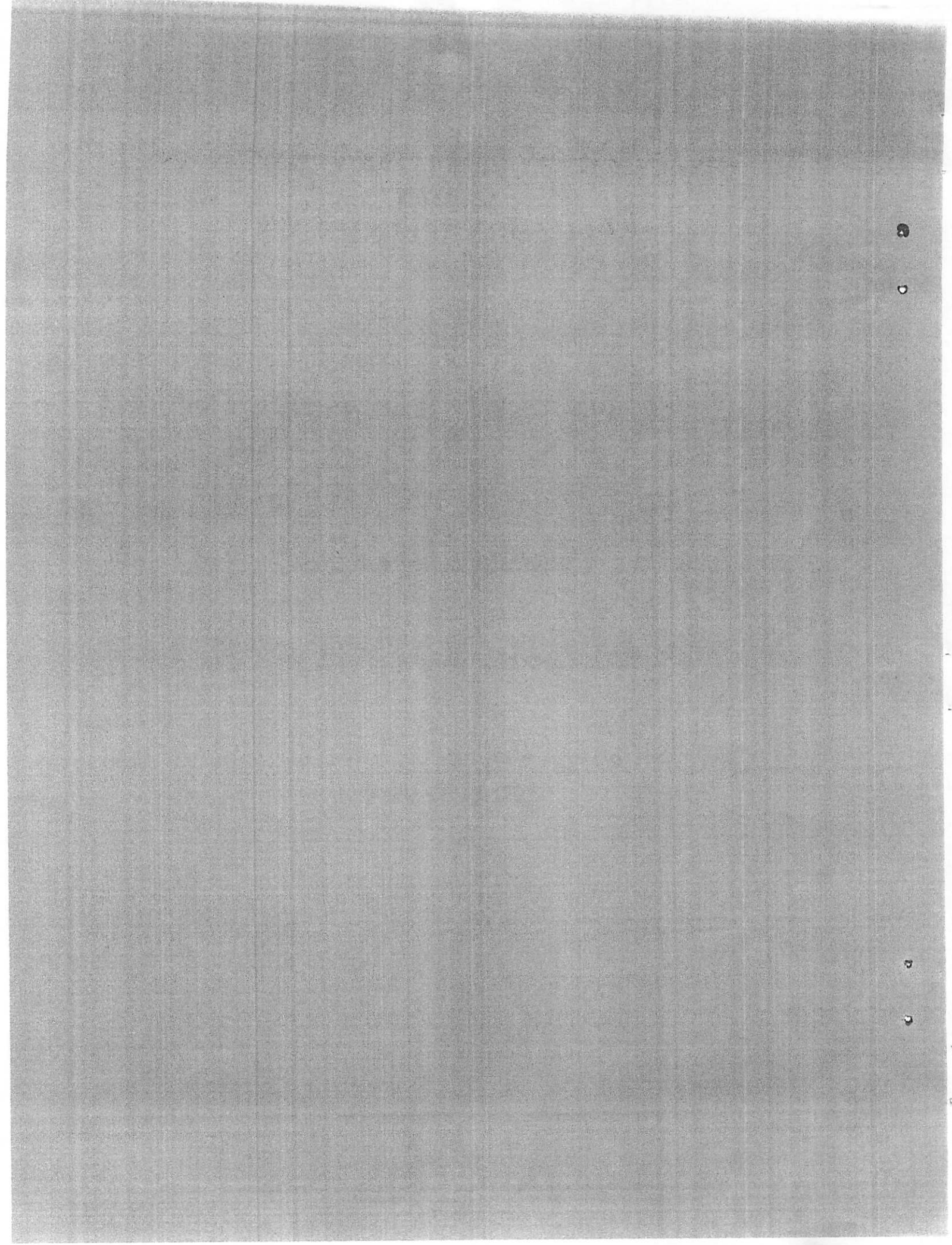


***ORGANIZATION OF EASTERN CARIBBEAN
STATES
EDUCATION REFORM UNIT***

***MATHEMATICS – PRIMARY LEVEL
CURRICULUM GUIDE***

GRADE TWO



Statistics/Data Management

<p style="text-align: center;">Topics</p>	<p style="text-align: center;">Learning Outcomes <i>By the end of Grade 2, students should be able to:</i></p>
<p><u>Data collection</u> Developing simple questions of interest to students. Procedures for observation and interviewing. Collecting and recording data.</p> <p><u>Data representation</u> Use of tables, pictographs, and bar graphs.</p>	<ol style="list-style-type: none"> 1. Generate questions that may be answered through data collection. 2. Describe how to collect data through observation and simple interviews 3. Identify similarities and differences between observation and interviewing. 4. Collect simple sets of data through observation and simple interviews. 5. Use number statements to record the collected data. 6. Describe how data are represented in a table. 7. Record collected data in tables. 8. Describe how data are represented in pictographs and bar graphs. 9. Explain the benefits of presenting data in tables and graphs. 10. Select appropriate means, pictograph or bar graph, to graphically represent collected data. 11. Represent recorded data by completing pictographs or bar graphs for which an outline or grid has been provided, and in which one picture or bar represents one unit of data.

<i>Materials</i>	<i>Teaching/Learning Activities</i>	<i>Assessment Strategies</i>
<p>Stories that involve data collection</p> <p>Household objects</p> <p>Toys</p> <p>School Supplies</p> <p>Objects and persons in the classroom</p> <p>Manipulatives such as shells, large buttons, blocks</p> <p>Cut-outs that represent the objects observed</p>	<p><i>Students can:</i></p> <p>Listen to, then talk about, stories that involve finding out information through asking people questions and/or observation. E.g., they can state what the characters in the story wanted to find out; identify the data that were collected by observation, by interviewing.</p> <p>Make up stories that involve observation or interviewing, present their stories to the class, and talk about the stories.</p> <p>Discuss information that they want to find out about each other, or about their school or home environment.</p> <p>Use the discussion to make up a list of questions that they will answer by collecting the relevant data through observation or interviewing.</p> <p>Some questions that may be used as prompts are: When is your bedtime? How many books are there in the class library about sports, animals, and food? In which month were you born?</p> <p>Talk about how they will collect the data to answer their questions, and how they will record the data.</p> <p>Work in groups to collect and record the data to answer the questions that they compiled.</p> <p>Compare the activities that they carried to collect data through observation with those that they used for interviewing.</p> <p>Examine examples of tables that have been prepared by their teacher to represent some of the data that they collected.</p>	<p>Practical tasks</p> <p>Observation</p> <p>Questioning</p> <p>Simple projects such as preparing reports that include a problem or question and a table and graph to represent the relevant data</p>

Topics	Learning Outcomes <i>By the end of Grade 2, students should be able to:</i>
<p><u>Interpretation of data</u> Reading tables and graphs. Answering simple questions on the information represented in graphs.</p>	<p>12. Read the data presented in simple tables, pictographs, and bar graphs.</p> <p>13. Interpret the data in simple tables, pictographs, and bar graphs.</p>

Materials	Teaching/Learning Activities	Assessment Strategies
<p>Examples of tables, pictographs, and bar graphs</p> <p>Outlines of pictographs and bar graphs</p>	<p><i>The students can:</i></p> <p>Talk about the parts of the tables prepared by their teacher. They can answer questions such as: Where is the title of the table? What data does the table show? What do the columns in the table show? What do the rows in the table tell us?</p> <p>Talk about how they will represent their data in tables. E.g., they can be guided to state the column headings they will use in their tables.</p> <p>Prepare tables to represent their data, present the tables to the class, and put them on display in the class.</p> <p>Examine examples of pictographs and describe the features of the graph. E.g., they can talk about how the graph shows the number of objects (frequency). This activity can be repeated, using examples of bar graphs.</p> <p>Examine a table, a pictograph, and a bar graph that represent the same data. Identify which of the three ways of presenting the data helps them to see the information quickly/clearly; which of the three ways allows them to make comparisons easily, e.g., to identify the highest frequency.</p> <p>State which of the ways of representing data they will use to present their data, and say why they selected the methods.</p> <p>Practice representing data in tables, pictographs, and bar graphs that have been partially prepared by their teacher.</p> <p>Answer questions that are based on the tables and graphs that they have prepared. Make up questions that are based on the information in their tables and graphs. Share their tables, graphs, and questions with the class. Classmates answer the questions.</p>	<p>Observation</p> <p>Questioning</p> <p>Peer assessment</p> <p>Practical tasks</p> <p>Pencil and paper exercises</p>

Geometry

Topics	Learning Outcomes
<p><u>Three-dimensional shapes</u> Faces of three-dimensional shapes Classification Cubes, cuboids, cones and cylinders</p>	<p style="text-align: center;"><i>By the end of Grade 2, students should be able to:</i></p> <ol style="list-style-type: none"> 1. Identify the faces of three-dimensional shapes. 2. Describe the shape of the faces of three-dimensional shapes in terms of two-dimensional shapes. 3. Classify three-dimensional shapes on the basis of their attributes, e.g., the number of faces, shape of their faces, size, etc. 4. Describe and compare the groups formed from their classification exercises. 5. Identify and name examples of cubes, cuboids, cones, cylinders, and spheres when presented in concrete or pictorial form. 6. Develop an awareness of the uses of three-dimensional shapes in real life.

Materials	Teaching/Learning Activities	Assessment Strategies
Household objects; e.g., cereal boxes, juice boxes, milk tins Toys Models of three-dimensional shapes	<p><i>Students can:</i></p> <p>Pass their hand over the faces of three-dimensional shapes and describe what they feel, using words such as flat, curved.</p> <p>Identify the faces on models of three-dimensional shapes and real-life objects, count the number of faces and state the shape of the faces.</p> <p>Make sets of objects according to given directions, e.g.,</p> <ul style="list-style-type: none"> Form a set of three-dimensional shapes whose faces are all of the same shape. Make a set of three-dimensional shapes with six faces. Pick out all of the three-dimensional shapes that have three faces, and one of the faces is curved. <p>Identify three-dimensional shapes that can belong to only one of the sets that they form (or more than one set), and explain why the shapes belong to these sets.</p> <p>Examine examples of cubes, and describe their features, e.g., number of faces, shape and size of the faces.</p> <p>Prepare small charts that contain concrete and/or pictorial examples of a cube and a description of the shape. The charts can be displayed in the classroom. This activity can be repeated using cuboids, cones, cylinders and spheres.</p> <p>Complete activity sheets, which require them to name the shapes drawn on the sheet.</p> <p>Select examples of a named shape (e.g., cylinder) from among drawings of examples and non-examples of the shape.</p>	<p>Practical tasks</p> <p>Observation</p> <p>Questioning</p> <p>Simple Projects</p> <p>Journal writing</p> <p>Pencil and paper exercises</p>

Topics	Learning Outcomes <i>By the end of Grade Two, students should be able to:</i>
<p><u>Plane shapes</u> Sides of two-dimensional shapes</p> <p>Classification Squares, rectangles, circles, triangles</p> <p>Drawing shapes</p> <p>Curves and straight lines</p> <p>Spatial relationships</p>	<p>7. Identify the sides of two-dimensional shapes.</p> <p>8. Describe two-dimensional shapes in terms of the number and length of their sides.</p> <p>9. Classify two-dimensional shapes on the basis of their attributes, e.g., shape, size, number and length of sides.</p> <p>10. Identify and name squares, rectangles, triangles, and circles.</p> <p>11. Sketch squares, rectangles, triangles, and circles.</p> <p>12. Sketch two-dimensional shapes that are a composition of squares, rectangles, triangles, and/or circles.</p> <p>13. Sketch two-dimensional shapes according to given descriptions.</p> <p>14. Copy drawings of curves and straight lines.</p> <p>15. Draw curves and straight lines.</p> <p>16. Sketch pictures to represent descriptions of the relative positions of two or more objects.</p> <p>17. Describe the relative position of objects using phrases such as by, on in inside, outside, opposite, beside, etc</p>

Materials	Teaching/Learning Activities	Assessment Strategies
<p>Models of two-dimensional shapes made out of different materials, e.g., drinking straws, Popsicle sticks</p> <p>Cut-outs of two-dimensional shapes</p> <p>Dot paper</p> <p>Geoboards</p> <p>Rubber bands</p> <p>String</p> <p>Rulers</p>	<p><i>The students can:</i></p> <p>Talk about how three-dimensional shapes are used in real life.</p> <p>Collect examples of three dimensional shapes that are used for different functions, e.g., storage, shipping goods, etc.</p> <p>Pass their fingers along the sides of models of two-dimensional shapes, and identify the number of sides that each has.</p> <p>Use a pencil to trace two-dimensional shapes on paper, and write the number of sides that each shape has.</p> <p>Use materials such as drinking straws and play dough to make models of two-dimensional shapes.</p> <p>Use paper folding to compare the lengths of the sides of two-dimensional shapes.</p> <p>Cut strips of paper that are the same length as the sides of a two-dimensional shape, and use these strips to compare the lengths of the sides of the shape.</p> <p>Compare the lengths of the sides of a two-dimensional shape to identify sides that are the same length and sides that are different in length. Repeat, using a variety of two-dimensional shapes.</p> <p>Write descriptions of models of two-dimensional, focussing on the lengths of the sides and the number of sides.</p> <p>Use cut-outs of two-dimensional shapes to make and draw shapes that are comprised of several two-dimensional shapes.</p> <p>Present a triangle (or a square, or rectangle, or circle) to the class, name the shape and describe it.</p>	<p>Observation</p> <p>Practical tasks</p> <p>Questioning</p> <p>Oral Presentations</p> <p>Journal writing</p> <p>Pencil and paper exercises</p>

Materials	Teaching/ Learning Activities	Assessment Strategies
	<p><i>The students can:</i></p> <p>Make squares and rectangles of different sizes on a geoboard.</p> <p>Draw squares and rectangles of different sizes on dot and plain paper.</p> <p>Make triangles of various shapes and sizes on a geoboard.</p> <p>Draw triangles of various shapes and sizes on dot and plain paper.</p> <p>Challenge each other to make two-dimensional shapes on a geoboard; e.g., to make a four-sided shape with two sides of the same length.</p> <p>Identify objects that can be used to draw circles, and use these objects to draw circles of different sizes.</p> <p>Select examples of a square from among a set of shapes that consists of examples and non-examples of a square. This activity can be repeated with a focus on rectangles, triangles or circles.</p> <p>Take turns to give instructions to the class to draw two-dimensional shapes.</p> <p>Form pairs of sets; e.g., a set of squares and a set of shapes with four sides.</p> <p>Identify the shapes that are common to both sets.</p> <p>Talk about why the shapes are common or not common to the sets.</p> <p>Examine examples of curves and trace the curves with a finger.</p> <p>Draw the examples of the curves.</p> <p>Talk about the design of the curves.</p> <p>Drop a piece of string onto a sheet of paper and trace the shape that the string forms.</p> <p>Use a finger to make curves in the air.</p>	

<i>Materials</i>	<i>Teaching/ Learning Activities</i>	<i>Assessment Strategies</i>
	<p><i>The students can:</i></p> <p>Examine examples of straight lines, and trace the lines with a finger. Use a ruler to draw straight lines in different orientations.</p> <p>Draw patterns consisting of curves and/or straight lines and display the patterns in the class.</p> <p>Play 'I spy', using descriptions/words that indicate the relative positions of objects.</p>	

Measurement

Topic	Learning Outcomes <i>By the end of Grade 2, students should be able to</i>
<p><u>General Strategies</u> Selection of units Problem-solving</p> <p><u>Linear Measurement</u> Estimation and measurement of length, height, and distances using the metre Comparison of linear measurements</p> <p><u>Measurement of mass</u> Estimation and measurement of mass using the kilogram Comparison of mass</p> <p><u>Measurement of Capacity</u> Estimation and measurement of capacity using the litre Comparison of capacity</p>	<ol style="list-style-type: none"> 1. Select the appropriate unit to measure length, mass, and capacity. 2. Create and solve problems involving linear measurement and measurement of mass, capacity and temperature. 3. Estimate, measure, and record lengths and heights of objects using the metre as the unit of measure. 4. Estimate, measure, and record distances using the metre as the unit of measure. 5. Compare the linear measurements of two or three objects using phrases such as longer, longest, higher, highest, taller, tallest, etc. 6. Estimate, measure, and record the mass of objects using the kilogram as the unit of measure. 7. Describe situations in real life where the kilogram is used as a unit of measure and give reasons for these uses of the unit. 8. Compare the masses of two or three objects using phrases such as heavier, lighter, lightest, etc. 9. Estimate and measure the capacity of containers using the litre as the unit of measure. 10. Compare the capacity of two or three containers using phrases such as 'holds more', 'holds the least', etc.

<i>Materials</i>	<i>Teaching/Learning Activities</i>	<i>Assessment Strategies</i>
<p>Metre ruler/stick Strips of Bristol Board that are 1 metre long</p> <p>Large household objects e.g., bookshelves, dining tables, beds</p> <p>Objects in the Classroom</p>	<p><i>The students can:</i> Select, from among a display of measuring instruments, the instruments that could be used to measure lengths, heights, and distances.</p> <p>Follow demonstrations of how to use a metre ruler/strip to measure lengths, heights and distances, and talk about what they observed in the demonstrations.</p> <p>Use metre rulers or strips to measure parts of the classroom; e.g., the length of the floor, width of the chalkboard.</p> <p>Use metre sticks or strips to measure distances in the school compound; e.g., the distance between the door of one classroom and the door of another classroom, the distance between the school gate and the nearest school building.</p> <p>Work in groups to measure given distances in the schoolyard or school playground; e.g., a distance of 3 metres, a distance of 5 metres.</p> <p>Use estimation to identify objects in their classroom or at home that are 1 metre long (or 2 metres long, or 1 metre high, etc.). Measure these objects to check the accuracy of their estimate.</p> <p>Estimate the length/height of given objects and record their estimates, using the metre as the unit of measure. Measure the lengths/heights of these objects using a metre ruler/stick. Compare their estimate and measurement. Talk about those estimates that were close to the actual measurement, how they determined the estimate, why it was close to the measurement.</p> <p>Talk about ways of obtaining estimates of lengths, heights, and distances.</p>	<p>Practical tasks</p> <p>Observation</p> <p>Questioning</p>

Topics	Learning Outcomes By the end of Grade Two, students should be able to:
<p><u>Measurement of Temperature</u> Temperature-related Vocabulary Comparison of temperature</p> <p><u>Time</u> Problem-solving Time-related vocabulary Use of the calendar Time on the hour, half-hour, and quarter hour</p> <p><u>Money</u> Problem-solving Description of the Eastern Caribbean currency Representing amounts of money Calculations involving money</p>	<p>11. Describe the temperature of an object as 'warm', 'hot', 'cold', etc.</p> <p>12. Compare the temperature of two or three objects using phrases such as warmer, hotter, hottest, coldest, etc.</p> <p>13. Create and solve problems involving time.</p> <p>14. Use time vocabulary appropriately, e.g., yesterday, today tomorrow, next week, last week, as soon as, etc.</p> <p>15. Name the days of the week and months of the year.</p> <p>16. State the number of days in a week and months in a year.</p> <p>17. State and write the date for the current day.</p> <p>18. State and write dates of important events, e.g., their birthday, Christmas Day, Independence Day.</p> <p>19. Tell time on the hour, half hour, and quarter hour in a variety of ways.</p> <p>20. Represent time on the hour, half hour, and quarter hour.</p> <p>21. Use the abbreviations 'a.m.' and 'p.m.' correctly.</p> <p>22. Tell and write the time at which certain events occur, e.g., break time, lunch-time.</p> <p>23. Create and solve problems involving money.</p> <p>24. Describe the coins in circulation.</p> <p>25. Represent amounts up to \$5.00 using coins in a variety of combinations.</p> <p>26. Describe the \$5, \$10, and \$20 notes.</p> <p>27. Represent values up to \$20.00 using \$1 coins and notes in a variety of combinations.</p> <p>28. Find the total value of a combination of notes and coins, up to a value of \$20.00.</p> <p>29. Read prices of items.</p> <p>30. Find the total cost of two or three items, up to a total of \$1.00.</p> <p>31. Calculate change from \$1.00, using counting on.</p>

Materials	Teaching/ Learning Activities	Assessment Strategies
<p>Balance scales</p> <p>Bathroom scales</p> <p>Packages of material (e.g., sand, marbles, buttons) that have a mass of 1 kg</p> <p>Household objects</p> <p>Objects in the classroom</p>	<p><i>The students can:</i></p> <p>Estimate whether their height is less than 1 metre, more than 1 metre, or equal to 1 metre. Measure their height to check their estimate.</p> <p>Talk about, and demonstrate, how they would find out if one object is longer/shorter than another.</p> <p>Arrange a set of objects in order of length or height.</p> <p>Arrange groups of students in order of height.</p> <p>Arrange strips of paper in order of length.</p> <p>Collect pictures of instruments that can be used to measure mass.</p> <p>Hold a 1 kg mass; play with it, to obtain a sense of what 1 kg is. Collect objects that have the same mass, in the classroom.</p> <p>Follow demonstrations of how to use scales to measure the mass of objects, using the kilogram as the unit of measure, and talk about the procedures for using the scales.</p> <p>Estimate the mass of given objects (e.g., 5 mathematics workbooks, 2 packets of beans) in kilograms. Record the estimate. Measure the mass of the objects. Talk about how close their estimate was to their measurement.</p> <p>Use estimation to identify objects that have a mass of 2 kg (3 kg, etc.). Measure the mass of the identified objects to check whether their estimate was correct or very close to the measurement.</p>	<p>Practical tasks</p> <p>Observation</p> <p>Written exercises</p> <p>Simple projects, e.g., a bulletin board display</p> <p>Preparation of a student profile developed by the student. Includes the student's height, mass, and other measurements carried out by the student.</p>

Materials	Teaching/Learning Activities	Assessment Strategies
<p>Measuring cylinders</p> <p>Measuring cups</p> <p>Teacher –made measuring cylinders: Bottles with a piece of tape to mark 1 litre</p> <p>Containers of various shapes and sizes</p>	<p><i>The students can:</i></p> <p>Carry out research at home to make up a list of household products whose mass is measured in kilograms.</p> <p>Work in groups to prepare a poster display to show the results of their research.</p> <p>Talk about, and demonstrate, how they would find out if one object is lighter or heavier than another.</p> <p>Determine which of a pair of objects is heavier than the other. Repeat the activity using several pairs of objects. Record their results in a table.</p> <p>Identify objects in the classroom that are lighter than a given object (e.g., a large dictionary), and objects that are heavier than the same given object.</p> <p>Use their measuring cylinders or cups to measure the capacity of various containers, e.g., bowls, bottles, and pots.</p> <p>Collect containers that have a capacity of 1 litre. Measure the containers to verify whether the capacity is 1 litre.</p> <p>Use estimation to select, from among a set of given containers, those containers that have a capacity of 2 litres (or 3 litres, or 4 litres, etc.). Measure the capacity of the selected containers. Talk about how close their estimate was to the measurement, and how they can make more accurate estimates.</p> <p>Compare two containers to identify which holds more. Measure the capacity of the containers to determine whether their comparison was correct. (The shape and size of the containers should be varied. E.g., 2 containers of the same shape but different sizes; a narrow tall bottle and a short wide bottle.) This activity can be repeated using three containers.</p>	<p>Practical tasks</p> <p>Observation</p> <p>Questioning</p> <p>Oral presentations</p>

Materials	Teaching/Learning Activities	Assessment Strategies
<p>Large and small clocks</p> <p>Teacher-made clock faces</p> <p>Worksheets</p> <p>Calendars</p>	<p>Take a walk around the school compound, and identify places that are hot (or warm, or cool). Identify the warmest or coolest places on the school compound. Relate these activities to the study of temperature in Science, by describing how the temperature of the places would change throughout the day.</p> <p>Tell stories, featuring activities that they engaged in at various points in time, e.g., last week, yesterday, on Tuesday, etc.</p> <p>Prepare a class diary in which they record important events that are to take place or that happened at school over a week (or a month).</p> <p>Fill in the missing days of the week in a sequence of days. E.g., Tuesday, _____, Thursday, _____, Saturday.</p> <p>Fill in the missing months of the year in a sequence of months.</p> <p>State the day that comes before or after a given day. State the month that comes before or after a given month.</p> <p>Prepare timelines that show the days of the week and the months of the year.</p> <p>Identify the months when they are on vacation.</p> <p>Prepare a scrapbook in which they insert pictures related to important events and record the dates of these events.</p> <p>Prepare a plan outlining the activities that they will engage in on a given day and the times at which they will carry out the activities.</p> <p>Talk about the position of the hands of the clock for time on the hour, half hour, and quarter hour.</p>	<p>Practical tasks</p> <p>Questioning</p> <p>Observation</p> <p>Pencil and paper exercises</p> <p>Simple projects</p>

Materials	Teaching/ Learning Activities	Assessment Strategies
<p>Examples of Eastern Caribbean (EC) currency coins Sets of 1 cent, 2 cent, 5 cent, 10 cent, and 25 cent coins Sets of \$1 coins</p> <p>Posters illustrating the EC currency notes and coins.</p> <p>Flyers and newspaper advertisements depicting items priced up to \$20</p> <p>A collection of items that cost \$1 or less, prices marked on the items</p>	<p><i>The students can:</i></p> <p>Make clock faces, using circular and rectangular pieces of paper, and represent given times on the clock faces.</p> <p>Draw clock faces to represent given times.</p> <p>Complete worksheets, which require them to represent given times by inserting the hands of the clock on drawings of clocks.</p> <p>Complete worksheets, which require them to tell the time represented on drawings of clocks.</p> <p>Talk about situations in which the abbreviations a.m. and p.m. are used in telling time.</p> <p>Talk about the shape of the faces of the coins.</p> <p>Talk about the features on the faces of the EC currency coins in circulation.</p> <p>Talk about how the shapes of the faces are alike and different. Talk about how the features of the faces are alike and different.</p> <p>Examine examples of the \$5 note (\$10 note, \$20 note), and make a presentation to the class describing the features of the note.</p> <p>Talk about how the \$5, \$10, and \$20 notes are alike and different.</p> <p>Read the price of items on flyers and advertisements.</p> <p>Use skip counting and counting on to show how a given amount of money up to \$5 can be represented with different combinations of coins.</p> <p>Use skip counting and counting on to show how a given amount of money up to \$21 can be represented using different combinations of \$1 coins and notes.</p> <p>Determine whether a given representation of an amount of money in a combination of coins and/or notes is correct.</p>	<p>Pencil and paper exercises</p> <p>Practical tasks</p>

<i>Materials</i>	<i>Teaching/Learning Activities</i>	<i>Assessment Strategies</i>
	<p><i>The students can:</i></p> <p>Prepare shopping lists containing items from the class collection, according to given directions. E.g., Prepare a list where the total cost of the items is \$1. Prepare a list where the total cost is more than 75 cents.</p> <p>Work in groups to operate a class shop with items costing \$1 or less. The students take turns being cashiers and customers. Cashiers must give correct change. Customers must decide on an appropriate combination of coins to pay for the items. Customers check whether the cashiers are correct, and vice versa.</p>	

Number Concepts

Topic	<i>Learning Outcomes</i> <i>By the end of Grade Two, students should be able to:</i>
<p><u>General</u> Use of appropriate strategies for investigating number concepts</p> <p><u>Counting</u> Counting forward and back Counting on Skip counting Number sequences</p> <p><u>Whole numbers</u> Reading and writing numbers Problem-solving Place value Expanded notation Comparison of numbers</p>	<ol style="list-style-type: none"> 1. Use a calculator, pencil and paper procedures, or mental strategies to investigate number concepts. 2. Explain how they used a selected strategy in carrying out investigations involving number concepts. 3. Count in sequence to 100 and beyond. 4. Describe the patterns that are evident in numbers between 1 and 100 and numbers beyond 100. 5. Count by 2's, 5's, 10's, 20's, and 25's to 100 and beyond. 6. Count on from a given number. 7. Complete a sequence of numbers that involves counting by 2's, 5's, 10's, 20's, and 25's. 8. Read numbers up to ninety-nine. 9. Write numbers up to ninety-nine in words and numerals. 10. Create and solve problems involving place value. 11. State the place value of the digits in any number up to ninety-nine. 12. Represent numbers up to ninety-nine in terms of a number of tens and ones, using concrete objects and diagrams. 13. State the total value of the digits in any number up to ninety-nine. 14. Write numbers up to ninety-nine in expanded notation. 15. Compare pairs of numbers (up to ninety-nine), using the symbols '<' and '>'. 16. Arrange a set of numbers (up to ninety-nine) in order of magnitude and give reasons for the arrangement.

<i>Materials</i>	<i>Teaching/Learning Activities</i>	<i>Assessment Strategies</i>
<p>Hundred chart</p> <p>10 x 10 numeral grid with pockets</p> <p>Numeral cards with numerals from 1 to 150</p> <p>Place value materials E.g., sets of squares (2 cm by 2 cm) made out of Bristol board, cardboard etc., and strips (20 cm by 2 cm); place value charts; Popsicle sticks or other objects – singles and bundles of 10.</p> <p>Calculators</p>	<p><i>The students can:</i></p> <p>Use a hundred chart to count to 100, count on from a given number, and to skip count.</p> <p>Use a calculator to count in sequence to 100 and to skip count.</p> <p>Follow directions for counting; e.g., ‘Start at 22 and count on to 46’.</p> <p>Place the numeral cards (1 to 100) in the correct sequence in the pockets of the numeral grid. Examine the patterns in the sequence of numerals. E.g., they can answer questions such as ‘How are the rows of numerals alike and different?’ How are the columns of numerals alike and different?’</p> <p>Use a calculator to count to 100 then continue the counting process. Use a numeral grid to count beyond 100. Talk about how counting beyond 100 is similar to counting from 1. Follow directions for counting on beyond 100.</p> <p>Use a hundred chart or numeral grid to help them continue or complete sequences of numbers (e.g., 2, 7, 12, 17, __, __; and 10, 20, 30, __, __, 70). Talk about how they obtained the missing numbers in the sequence.</p> <p>Work in pairs; one person displays a numeral on the calculator and the other reads it and writes it in words. The students alternate roles.</p> <p>Count a given number of objects and write the numeral for that number. Group the objects into sets of 10 and ones. Compare the number of sets of ten and ones with the digits in the numeral.</p>	<p>Practical tasks</p> <p>Observation Questioning</p> <p>Pencil and paper exercises</p> <p>Simple projects</p> <p>Journal writing</p>

Topic	Learning Outcomes <i>By the end of Grade 2, students should be able to:</i>
<u>Fractions</u> Problem-solving Unit fractions Proper fractions Comparison of fractions Representation of fractions	17. Create and solve problems involving fractions of a whole. 18. Identify a unit fraction ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{8}$) of a whole. 19. Compare unit fractions. 20. Represent a unit fraction of a whole. 21. State and write, in words and numerals, the unit fraction that corresponds to a pictorial or concrete representation of a unit fraction of a whole. 22. Identify a proper fraction of a whole (e.g., $\frac{2}{3}$, $\frac{3}{4}$ etc.). 23. Represent a proper fraction of a whole, using concrete objects or diagrams. 24. State and write, in words and numerals, the proper fraction that corresponds to a pictorial or concrete representation of a fraction of a whole. 25. Describe real life situations that involve fractions of a whole.

<i>Materials</i>	<i>Teaching/Learning Activities</i>	<i>Assessment Strategies</i>
	<p><i>The students can:</i></p> <p>Talk about, and demonstrate, how they can use the place value materials to represent numbers up to ninety-nine.</p> <p>Talk about, and demonstrate, how they would use diagrams to illustrate their place value representations of given numbers.</p> <p>Work in pairs; one student uses place value materials to represent a given number, the other student writes the numbers in several (e.g., 27, 2 tens and 7 ones, $20 + 7$)</p> <p>Represent given numbers in as many ways as possible, using place value materials, diagrams, words, numerals, expanded notation.</p> <p>Use place value materials and one-to-one matching to determine which of two numbers is bigger (smaller) than the other.</p> <p>Talk about how they can use the place value of the digits in a numeral to determine which of two numbers is smaller (bigger) than another.</p> <p>Work in small groups to arrange a set of numbers in order of magnitude. The group leader shuffles a set of numeral cards, and then selects three or four cards at random. The other members of the group arrange the numeral cards in order of magnitude and state why they think it is a correct arrangement. The group leader decides if the arrangement is correct. The students in the group take turns at being the group leader.</p> <p>Examine examples of representations of unit fractions and talk about what the various unit fractions mean (e.g., one out of two equal parts, one out of three equal parts, etc.).</p> <p>Identify examples of $\frac{1}{2}$ from among a set of shapes that have been divided into two parts, some equal and some unequal. Repeat the activity using other unit fractions.</p>	<p>Oral presentations</p> <p>Portfolio assessment; entries could include illustration of the student's understanding of place value, diagrams depicting unit fractions, problems that they have solved.</p>

Materials	Teaching/Learning activities	Assessment Strategies
<p>Paper cut-outs of common geometric shapes</p> <p>Sets of paper strips of the same length</p> <p>Fraction charts</p> <p>Charts with representations of unit and proper fractions</p>	<p><i>The students can:</i></p> <p>Use paper cut-outs to represent unit fractions.</p> <p>Shade parts of diagrams to represent given unit fractions, and write the corresponding fractional numeral.</p> <p>Take a set of cut-outs of the same shape and size. Divide one of the cut-outs into halves, another thirds, etc., and colour one-half, one third, etc.</p> <p>Place the coloured pieces one on the other to compare the size of the unit fractions.</p> <p>Use their coloured pieces and a fraction chart to answer questions such as the following: Which is larger, $\frac{1}{4}$ or $\frac{1}{8}$? Which is the smallest, $\frac{1}{3}$, $\frac{1}{8}$, or $\frac{1}{5}$?</p> <p>Examine examples of proper fractions (e.g., $\frac{2}{3}$, $\frac{3}{5}$, $\frac{5}{8}$) and talk about what the fractions represent.</p> <p>Identify examples of a given proper fraction from among a set of representations of proper fractions.</p> <p>Use paper cut-outs to represent given proper fractions.</p> <p>Shade parts of diagrams to represent given proper fractions.</p> <p>Draw diagrams to represent given proper fractions.</p> <p>Examine a set of diagrams (or concrete representations) of proper fractions. State and write, in words and numerals, the proper fraction that each diagram (or concrete representation) represents.</p> <p>Talk about situations (e.g., games, household activities, shopping) that involve the use of fractions.</p> <p>Illustrate these situations, using concrete materials and diagrams.</p> <p>Work in groups and use these situations to develop problems. Exchange the problems among the groups. Each group solves the problems that they did not develop, and checks the solutions of the problems that they developed.</p>	<p>Oral presentations</p> <p>Practical tasks</p> <p>Pencil and paper exercises</p>

Computation

Topic	Learning Outcomes <i>By the end of Grade Two, students should be able to:</i>
<u>General</u> Use of computation strategies <u>Addition of whole numbers</u> Problem-solving Basic facts Addition without and with regrouping Addition-related vocabulary	<ol style="list-style-type: none"> 1. Identify and describe situations in which it is appropriate to use mental strategies, pencil and paper procedures, and calculators to add subtract, multiply or divide whole numbers. 2. Use mental strategies, pencil and paper procedures, or a calculator, as appropriate, to add, subtract, multiply and divide whole numbers. 3. Create and solve problems involving addition of whole numbers, with totals up to 99. 4. Use several strategies to recall the basic facts for addition. 5. Explain their strategies for recalling the basic facts for addition. 6. Add a two-digit number to a one-digit number, without and with regrouping, totals up to 99. 7. Add two two-digit numbers, without and with regrouping, totals up to 99. 8. Carry out addition with numerals presented in a horizontal or vertical format.

Materials	Teaching/Learning Activities	Assessment Strategies
<p>Manipulatives such as shells, stones, buttons, etc.</p> <p>Place value materials: e.g., sets of squares (2 cm by 2 cm) made out of Bristol board, cardboard etc., and strips (20 cm by 2 cm); place value charts; Popsicle sticks or other objects – singles and bundles of 10.</p> <p>Calculators</p> <p>Squared paper</p> <p>Flash cards</p>	<p><i>The students can:</i></p> <p>Write problems that involve situations requiring addition. Talk about how they could solve the problem. Estimate the answer to the problems, and explain how they obtained their estimate. Record their estimates.</p> <p>Use place value materials or a calculator to carry out the required addition to solve the problems. Describe how they used their materials or calculator to solve the problems. Compare their estimates to the actual answers, and determine which was the best estimate.</p> <p>Talk about the similarities and differences in the ways in which different students used the place value materials. Record the steps they carried in using their place value materials, using expanded notation</p> <p>Demonstrate how they would use place value materials to add with regrouping. Talk about their procedures, and identify the correct procedures. Talk about the regrouping process, e.g., when it is necessary, how it is carried out. Use place value materials to carry out addition with regrouping. Record the steps they carried out in using their place value materials to add with regrouping.</p> <p>Explore strategies for adding numbers, with totals up to 99, mentally. Talk about the steps involved in each strategy, and practice using the strategies.</p> <p>Use squared paper and place value charts to practice aligning addends vertically.</p> <p>Practice strategies such as counting up and counting down to recall the basic facts for subtraction.</p>	<p>Practical tasks</p> <p>Observation</p> <p>Questioning</p> <p>Pencil and paper exercises</p>

<p>Topics</p>	<p>Learning Outcomes <i>By the end of Grade 2, students should be able to:</i></p>
<p><u>Subtraction of whole numbers</u> Basic facts Problem-solving Subtraction without and with regrouping Subtraction-related vocabulary</p>	<ol style="list-style-type: none"> 9. Create and solve problems involving subtraction of whole numbers up to ninety-nine. 10. Use several strategies to recall the basic facts for subtraction. 11. Explain their strategies for recalling the basic facts for subtraction. 12. Subtract a one-digit number from a two-digit number, without and with regrouping. 13. Subtract a two-digit number from a two-digit number, without and with regrouping. 14. Explain the procedures they use for addition and subtraction, using appropriate vocabulary such as 'add', 'sum', 'difference', 'minus', etc. 15. Carry out subtraction with numerals presented in a horizontal or vertical format.
<p><u>Multiplication of whole numbers</u> Problem-solving Multiplication-related vocabulary Multiplication of one-digit numbers Properties of multiplication Basic facts</p>	<ol style="list-style-type: none"> 16. Create and solve simple problems involving multiplication. 17. Interpret multiplication statements and number sentences, using terms such as 'sets of', 'times', 'product', etc. 18. Calculate the product of two one-digit numbers, with products up to 60. 19. Explain the properties of multiplication (e.g., any number times 1 equals the number, the product of two numbers is the same even if their order is changed, $3 \times 4 = 4 \times 3 = 12$). 20. Use several strategies (e.g., concrete objects, skip counting, properties of multiplication) to develop the multiplication basic facts for the 2, 3, 5, and 10 times table.

<i>Materials</i>	<i>Teaching/Learning Activities</i>	<i>Assessment Strategies</i>
<p>Worksheets with problems, some involving addition and some involving subtraction</p> <p>Activity Sheets</p>	<p><i>The students can:</i></p> <p>Write problems that involve situations requiring subtraction.</p> <p>Talk about how they would solve the problems.</p> <p>Estimate the answers to the problems, and record the estimates.</p> <p>Talk about how they obtained their estimate.</p> <p>Use place value materials to solve the problems.</p> <p>Talk about how they solved their problems, and why they think their answer is correct.</p> <p>Compare their answers with their estimates.</p> <p>Follow demonstrations of how place value materials may be used to carry out subtraction with regrouping.</p> <p>Talk about, and demonstrate, how to use place value materials to carry out subtraction with regrouping.</p> <p>Use diagrams to carry out subtraction.</p> <p>Use expanded notation to carry out subtraction.</p> <p>Read a problem provided on a worksheet.</p> <p>Talk about the problem and decide whether the solution requires addition or subtraction. Repeat with other problems.</p> <p>Read problems or number sentences and decide whether they can obtain the answer by using mental computation or pencil and paper.</p> <p>Use their selected strategy to obtain the answer.</p> <p>Work in groups of three to complete number sentences. For each number sentence, one student uses mental computation, another uses pencil and paper, and the other uses a calculator to obtain the answer. The students check each other's answer to determine if it is correct. The students take turns using the various computation strategies.</p>	

Materials	Teaching/Learning Activities	Assessment Strategies
Work cards with problems that involve multiplication	<i>The students can:</i> Read problems which involve situations requiring multiplication. Talk about how they would solve the problems. Illustrate the steps for solving the problems using concrete materials and/or diagrams.	Simple projects Pencil and paper exercises
Work cards with problems that involve division.	Write problems involving multiplication. Exchange the problems among their classmates and solve the problems. Display the solutions in the classroom, and check each other's solutions.	Journal writing
Number lines	Talk about the meaning of multiplication statements: e.g., 3 sets of 2 = ٦; 4 sets of 3 = 12; 3 x 5 = 15; 4 x 4 = ١٦ Illustrate the statements, using a variety of materials and diagrams. Complete activity sheets that guide them to discover properties of multiplication. E.g., the students can complete several statements of the following form and talk about the patterns in their answers. <div>3 x 4 = 4 x 3 = 5 x 6 = 6 x 5 = 2 x 7 = 7 x 2 =</div> Make bulletin board or poster displays, using a variety of materials, to illustrate the basic facts. E.g., some students can use concrete objects glued onto paper to illustrate all the facts with a product of 12; another group of students can use squared paper to show the facts for the two times table. Work in small groups to prepare flash cards for the various multiplication tables, and use these cards in activities. E.g., students can work in pairs; one student completes the number sentence on one face of the card and the other student uses the answer on the other side of the card to check whether his/her partner's answer is correct. Role-play situations that involve sharing. Talk about how the sharing was done, whether the objects were shared equally or not. Identify situations where things are shared equally.	

Materials	Teaching/ Learning Activities	Assessment Strategies
	<p><i>The students can:</i> Read problems which involve division, and talk about what they understand in the problem. Illustrate the situations in the problem, using concrete materials, number lines, squared paper. Use the various materials to solve the problems.</p> <p>Change their word problems into short statements that use division vocabulary. E.g., '6 cupcakes are to be shared equally among 3 persons. Each person gets __ cupcakes.'</p> <p>Compare pairs of word statements with number statements, and talk about how the number statement represents the word statement. Example of a pair: Paul shares 12 cookies equally among his 3 friends. Each friend gets ____ cookies. Number statement $12 \div 3 = 4$</p> <p>Write the number sentences that could be used to solve division problems. Write word problems for given number sentences.</p> <p>Use concrete materials of their choice to solve problems involving addition of unit fractions. Talk about how they used the materials to determine the answer to the problem. Write number sentences to represent the solution to their problems.</p> <p>Write problems that involve addition of unit fractions, and exchange the problems among the class. Classmates solve the problems. Each person checks whether the solutions to the problems that he/she wrote are correct.</p> <p>Examine a set of examples of number sentences involving addition of unit fractions; e.g., $\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$ $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{3}{3}$ $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{4}{5}$</p> <p>Talk about how the answers were obtained.</p> <p>Write a journal entry in which they explain how to obtain the sum of two or more unit fractions.</p>	

Attainment Criteria

The attainment criteria outline the mathematical competencies expected of students at this grade level. The criteria move progressively from Level 1(basic competency) to Level 4. It is expected that at each attainment level, the students would also be able to apply the competencies to situations involving real-life experiences, other subjects, and other mathematical topics as appropriate and to carry out tasks involving problem solving, communication, and reasoning.

The criteria are as follows.

Statistics/Data Management

- Level 1:** Generate questions that may be answered through data collection; collect simple sets of data through observation and interviews; and use number statements to record collected data.
- Level 2:** Generate questions that may be answered through data collection; collect simple sets of data through observation and interviews; use number statements to record collected data; record collected data in tables; represent collected data by completing pictographs or bar graphs; and read the data in simple tables, pictographs and bar graphs.
- Level 3:** Generate questions that may be answered through data collection; collect simple sets of data through observation and interviews; use number statements to record collected data; record collected data in tables; select appropriate means to graphically represent collected data; represent collected data by completing pictographs or bar graphs; read and interpret the data in simple tables, pictographs and bar graphs; describe how to collect data through observation and interviews; and identify similarities and differences between observation and interviewing.
- Level 4:** Generate questions that may be answered through data collection; collect simple sets of data through observation and interviews; use number statements to record collected data; record collected data in tables; select appropriate means to graphically represent collected data; represent collected data by completing pictographs or bar graphs; read and interpret the data in simple tables, pictographs and bar graphs; describe how to collect data through observation and interviews; identify similarities and differences between observation and interviewing; describe how data are represented in pictographs and bar graphs; and explain the benefits of presenting data in tables and graphs.
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Geometry

Level 1: Identify the faces of three-dimensional shapes; identify the sides of two-dimensional shapes; identify and name squares, rectangles, and circles.

Level 2: Identify the faces of three-dimensional shapes; describe the faces of three-dimensional shapes in terms of two-dimensional shapes; classify three-dimensional shapes on the basis of their attributes; identify the sides of two-dimensional shapes; identify and name squares, rectangles, circles, and triangles; describe two-dimensional shapes in terms of the number and length of their sides; classify two-dimensional shapes on the basis of their attributes; describe and compare groups formed from classification exercises; and describe the relative position of objects.

Level 3: Identify the faces of three-dimensional shapes; describe the faces of three-dimensional shapes in terms of two-dimensional shapes; classify three-dimensional shapes on the basis of their attributes; identify and name examples of cubes, cuboids and spheres; identify the sides of two-dimensional shapes; identify and name squares, rectangles, circles, and triangles; describe two-dimensional shapes in terms of the number and length of their sides; classify two-dimensional shapes on the basis of their attributes; describe and compare groups formed from classification exercises; describe the relative position of objects; represent descriptions of the relative position of objects using drawings; and draw curves and straight lines.

Level 4: Identify the faces of three-dimensional shapes; describe the faces of three-dimensional shapes in terms of two-dimensional shapes; classify three-dimensional shapes on the basis of their attributes; identify and name examples of cubes, cuboids and spheres; identify the sides of two-dimensional shapes; identify and name squares, rectangles, circles, and triangles; describe two-dimensional shapes in terms of the number and length of their sides; classify two-dimensional shapes on the basis of their attributes; describe and compare groups formed from classification exercises; describe the relative position of objects; represent descriptions of the relative position of objects using drawings; draw curves and straight lines; and sketch squares, rectangles, triangles, circles and other two-dimensional shapes.

Measurement

Measurement – Length, mass, capacity, and temperature

Level 1: Estimate, measure and record lengths, heights and distances, using the metre; and describe the temperature of an object.

Level 2: Use appropriate units to estimate, measure and record lengths, heights and distances; estimate, measure and record the mass of objects; describe the temperature of an object; compare measurements of length; and compare the temperature of objects using appropriate vocabulary.

Level 3: Use appropriate units to estimate, measure and record lengths, heights and distances; estimate, measure and record the mass and capacity of objects; describe the temperature of an object; compare measurements of length; compare the masses of two or three objects; compare the temperature of objects using appropriate vocabulary; and describe situations in real life where the kilogram is used as a unit of measure.

Level 4: Use appropriate units to estimate, measure and record lengths, heights and distances; estimate, measure and record the mass and capacity of objects; describe the temperature of an object; compare measurements of length; compare the masses of two or three objects; compare the capacity of two or three containers; compare the temperature of objects using appropriate vocabulary; and describe situations in real life where the kilogram is used as a unit of measure.

Measurement – Time

Level 1: Use time vocabulary appropriately; name the days of the week and months of the year; state the number of days in a week and months in a year; state and write the date for the current day; and tell and represent time on the hour.

Level 2: Use time vocabulary appropriately; name the days of the week and months of the year; state the number of days in a week and months in a year; state and write the date for the current day and important events; and tell and represent time on the hour and half hour.

Level 3: Use time vocabulary appropriately; name the days of the week and months of the year; state the number of days in a week and months in a year; state and write the date for the current day and important events; and tell and represent time on the hour, half hour, and quarter hour.

Level 4: Use time vocabulary appropriately; name the days of the week and months of the year; state the number of days in a week and months in a year; state and write the date for the current day and important events; tell and represent time on the hour, half hour, and quarter hour; tell and write the time at which given events occur; and use the abbreviations 'a. m.' and 'p. m.'.

Measurement – Money

Level 1: Describe the coins in circulation; describe the \$5 and \$10 notes; and represent amounts of money up to 50 cents in a variety of combinations.

Level 2: Describe the coins in circulation; describe the \$5, \$10, and \$20 notes; represent amounts of money up to \$1 in a variety of combinations; read the prices of items; find the total cost of a number of items up to a total of 50 cents; and calculate change from amounts up to 50 cents using counting on.

Level 3: Describe the coins in circulation; describe the \$5, \$10, and \$20 notes; represent amounts of money up to \$5 in a variety of combinations; read the prices of items; find the total cost of a number of items up to a total of \$1; and calculate change from \$1 using counting on.

Level 4: Describe the coins in circulation; describe the \$5, \$10, and \$20 notes; represent amounts of money up to \$5 in a variety of combinations; read the prices of items; find the total cost of a number of items up to a total of \$1; calculate change from \$1 using counting on; represent values up to \$20 using \$1 coins and notes in a variety of combinations; and find the total value of a combination of notes and coins up to a value of \$20.

Number Concepts

Number Concepts – Counting

- Level 1:** Count in sequence to 100 and beyond, and count by 2's, 5's, and 10's to 100.
- Level 2:** Count in sequence to 100 and beyond; count by 2's, 5's, 10's, and 20's to 100 and beyond; and count on from a given number.
- Level 3:** Count in sequence to 100 and beyond; count by 2's, 5's, 10's, 20's, and 25's to 100 and beyond; count on from a given number; and complete sequences of numbers that involve skip counting.
- Level 4:** Count in sequence to 100 and beyond; count by 2's, 5's, 10's, 20's, and 25's to 100 and beyond; count on from a given number; complete sequences of numbers that involve skip counting; and describe the patterns that are evident in numbers between 1 and 100 and numbers beyond 100.

Number Concepts – Whole numbers

- Level 1:** Read numbers up to ninety-nine, and write numbers up to ninety-nine in words and numerals.
- Level 2:** Read numbers up to ninety-nine; write numbers up to ninety-nine in words and numerals; state the place value of the digits in any number to ninety-nine; and represent numbers up to ninety-nine using objects and diagrams.
- Level 3:** Read numbers up to ninety-nine; write numbers up to ninety-nine in words and numerals; state the place value of the digits in any number up to ninety-nine; represent numbers up to ninety-nine using objects and diagrams; state the total value of the digits in any number up to ninety-nine; write numbers up to ninety-nine in expanded notation; and compare two numbers (up to ninety-nine) using the symbols '<' and '>'.
- Level 4:** Read numbers up to ninety-nine; write numbers up to ninety-nine in words and numerals; state the place value of the digits in any number up to ninety-nine; represent numbers up to ninety-nine using objects and diagrams; state the total value of the digits in any number up to ninety-nine; write numbers up to ninety-nine in expanded notation; compare two numbers (up to ninety-nine) using the symbols '<' and '>'; and arrange a set of numbers (up to ninety-nine) in order of magnitude.

Number Concepts – Fractions

Level 1: Identify a unit fraction of a whole; represent a unit fraction of a whole; and state/write in words and numerals the unit fraction that corresponds to a given concrete or pictorial representation of a unit fraction.

Level 2: Identify a unit fraction of a whole; represent a unit fraction of a whole; state/write in words and numerals the unit fraction that corresponds to a given concrete or pictorial representation of a unit fraction; and compare unit fractions.

Level 3: Identify a unit fraction of a whole; represent a unit fraction of a whole; state/write in words and numerals the unit fraction that corresponds to a given concrete or pictorial representation of a unit fraction; compare unit fractions; represent a proper fraction of a whole; and state/write in words and numerals the proper fraction that corresponds to a concrete or pictorial representation of a fraction of a whole.

Level 4: Identify a unit fraction of a whole; represent a unit fraction of a whole; state/write in words and numerals the unit fraction that corresponds to a given concrete or pictorial representation of a unit fraction; compare unit fractions; represent a proper fraction of a whole; state/write in words and numerals the proper fraction that corresponds to a concrete or pictorial representation of a fraction of a whole; identify a fraction of a whole; and describe situations that involve fractions of a whole.

Computation

- Level 1:** Recall the basic facts for addition and subtraction; add numbers up to ninety-nine, without regrouping, totals up to 99; carry out subtraction involving numbers up to ninety-nine, without regrouping.
- Level 2:** Recall the basic facts for addition and subtraction; add numbers up to ninety-nine, without and with regrouping, totals up to 99; and carry out subtraction involving numbers up to ninety-nine, without and with regrouping.
- Level 3:** Recall the basic facts for addition and subtraction; add numbers up to ninety-nine, without and with regrouping, totals up to 99; carry out subtraction involving numbers up to ninety-nine, without and with regrouping; explain the procedures for addition and subtraction; use the vocabulary related to multiplication appropriately; calculate the product of two one-digit numbers (products up to 60); and illustrate division as repeated subtraction in a variety of ways.
- Level 4:** Recall the basic facts for addition and subtraction; add numbers up to ninety-nine, without and with regrouping, totals up to 99; carry out subtraction involving numbers up to ninety-nine, without and with regrouping; explain the procedures for addition and subtraction; use the vocabulary related to multiplication appropriately; calculate the product of two one-digit numerals (products up to 60); explain the properties of multiplication; use several strategies to recall the basic facts for multiplication by 2, 3, and 5; illustrate division as repeated subtraction in a variety of ways; write number sentences to represent division; use the vocabulary related to division appropriately; and add two or more unit fractions with totals up to 1.
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RECORD KEEPING

The following is an example of a checklist, which may be used as a means of monitoring a student's progress in attaining the competencies outlined in the criteria. The competencies are related to the area of Measurement. Similar checklists may be prepared for each of the content strands by using the competencies listed in Level 4 to generate the items for the checklist.

For each of the competencies, place a tick (✓) in the column headed 'Yes', if at the time of evaluation the student has acquired the knowledge and/or skills related to the competency. Otherwise, check 'No'.

<i>Student's Name:</i>		
<i>Competencies</i> <i>Measurement of length, mass, capacity and temperature</i>	<i>Yes</i>	<i>No</i>
<p><i>The student can:</i></p> <ol style="list-style-type: none"> 1. Use appropriate units to estimate <ol style="list-style-type: none"> a) Lengths. b) Heights. c) Distances. 2. Use appropriate units to measure <ol style="list-style-type: none"> a) Lengths. b) Heights. c) Distances. 3. Use appropriate notation to record estimates and measurements of <ol style="list-style-type: none"> a) Length. b) Height. c) Distance. 4. Use appropriate units to estimate the mass of objects. 5. Use appropriate units to measure the mass of objects. 6. Use appropriate notation to record estimates and measurements of the mass of objects 		

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| <ol style="list-style-type: none"> 7. Use appropriate units to estimate the capacity of containers. 8. Use appropriate units to measure the capacity of containers. 9. Use appropriate notation to record estimates and measurements of the capacity of containers. 10. Describe the temperature of an object. 11. Compare measurements of length. 12. Compare the masses of two or three objects. 13. Compare the capacity of two or three containers. 14. Compare the temperature of objects using appropriate vocabulary. 15. Describe situations in real life where the kilogram is used as a unit of measure. | | |
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APPENDIX

SCOPE AND SEQUENCE INFORMATION

This section illustrates the scope and sequence of the specific learning outcomes in relation to the general exit outcomes for each strand. The tables identify the grade level at which concepts, skills, and processes related to each of the general exit outcomes are introduced and the grade levels at which they are further developed.

General Outcomes	Grade Levels						
	K	1	2	3	4	5	6
Statistics							
Discuss data collection methods	√	√	√	√	√	√	√
Collect data	√	√	√	√	√	√	√
Present data using pictographs, bar graphs and tables	√	√	√	√	√	√	√
Interpret graphs and tables	√	√	√	√	√	√	√
Discuss relationships among data collection methods		√	√	√	√	√	√
Choose appropriate methods to represent data			√	√	√	√	√
Apply statistics to other aspects of mathematics and other disciplines				√	√	√	√
Geometry							
Investigate attributes of three-dimensional shapes	√	√	√	√	√	√	√
Represent three-dimensional shapes	√	√	√	√	√	√	√
Investigate the attributes of two-dimensional shapes	√	√	√	√	√	√	√
Represent two-dimensional shapes	√	√	√	√	√	√	√
Demonstrate a sense of spatial awareness	√	√	√	√	√	√	√
Appreciate the aesthetic value of geometry	√	√	√	√	√	√	√
Measurement							
Appreciate the importance of measurement in every day life	√	√	√	√	√	√	√
Use correct measurement vocabulary/terminology	√	√	√	√	√	√	√
Identify standard units of measurement and their abbreviations	√	√	√	√	√	√	√
Identify and use measuring instruments	√	√	√	√	√	√	√
Select appropriate units and instrument to measure an object	√	√	√	√	√	√	√
Estimate and measure attributes of an object	√	√	√	√	√	√	√
Describe relationships within each type of measurement		√	√	√	√	√	√
Convert from one unit to another						√	√
Perform basic operations using units of measurement	√	√	√	√	√	√	√

General Outcomes	Grade Levels						
	K	1	2	3	4	5	6
Number Concepts							
Relate number to the world of objects	√	√	√	√	√	√	√
Represent and interpret number in a variety of ways	√	√	√	√	√	√	√
Translate number names to numerals	√	√	√	√	√	√	√
Explain the properties of numbers	√	√	√	√	√	√	√
Explain the relationships that exist among the various types of numbers			√	√	√	√	√
Perform and explain algorithms accurately			√	√	√	√	√
Investigate and explain the various routes to an answer to a problem	√	√	√	√	√	√	√
Determine when it is appropriate to use a calculator, a pencil and paper strategy or a mental strategy to investigate number concepts	√	√	√	√	√	√	√
Computation							
Use the vocabulary associated with the four basic operations	√	√	√	√	√	√	√
Carry out addition, subtraction, multiplication, and division of whole numbers	√	√	√	√	√	√	√
Carry out addition, subtraction, multiplication, and division of fractions		√	√	√	√	√	√
Carry out addition, subtraction, multiplication, and division of decimals					√	√	√
Explain and use the relationships that exist among the four basic operations		√	√	√	√	√	√
Apply computations to real life situations	√	√	√	√	√	√	√
Estimate the results of an operation	√	√	√	√	√	√	√
Determine the reasonableness of the answer obtained on carrying out an operation	√	√	√	√	√	√	√
Determine when it is appropriate to use a calculator, a pencil and paper strategy or a mental strategy to investigate number concepts	√	√	√	√	√	√	√

List of Contributors

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Notes

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