled with liquid.</p> <p>What do you notice about the containers that are less than 1 litre; equal to 1 litre; more than 1litre? Have students draw and name a container which they think is measured in litre and a container which is measured in millilitre if filled with liquid</p>	More than 1 litre	1 Litre	Less than 1 litre										<p><u>Problem Solving task - Drinking Water</u> Water is good for your health. On a given day estimate how much water you drink? Is this amount best measured in litres or millilitres? Why?</p> <p><u>Problem Solving Task - Make 1 Litre(Multiple solutions)</u> An athlete’s coach tells him to drink 1litre of liquid for the day. In the igloo are: 200ml bottles of spring water 300ml bottles of Lucozade 250ml bottles of Gatorade 500ml bottles of fruit juice 350ml bottles of Cran water What are the different combinations of liquids the athlete can drink and how much of each?</p> <p><u>Example solution :</u> 1 bottle 200ml spring water + 1 bottle 300ml of Lucozade+ 1 bottle 500ml fruit juice</p>
More than 1 litre	1 Litre	Less than 1 litre													

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<p>Read a calendar to tell a) month, b) day of week, and date.</p> <p>Know relationships between year, month, week and day.</p> <p>Associate the passage of years with a person's age and concepts of younger/older.</p>		<p>Revise/introduce time to students by discussing concepts that tell how we measure time (day, month, year, hour, second, minute, decade, century, etc.) – focus on the month</p> <p>a) Ensure that students understand that 12 months = 1 year 4 weeks = 1 month 7 days = 1 week</p> <p>Engage students in solving problem called 'Birthday Cakes' (<i>see attached resource documents for the details.</i>) Use the platform as an opportunity to :</p> <ul style="list-style-type: none"> ✓ Discuss what happens to Jack's age each year passes ? ✓ Discuss how Jack's age compares with his sister's age ? <p>Allow students to explore various strategies for calculating their ages in years and months then check each other's answers using a different method. Allow them to explain their strategies to their peers including how they know that their answers are correct.</p>	<p>Allow students to make and take to class a calendar. Have students identify the month and day of the week on which their birthdays or any special events fall.</p> <p>Tell students a variety of dates and have them:</p> <ul style="list-style-type: none"> ✓ show the times on their individual calendars ✓ calculate ages

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<p><u>Temperature</u> Associate a given temperature with hot or cool day, normal body temperature, fever, freezing and boiling point of water.</p> <p>Record a given temperature using symbols, e.g. 28°C.</p> <p>Estimate, measure and record temperature using standard metric unit.</p>		<p>Divide students into small groups and give each group a cup of warm water and a thermometer. Have students measure the water's temperature.</p> <p>Challenge students to get the water to room temperature (which is approximately 21°C). [For this challenge, students may want to add cold water, drop in an ice cube or even blow air on the water.]</p> <p>Allow students to record the difference between the initial temperature and the new temperature.</p> <p>Use the activity as a platform to discuss with students their observation of the measure of the temperature as the water cools, as well as to get their thoughts on what would happen if the water were to be heated again, etc.</p> <p>Allow students to use their knowledge of the boiling point and freezing point of a liquid and the normal body temperature of humans as benchmarks to estimate temperatures in given story contexts in Learning Activity II.</p>	<p>Allow students to carry out research online to determine where the hottest place on earth is. They can use the following questions as guide:</p> <p>a) What is the hottest temperature ever recorded on each of the continents (Asia, Africa, North America, South America, Antarctica, Europe and Australia)?</p> <p>b) What is the hottest temperature ever recorded in Jamaica?</p> <p>c) Compare the two temperatures (the highest recorded temperature of the continents with that of your country) and comment on what you would have to do to adapt and thrive in the heat, if you were to visit the hottest place on earth</p>

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Identify twelve (12) objects as one dozen. Identify commodities usually sold by the dozen. Identify the number of objects in half and quarter dozen. Use 'dozen' in problem solving situations.	One dozen Half dozen Quarter dozen	Engage students in a discussion about things in their environment that are packaged in dozens or are sold by the dozen. Allow students in groups or individually to do a representation (drawing) of the items in their environment that are packaged or sold by the dozen. Allow students discuss and compare each other's representations Use this activity as a platform to discuss with students how many items are in a dozen, half of a dozen and quarter of a dozen Engage students in solving word problems that help them to distinguish between items which are sold by the dozen and those that are not.	Allow students to complete a table indicating items in their environment that are sold by the dozen and those that are not.