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Definition and Scope of Primary Mathematics

1.1 Primary mathematics is an eight-year program for students at all levels from infant one to standard six.

1.2 Primary mathematics is designed to be scheduled for a minimum of two hundred teaching minutes per week for infant classes and three hundred teaching minutes per week from standard one to standard six.

1.3 Primary mathematics supports the achievement by students of the ninth national goal of education: understanding of number, quantity and space and the application of relevant concepts.

Aim of Primary Mathematics

2.1 Primary mathematics will enable students to apply reasoning, problem solving skills and number fluency as they engage in academic and real world activities.

Philosophical Orientation of Primary Mathematics

3.1 Knowledge of mathematics contributes to national development by supporting improved decision making in science, technology, engineering, medicine, entrepreneurship, financial literacy and other fields of human activity.

3.2 Knowledge of mathematics can help to develop desirable personal traits such as independence and discipline. As students solve problems, explore and record results, analyze observations, make and test generalizations and reach new conclusions, they develop thinking skills that are useful in everyday life and other subject areas.

3.3 All students can learn mathematics but they learn more effectively when they believe they are capable of understanding and doing mathematics and when they view it as useful and worthwhile, both inside and outside the classroom.

3.4 Instruction should promote a positive attitude, encourage students to take intellectual risks, involve frequent authentic problem solving and allow students to learn from each other. The learning environment should create a sense of belonging and provide opportunities for success. A positive learning environment respects, values and is responsive to the diversity of student

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1 This document is for use in the piloting of the revised mathematics curriculum. All schools may volunteer to use this, and the accompanying learning outcomes in the 2019-2020 school year. Schools may also continue using the existing set of learning outcomes published in 2012.
experiences, cultural heritages and ways of thinking. Caring and trusting classroom communities emphasize a strong math focus with high, yet realistic, expectations.

3.5 Students are curious, active learners with individual interests, abilities and needs. They come to classrooms with varying knowledge, life experiences and backgrounds. Effective learning builds on existing proficiencies, interests and previous experiences. A key component in successfully developing numeracy, therefore, is making connections to these backgrounds and experiences. Instruction on a new mathematical concept should usually begin with a discussion of how the concept applies to real world situations that are familiar to the students. As students perform mathematical tasks and develop mathematical ideas using their knowledge of real world situations, the purposes of mathematics will make more sense.

3.6 A variety of developmentally appropriate pedagogical approaches including problem-solving, cooperative learning, thematic discussions, inquiry, field trips and integrated projects should be used. Developmentally appropriate mathematics activities should challenge students to complete active learning tasks, both independently and collaboratively. Students should be provided with experiences that expose them to broad interpretations of key concepts and different perspectives. Teachers should encourage high levels of thinking, including making conjectures and engaging in mathematical argumentation and the testing and validation of concepts. The memorization of procedures without an accompanying understanding of why the procedure works is ineffective because it does not lead to sustainable learning.

3.7 Mathematical understanding is best developed when learners encounter experiences that proceed from the simple to the complex and from the concrete to the abstract. Concepts should be introduced, practiced and developed through the use of pictures and manipulatives.

3.8 Mathematics instruction should predominantly feature the spoken exchange of ideas. Students will learn mathematics more effectively if they are provided with the opportunity to discuss, clarify, probe and share their thinking. This can occur in both whole class and small group settings. Collaborative group work provides emotional and practical support that enhances engagement and facilitates the exchange and testing of ideas.

3.9 Long term success in mathematics depends on the ability to mentally perform routine calculations with fluency and accuracy. These skills, and the accompanying understanding of number concepts and quantities, can be developed through the frequent playing of games that require mental calculations. Fluency and accuracy in the performance of mental calculations should be consolidated through short, individualized, repetition and practice activities such as drills conducted on a daily basis. Whole class chanting and choral response of memorized procedures and tables is less effective and its use should be minimized.
Goals of Primary Mathematics

4.1 By the end of the primary mathematics program, students will:

(i) have constructed mathematical meaning through active engagement;
(ii) have encountered experiences that enable them to confidently apply mathematical concepts in academic and real world situations;
(iii) be able to apply reasoning skills to explore, test, and evaluate mathematical concepts;
(iv) be able to draw conclusions based on the collection, recording and analysis of real world data.
(v) be able to communicate information using appropriate mathematical language;
(vi) appreciate the value of and feel confident about mathematics;
(vii) have the capacity to use technology effectively for mathematical purposes.

Principles of Assessment for Primary Mathematics

5.1 Assessment should reflect how students learn mathematics.

5.2 Assessment should align with the concepts and skills described in the learning outcomes. Teachers should evaluate the extent to which students have attained the skills and competencies described in the relevant learning outcomes at the end of each unit and grade level.

5.3 Information from both summative and formative assessments should be used to monitor and report on student learning. Results from assessments should be used to diagnose learning issues and determine what students need to do next. Assessments that focus on evaluating students’ understanding of processes, as opposed to the production of results, should be regarded as valid and reliable. For example, the use of observational checklists provides insights into student learning and growth as they demonstrate the steps required to solve problems.

5.4 Assessments should help develop students’ confidence. Although expectations of student achievement should be high yet realistic, assessments that elevate mathematical anxiety should be avoided.

5.5 Assessments should focus on understanding of fundamental mathematical concepts rather than the replication of memorized procedures. This can often be achieved through the use of word problems that require students to apply skills and concepts in a range of situations drawn from the real world.

5.6 Assessments should usually require students to clearly explain the process by which they arrived at an answer. Credit should be given for the demonstration of steps taken.

5.7 Assessment of the language and symbols of mathematics should be a routine part of students’ experiences.

5.8 A range of formal and informal assessment techniques are required for the thorough evaluation of mathematical competence. Assessments that use alternatives to pen and paper should be a frequent part of students’ experience of mathematics. Teachers can use observational checklists to evaluate and assign a grade to students’ use of mathematical processes.
Content Overview

Statutory Requirements

Content is categorized, defined and described using a system of strands, content standards and learning outcomes. Strands organize content into a set of related topics. The strands are the same at all levels of the curriculum. Each strand is supported by several content standards. These describe the concepts and skills for a particular topic that students are expected to have attained by the end of primary school. Each content standard has a title and accompanying description. Content standards are subdivided into grade level learning outcomes. Each learning outcome describes concepts and skills the students are expected to acquire by the end of the specified grade level. Learning outcomes indicate for teachers the scope and instructional sequence of curriculum content.

Curriculum Strands

Primary mathematics is organized into three strands as follows:

<table>
<thead>
<tr>
<th>Strand Title</th>
<th>Strand Description</th>
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</thead>
<tbody>
<tr>
<td>1 Numbers and Number Operations</td>
<td>Numbers and Number Operations develops sense of number, comprehension of numbers and operations and ability to accurately and fluently perform written and mental calculations. Students count in various ways and compare numbers and quantities. They recognize, represent, read, write, compose and decompose numbers in order to solve problems using numerical relations. Students develop the conceptual knowledge underlying the four arithmetic operations of addition, subtraction, multiplication, and division and use these operations to solve real life problems using whole numbers, fractions and decimals.</td>
</tr>
<tr>
<td>2 Spatial Relationships and Shapes</td>
<td>Spatial Relationships and Shapes develops the concepts of traditional geometry, including the ability to construct, recognize, visualize, represent and transform two-dimensional shapes and three-dimensional objects. The quantitative properties of shapes and objects are measured and explored using both the customary and metric systems. Skills associated with identifying, describing, communicating, measuring and calculating time and intervals of time are developed.</td>
</tr>
<tr>
<td>3 Data Handling</td>
<td>Data handling includes the concepts of collecting, representing and analysing a range of data types from real life contexts in order to solve a particular problem or question. It allows students to make sense of information and to identify patterns and trends. Concepts of chance and probability and the ability to use and communicate real world statistical information are developed.</td>
</tr>
</tbody>
</table>
Content Standards for Primary Mathematics

Content Standards for Numbers and Number Operations

<table>
<thead>
<tr>
<th>No.</th>
<th>Content Standard Title</th>
<th>Content Standard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Numbers</td>
<td>By the end of primary school, students are expected to be able to: Describe quantities in real world situations using positive and negative numbers, the place-value system, fractions, and decimal numbers in practical contexts.</td>
</tr>
<tr>
<td>2</td>
<td>Patterns</td>
<td>Apply knowledge of repeating, increasing, decreasing and alternating numerical, graphical and other patterns.</td>
</tr>
<tr>
<td>3</td>
<td>Addition and Subtraction</td>
<td>Solve problems by adding and subtracting multi-digit positive and negative numbers with and without decimals.</td>
</tr>
<tr>
<td>4</td>
<td>Multiplication and Division</td>
<td>Solve problems by multiplying and dividing multi-digit positive and negative numbers with and without decimals.</td>
</tr>
<tr>
<td>5</td>
<td>Fractions and Decimals</td>
<td>Solve problems by identifying, comparing, sequencing, adding, subtracting, multiplying and dividing fractions and decimals.</td>
</tr>
<tr>
<td>6</td>
<td>Algebra</td>
<td>Solve problem by representing and recording algebraic patterns, structures and rules in a variety of ways.</td>
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</table>

Content Standards for Spatial Relationships and Shapes

<table>
<thead>
<tr>
<th>No.</th>
<th>Content Standard Title</th>
<th>Content Standard Description</th>
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</thead>
<tbody>
<tr>
<td>7</td>
<td>Geometry</td>
<td>By the end of primary school, students are expected to be able to: Recognize, draw, construct, and identify the attributes of and relationships between a range of two-dimensional shapes and three-dimensional objects.</td>
</tr>
<tr>
<td>8</td>
<td>Measurement</td>
<td>Describe, estimate, measure and solve problems in relation to distance, mass, weight, capacity, volume, area and time in real-life situations using both the customary and metric systems.</td>
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</tbody>
</table>
Content Standards for Data Handling

<table>
<thead>
<tr>
<th>No.</th>
<th>Content Standard Title</th>
<th>Content Standard Description</th>
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</thead>
<tbody>
<tr>
<td>9</td>
<td>Coordinate Graphs</td>
<td>Plot points, represent shapes and interpret data using all four quadrants of a coordinate graph.</td>
</tr>
<tr>
<td>10</td>
<td>Sets</td>
<td>Categorize items into groups based on their attributes to make comparisons and communicate information about real world situations.</td>
</tr>
<tr>
<td>11</td>
<td>Data</td>
<td>Collect, record, interpret and communicate data from real world contexts.</td>
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</tbody>
</table>

Learning Outcomes for Primary Mathematics

Learning outcomes describe concepts and skills the students are expected to acquire by the end of the specified grade level. Learning outcomes indicate for teachers the scope and instructional sequence of curriculum content.

On the following pages, the learning outcomes are presented in two ways.

1. A listing of all learning outcomes for lower division in the order of their strand and content standard.

2. An annual planning framework that clusters the learning outcomes into twelve groupings for unit planning. There are four of these “units” per term and each one is expected to require either two or three weeks to deliver.

The annual planning framework presents the learning outcomes in a recommended instructional sequence. Teachers may vary the order of the units and they may vary the order in which the learning outcomes in each unit are presented. Moving learning outcomes from one unit to another is not recommended.

Relevant learning outcomes should be cited on all instructional plans. Instructional materials, strategies and assessment should align with the stated learning outcome.
National Curriculum for Primary Schools
Lower Division Learning Outcomes for Mathematics
Listed by Strand and Content Standard

01 Numbers

Describe quantities in real world situations using positive and negative numbers, the place-value system, fractions, and decimal numbers in practical contexts.

Infant 1

1.1 Count groups of objects up to 10, using the counting principles of stable order, one-to-one correspondence and cardinality.

1.2 Demonstrate different ways of counting through oral exercises such as playing games, singing songs, and saying rhymes.

1.3 Match groups of up to ten objects to written numerical symbols.

1.4 Count groups of objects up to 10, using the counting principles of abstraction and order irrelevance.

1.5 State how many objects are in a group of up to 10 objects at a glance without having to count them one by one.

1.6 Identify an individual number, a sequence of numbers and the number before, after or between given numbers on a number line.

1.7 Recite the numbers 1 to 30 in sequence with fluency and accuracy.

1.8 Compare numbers from 0 to 10 using the less than, greater than and equals signs.

1.9 Write the numeric symbols for numbers from 0 to 10.

1.10 Compose and decompose numbers from 1 - 10, grouping items into given numbers with no remainder.

1.11 Identify the position of an item in a group using ordinal numbers from first to tenth.

Infant 2

1.12 Count up to 100 using a number chart.

1.13 Count groups of up to one hundred objects using the five counting principles of stable order, one-to-one correspondence, cardinality, abstraction and order irrelevance.

1.14 Match number names and numeric symbols for numbers from 0 to 100 both orally and in writing.

1.15 Apply the concept of zero to real-life situations.

1.16 Identify the position of an item in a group using ordinal numbers from first to one hundredth.

1.17 Compose 2-digit numbers from groups of tens and ones.

1.18 Decompose 2-digit numbers into groups of tens and ones.

1.19 Sequence a set of numbers between 0 and 100, in ascending or descending order, using a number line.

1.20 Identify the number that is ten more or ten less than a given number using a place value chart.

1.21 Sequence a set of non-consecutive numbers between 0 and 100 using a place value chart.
1.22 Compare numbers from 0 to 100 using the less than, greater than and equals signs.

**Standard 1**
1.23 Apply the concept of thousands to real life situations.
1.24 Read, write and match numbers up to 1000 using numerical symbols and words.
1.25 Draw a segment of a number line to show a selection of positive numbers up to 1000.
1.26 Explain that each column of a place value chart is ten times more or less than the neighbouring column for numbers between 0 and 999.
1.27 Compare numbers up to 1000 using the symbols for equals (=), less than (<) and greater than (>).
1.28 State, read and write numbers in expanded form, up to 1000.

**02 Patterns**

*Apply knowledge of repeating, increasing, decreasing and alternating numerical, graphical and other patterns.*

**Infant 1**
2.1 Find examples of patterns in the classroom, school and wider environment.
2.2 Sort objects and shapes based on their colour, size, number of sides or another attribute.
2.3 Create patterns using objects, actions, shapes, colours, sounds or numbers.
2.4 Group 10 or fewer objects into sets of 2's, 3's, 4's and 5's without remainders.
2.5 Count up to 10 objects by 1s and 2s, forwards and backwards.

**Infant 2**
2.6 Identify patterns in pictures and artistic designs.
2.7 Create repeating patterns using actions, objects, shapes, letters, colours, sounds, and numbers.
2.8 Distinguish between odd and even numbers.
2.9 Estimate to the closest benchmark number, for example, 5, 10, 25 or 50 before counting a set of objects to find the exact amount.

**Standard 1**
2.10 Sequence non-consecutive positive numbers between 0 and 1000 in ascending and descending order, using the number line.
2.11 Identify the next, or a missing, object, action, shape, colour, sound or number in a series.
2.12 Create increasing, decreasing and alternating patterns using objects, actions, shapes, colours, sounds or numbers.
2.13 Describe increasing, decreasing and alternating number patterns and patterns of real objects, actions, sounds, colours and shapes.
2.14 Count forward and backward by 2's, 5's, 10's and 100's from any given starting number between 0 and 1000.
Addition and Subtraction

Solve problems by adding and subtracting multi-digit positive and negative numbers with and without decimals.

Infant 1
3.1 Add sets of up to ten objects including with the use of zero when adding.
3.2 Solve problems involving addition of up to 10 objects, using real life situations.
3.3 Subtract objects, including zero objects, from a set of up to ten.
3.4 Solve problems involving subtraction of up to 10 objects, using real life situations.
3.5 Add and subtract sets of up to ten objects with and without the use of concrete objects.
3.6 Combine, rearrange and separate objects to show addition and subtraction, including with the use of +, - symbols.

Infant 2
3.7 Add a single digit number to a 2 digit number that ends in a zero.
3.8 Add a single digit number to any 2-digit number with the answer not exceeding 99.
3.9 Add, mentally, without the use of manipulatives, multiples of 10, with the sum not exceeding 100.
3.10 Subtract a single digit number from a 2-digit number without the need to borrow.
3.11 Add any two 2-digit numbers together with the answer not exceeding 100, vertically and horizontally with or without the use of a place value chart.
3.12 Subtract a single or 2 digit number from a 2-digit number, vertically and horizontally, without the need to borrow, with or without the use of a place value chart.
3.13 Complete number sentences with sums or differences up to 100 using the symbols +, -, =
3.14 Explore the additive identity property, that is if you add a number to 0, then the sum is the same number.

Standard 1
3.15 Add 2 digit numbers without regrouping using unit columns.
3.16 Subtract 2 digit numbers without regrouping using unit columns.
3.17 Add 2 digit numbers with regrouping using manipulatives such as base ten blocks or lego.
3.18 Subtract 2 digit numbers with regrouping using manipulatives such as base ten blocks or lego.
3.19 Add three 2-digit numbers with and without regrouping in unit columns.
3.20 Show the relationship between addition and subtraction.
3.21 Add two 3 digit numbers without regrouping using unit columns.
3.22 Subtract two 3 digit numbers without regrouping using unit columns.
3.23 Add two 3-digit numbers with regrouping using manipulatives such as base ten blocks.
3.24 Subtract two 3-digit numbers with regrouping using manipulatives such as base ten blocks.
Solve problems by multiplying and dividing multi-digit positive and negative numbers with and without decimals.

Infant 1

There are no learning outcomes for Multiplication and Division for infant one students.

Infant 2

4.1 Place up to 50 objects into groups of equal size.
4.2 Divide groups into equal parts using real objects or pictures.
4.3 Investigate that multiplication is the same as repeated addition.
4.4 Multiply two single digit numbers together using manipulatives arranged in groups, multiplication arrays and so on.

Standard 1

4.5 Multiply, mentally, single digit numbers by 2, 3, 4, 5, and 10 with automaticity.
4.6 Explore the multiplicative identity of a number, that is if you multiply a number by 1, the product is that original number.
4.7 Round-off to the nearest ten to estimate when multiplying.
4.8 Multiply a 2-digit number by a single digit number.
4.9 Represent multiplication problems both horizontally and vertically.
4.10 Read and write multiplication number sentences that include the symbols x and =.
4.11 Multiply numbers by using a 12 by 12 chart.
4.12 Investigate that division is the same as repeated subtraction.
4.13 Divide single and 2-digit numbers by 2, 3, 4, 5, 10, without remainders.
4.14 Read and write division number sentences that include the symbols ÷ and =.
4.15 Show the relationship between multiplication and division.
4.16 Solve word problems with real life applications using multiplication and division.
Fractions and Decimals

Solve problems by identifying, comparing, sequencing, adding, subtracting, multiplying and dividing fractions and decimals.

Infant 1

5.1 Explain that a whole object can be divided into parts of equal and different sizes.
5.2 Describe fractions in everyday situations by using language such as ‘1 out of 2’.
5.3 Compose and decompose a region, shape or set of objects using halves and quarters, recognizing that the fractional parts are equal.
5.4 Match pictures of halves and quarters and objects in parts with the symbols ½ and ¼.

Infant 2

5.5 Compose and decompose a region, shape or set of objects using halves, thirds, quarters, and fifths.
5.6 Match pictures of fractional parts with the symbols ½, ⅓, ¼, and ⅕.

Standard 1

5.7 Describe parts of a whole or of a set using fractions with numerators other than one, such as, 2/3, 3/4, 2/5, 5/6, 4/10.
5.8 Compare and sequence fractions with like denominators with the aid of pictures, the number line, fraction strips or other manipulatives.
5.9 Add two or more proper fractions with like denominators.
5.10 Convert fractions with tenths to decimals for example 3/10 is the same as 0.3
5.11 Add and subtract numbers with one decimal place.
5.12 State, read and write decimals to one decimal place.

Algebra

Solve problem by representing and recording algebraic patterns, structures and rules in a variety of ways.

Infant 1

There are no learning outcomes for Algebra for infant one students.

Infant 2

There are no learning outcomes for Algebra for infant two students.

Standard 1

There are no learning outcomes for Algebra for standard one students.
Recognize, draw, construct, and identify the attributes of and relationships between a range of two dimensional shapes and three dimensional objects.

Infant 1

7.1 Find examples of points, lines, squares, circles, rectangles and triangles in the classroom, school and wider environment.
7.2 Explore common shapes through play and the use of manipulatives.
7.3 Describe the properties of triangles, squares and rectangles in terms of the number of sides and corners.
7.4 Construct 2-D shapes using straws, sticks, clay, building blocks and other materials.
7.5 Identify rays, angles and planes in the classroom, school and wider environment.
7.6 Find examples of 3-D objects such as spheres, cubes, cylinders and cones in the classroom, school and wider environment.
7.7 Construct 3-D shapes and objects using straws, sticks, clay, building blocks and other materials.

Infant 2

7.8 Draw lines, rays and angles.
7.9 Differentiate between horizontal, vertical and diagonal lines.
7.10 Identify the similarities and differences between triangles, squares, rectangles and circles.
7.11 Create by drawing or modelling 2-D shapes with a specified number of sides.
7.12 Create models of 3-D shapes and objects with specified properties, such as number of faces.
7.13 Compare 2-D shapes according to specific properties including length of sides, number of vertices and the approximate size of their internal angles.
7.14 Investigate the similarities and differences between symmetrical shapes.

Standard 1

7.15 Describe horizontal, vertical, diagonal, intersecting, parallel and perpendicular lines.
7.16 Draw common shapes with specified lengths of sides using a ruler.
7.17 Investigate how the perimeter of common shapes such as triangles, squares and rectangles is calculated.
7.18 Create compound shapes using manipulatives such as pattern blocks, sticks, straws, string or other materials.
7.19 Describe 3-D figures such as cones, cylinders, cubes, cuboids and pyramids.
Describe, estimate, measure and solve problems in relation to distance, mass, weight, capacity, volume, area and time in real-life situations using both the customary and metric systems.

Infant 1

8.1 Compare the length, height, weight, temperature and capacity of two objects using words such as longer, taller, shorter, lighter, heavier, colder, hotter, more full or emptier.

8.2 Investigate the length of objects found in the classroom or wider environment, in non-standard units of measurement, such as finger lengths, pieces of string or lengths of a pencil.

8.3 Describe the position of two objects relative to each other in terms of distance and direction using phrases such as near to, far from, very far from, to the right of, below, above and so on.

8.4 Describe the passage of time using terms such as minute, hour, day, week, month and year.

8.5 Correctly sequence the days of the week and months of the year using ordinal numbers.

8.6 Identify the current dates and days of the month on a calendar or weather chart using ordinal numbers.

8.7 Tell time to the hour using an analogue clock.

Infant 2

8.8 Investigate the perimeter and area of 2-D shapes using non-standard measures.

8.9 Measure the length of lines, perimeter of shapes and real objects found in the environment using the customary units of feet and inches.

8.10 Investigate the volume of 3-D shapes using non-standard units of measurement.

8.11 Measure volume of containers using the customary units of cups and pints.

8.12 Measure the weight of objects using the customary units of pounds and ounces.

8.13 Compare the use of non-standard units to the use of customary units of measurement.

8.14 Identify time as half hour, quarter hour to or past the hour using an analogue clock.

8.15 Apply the terms a.m. and p.m. to time

8.16 Explore the relationship between seconds, minutes, hours, days, weeks and a year.

8.17 Identify how many seconds have passed using the second hand of an analogue clock.

8.18 Identify the time to the nearest minute using both analogue and digital clocks.

Standard 1

8.19 Measure, compare and record the length of lines, distances and the size of objects using the customary units of inches, feet and yards.

8.20 Measure, compare and record the weight of various objects in the customary units of pounds and ounces.

8.21 Measure, compare and record the capacity of a container using the customary units of cups, pints, quarts and gallons.

8.22 Estimate the length, weight and capacity of objects before accurately measuring them.
8.23 Convert among units within the customary system of length, weight and capacity.
8.24 Convert a length of time between minutes and seconds.
8.25 Identify the temperature of the environment, in either degrees Celsius or Fahrenheit, by using a thermometer with a scale.

### Coordinate Graphs

Plot points, represent shapes and interpret data using all four quadrants of a coordinate graph.

**Infant 1**

There are no learning outcomes for Coordinate Graphs for infant one students.

**Infant 2**

There are no learning outcomes for Coordinate Graphs for infant two students.

**Standard 1**

There are no learning outcomes for Coordinate Graphs for standard one students.

### Sets

Categorize items into groups based on their attributes to make comparisons and communicate information about real world situations.

**Infant 1**

There are no learning outcomes for Sets for infant one students.

**Infant 2**

There are no learning outcomes for Sets for infant two students.

**Standard 1**

There are no learning outcomes for Sets for standard one students.
Collect, record, interpret and communicate data from real life contexts.

Infant 1

11.1 Gather data from environment through observation, counting, sorting and grouping of items such as objects and pictures.
11.2 Organize and display data using concrete materials in tally charts and on pictorial representations.
11.3 Interpret information presented in pictographs using a variety of data sets.

Infant 2

11.4 Gather data from picture and written sources and the environment through observation.
11.5 Organize and display data using concrete materials in tally charts and column representations.
11.6 Interpret information presented in simple column graphs using a variety of data sets
11.7 Make predictions using graphs.

Standard 1

11.8 Collect data in real life situations.
11.9 Represent data contained in a tally chart or frequency table using pictographs and bar graphs.
11.10 Analyse a tally chart of real life events that are based on chance.
11.11 Discuss situations that involve chance such as certain, impossible or equally likely events.
11.12 Investigate probability using tables and graphs.
Annual and Unit Planning
Learning Outcome Clusters
and
Teachers’ Toolkit

INFANT ONE
Infant 1

There are no learning outcomes for Coordinate Graphs for infant one students.

There are no learning outcomes for Algebra for infant one students.

There are no learning outcomes for Multiplication and Division for infant one students

There are no learning outcomes for Sets for infant one students

Numbers A

1.1 Count groups of objects up to 10, using the counting principles of stable order, one-to-one correspondence and cardinality.

1.2 Demonstrate different ways of counting through oral exercises such as playing games, singing songs, and saying rhymes.

1.3 Match groups of up to ten objects to written numerical symbols.

Numbers B

1.4 Count groups of objects up to 10, using the counting principles of abstraction and order irrelevance.

1.5 State how many objects are in a group of up to 10 objects at a glance without having to count them one by one.

1.6 Identify an individual number, a sequence of numbers and the number before, after or between given numbers on a number line.

1.7 Recite the numbers 1 to 30 in sequence with fluency and accuracy.

Numbers C

1.8 Compare numbers from 0 to 10 using the less than, greater than and equals signs.

1.9 Write the numeric symbols for numbers from 0 to 10.

1.10 Compose and decompose numbers from 1 - 10, grouping items into given numbers with no remainder.

1.11 Identify the position of an item in a group using ordinal numbers from first to tenth.

Geometry A

7.1 Find examples of points, lines, squares, circles, rectangles and triangles in the classroom, school and wider environment.

7.2 Explore common shapes through play and the use of manipulatives.

7.3 Describe the properties of triangles, squares and rectangles in terms of the number of sides and corners.

7.4 Construct 2-D shapes using straws, sticks, clay, building blocks and other materials.

Patterns

2.1 Find examples of patterns in the classroom, school and wider environment.

2.2 Sort objects and shapes based on their colour, size, number of sides or another attribute.

2.3 Create patterns using objects, actions, shapes, colours, sounds or numbers.

2.4 Group 10 or fewer objects into sets of 2's, 3's, 4's and 5's without remainders.

2.5 Count up to 10 objects by 1s and 2s, forwards and backwards.
Measurement A

8.1 Compare the length, height, weight, temperature and capacity of two objects using words such as longer, taller, shorter, lighter, heavier, colder, hotter, more full or emptier.

8.2 Investigate the length of objects found in the classroom or wider environment, in non-standard units of measurement, such as finger lengths, pieces of string or lengths of a pencil.

8.3 Describe the position of two objects relative to each other in terms of distance and direction using phrases such as near to, far from, very far from, to the right of, below, above and so on.

Measurement B - Time

8.4 Describe the passage of time using terms such as minute, hour, day, week, month and year.

8.5 Correctly sequence the days of the week and months of the year using ordinal numbers.

8.6 Identify the current dates and days of the month on a calendar or weather chart using ordinal numbers.

8.7 Tell time to the hour using an analogue clock.

Addition and Subtraction A

3.1 Add sets of up to ten objects including with the use of zero when adding.

3.2 Solve problems involving addition of up to 10 objects, using real life situations.

Fractions and Decimals

5.1 Explain that a whole object can be divided into parts of equal and different sizes.

5.2 Describe fractions in everyday situations by using language such as ‘1 out of 2’.

5.3 Compose and decompose a region, shape or set of objects using halves and quarters, recognizing that the fractional parts are equal.

5.4 Match pictures of halves and quarters and objects in parts with the symbols ½ and ¼.

Geometry B

7.5 Identify rays, angles and planes in the classroom, school and wider environment.

7.6 Find examples of 3-D objects such as spheres, cubes, cylinders and cones in the classroom, school and wider environment.

7.7 Construct 3-D shapes and objects using straws, sticks, clay, building blocks and other materials.

Addition and Subtraction B

3.3 Subtract objects, including zero objects, from a set of up to ten.

3.4 Solve problems involving subtraction of up to 10 objects, using real life situations.

3.5 Add and subtract sets of up to ten objects with and without the use of concrete objects.

3.6 Combine, rearrange and separate objects to show addition and subtraction, including with the use of +, - symbols.

Data

11.1 Gather data from environment through observation, counting, sorting and grouping of items such as objects and pictures.

11.2 Organize and display data using concrete materials in tally charts and on pictorial representations.

11.3 Interpret information presented in pictographs using a variety of data sets.
**1.1 Count groups of objects up to ten, using the counting principles of stable order, one-to-one correspondence and cardinality.**

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The counting principles are taught orally. It is not necessary to introduce writing at this stage. Objects can be organized without numbers at first. These can be added later.</td>
<td></td>
</tr>
<tr>
<td>There are five counting principles. The first three, stable order, one-to-one correspondence and cardinality are usually taught first. They show how we count. These are important skills for students to master before they can carry out meaningful counting and higher calculations.</td>
<td></td>
</tr>
<tr>
<td>Using items of high interest to the students such as taps on a drum, toys, pages in a book and so on can maintain their attention and interest.</td>
<td></td>
</tr>
<tr>
<td><strong>Stable Order:</strong> - We count using a series of number names (one, two three and so on) and the order of these numbers names always stays the same when we count.</td>
<td></td>
</tr>
<tr>
<td>Count the chicks out loud</td>
<td></td>
</tr>
<tr>
<td>One-to-one correspondence – Each object is counted once and only once.</td>
<td></td>
</tr>
<tr>
<td>Students can:</td>
<td></td>
</tr>
<tr>
<td>• touch each item as they count it;</td>
<td></td>
</tr>
<tr>
<td>• tag or move items out of the way while counting;</td>
<td></td>
</tr>
<tr>
<td>• create marks on a paper as they count.</td>
<td></td>
</tr>
<tr>
<td><strong>Cardinality</strong></td>
<td></td>
</tr>
<tr>
<td>The last number counted represents the total number of items in a group.</td>
<td></td>
</tr>
<tr>
<td>Encourage students to show you a group of items to match a specific number.</td>
<td></td>
</tr>
<tr>
<td>Ask students to count a group of items in a set. Then, explicitly ask them to show you how many objects in that group represent that amount.</td>
<td></td>
</tr>
</tbody>
</table>

**1.2 Demonstrate different ways of counting through oral exercises such as playing games, singing songs, and saying rhymes.**

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Songs and rhymes reinforce counting principles:</td>
<td></td>
</tr>
<tr>
<td>One, two, buckle my shoe....</td>
<td></td>
</tr>
<tr>
<td>Five little ducklings went swimming that day . . .</td>
<td></td>
</tr>
<tr>
<td>There are 10 green bottles hanging on the wall...</td>
<td></td>
</tr>
<tr>
<td>Games such as snakes and ladders, skipping and simple card games also encourage counting.</td>
<td></td>
</tr>
<tr>
<td>Adding songs to lessons helps to reinforce concepts and skills, while allowing students to have fun. The repetition and rhythm in songs and rhymes help students to grasp concepts better.</td>
<td></td>
</tr>
</tbody>
</table>
### 1.3 Match groups of up to ten objects to written numerical symbols.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th>NUMBERS A</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.3</strong> Match groups of up to ten objects to written numerical symbols.</td>
<td></td>
</tr>
<tr>
<td>Match the number with the group having the same number of objects.</td>
<td>An understanding of quantity is necessary if matching objects to symbols is to have value for the students.</td>
</tr>
</tbody>
</table>

### 1.4 Count groups of objects up to ten, using the counting principles of abstraction and order irrelevance.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th>NUMBERS B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.4</strong> Count groups of objects up to ten, using the counting principles of abstraction and order irrelevance.</td>
<td></td>
</tr>
<tr>
<td>Abstraction and order irrelevance are closely linked and are usually developed at the same time. <strong>Abstraction:</strong> - How we count stays the same no matter what is being counted. For example, the quantity of five large things is the same count as the quantity of five small things or a mixed group of five small and large things. Students may be asked to count five pencils, then count five erasers- the quantity doesn’t change, because the objects changed. You do not have to be able to touch an object to count it. Things that are non-tangible, such as sounds and dreams can be counted. Repeated actions, such as steps taken to reach somewhere can also be counted. Students understand abstraction if they count sets of different types of objects of the same amount as they same quantity.</td>
<td><strong>Order Irrelevance:</strong> The order in which items are counted does not change the quantity. The counting of objects can begin with any object in a set and the total will stay the same. Activities include: - counting a row of objects from left to right, then from right to left to see if the amount is the same. - counting sets of unique items (different colour, shape, etc.) in a variety of orders.</td>
</tr>
</tbody>
</table>
### 1.5 State how many objects are in a group of up to ten objects at a glance without having to count them one by one.

**Content Examples & Teaching Points**

Students need to practice immediately knowing or seeing how many there are in a small amount of objects without counting. This practice should begin with 5 or fewer objects until, for example, they know there are 3 candies on a table without counting them.

Flash cards that have small quantities of symbols arranged in different ways can be used for reinforcement and practice.

This skill can be effectively taught through games that involve dice, dominoes or cards.

Knowing a dice shows 5 without counting the dots.

Knowing a domino shows 4 without counting the dots.

### 1.6 Identify an individual number, a sequence of numbers and the number before, after or between given numbers on a number line.

**Content Examples & Teaching Points**

On the number line below, the number 7 comes before the number 8.

Knowing the location of things is important in math. Students will need to answer questions about position and use their spatial reasoning skills.

### 1.7 Recite the numbers 1 to 30 in sequence with fluency and accuracy.

**Content Examples & Teaching Points**

Students participate in automatic (rote) counting by reciting numbers from memory. A lot of repetition and a variety of hands-on approaches is required to effectively teach this skill.

Teachers should model orally counting aloud the numbers from one to thirty.

Activities may include tossing a ball from person to person while counting, clapping while reciting numbers, singing songs that include rote number series or counting blocks.

Whole class chanting should be minimized in favour of individual and small group recitation.
### 1.8 Compare numbers from 0 to 10 using the less than, greater than and equals signs.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>If James has 5 apples and Suzy has 8 apples, who has more apples?</td>
</tr>
<tr>
<td>The picture below shows that Suzy has more apples.</td>
</tr>
<tr>
<td>James [Image] Suzy [Image]</td>
</tr>
<tr>
<td>Using the symbols:</td>
</tr>
<tr>
<td>8 &gt; 5 (8 is greater than 5)</td>
</tr>
<tr>
<td>5 &lt; 8 (5 is less than 8)</td>
</tr>
<tr>
<td>5 = 5 (5 equals 5 or 5 is the same as 5)</td>
</tr>
</tbody>
</table>

When we don't have a picture to look at, we have to use just the numbers. Here are two ways to compare numbers:

- By counting on, when the number you get to first is smaller. 5 comes before 8 so 5 is smaller than 8.
- By using a number line when the greater, or higher, number is always further along the line.

### 1.9 Write the numeric symbols for numbers from 0 to 10.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>The numeric symbols are:</td>
</tr>
<tr>
<td>0, 1, 2, 3, 4, 5, 6, 7, 8, 9.</td>
</tr>
<tr>
<td>This does not require students to read the written word (one, two, etc) but to match and then write the symbol to a number stated orally.</td>
</tr>
<tr>
<td>[four] [Image] [4] [Image]</td>
</tr>
</tbody>
</table>

Learning to write numbers involves different techniques:

- Writing numbers in the air with a finger.
- Writing numbers in sand, sugar or salt using fingers or a paintbrush.
- Tracing numbers.
- Using rhymes that describe how the symbol is formed, for example, “making a straight line is fun, and now you have one.”

Progress in other areas of math should not be delayed as students learn to write.
### 1.10 Compose and decompose numbers from 1 - 10, grouping items into given numbers with no remainder.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>When a number is made up of putting together other existing numbers, we are <strong>composing</strong>. For example, a group of 2 objects can be joined to a group of 4 objects to get a group of 6 objects.</td>
</tr>
<tr>
<td><strong>Decomposing</strong> is when we break the number apart. For example, a group of 5 objects can be split into a group of 3 objects and a group of 2 objects.</td>
</tr>
<tr>
<td>Composing and decomposing numbers helps students when they move on to adding and subtracting. Dominoes can be a useful manipulative. The number pairs that total ten are foundational for students’ ability to work fluently within base-ten numbers and operations. Different models, such as ten-frames, cubes, two-color counters, etc., assist students in visualizing these number pairs for ten.</td>
</tr>
<tr>
<td>Starting with the whole, students break numbers into parts and explore how many different ways a number can be partitioned.</td>
</tr>
</tbody>
</table>

### 1.11 Identify the position of an item in a group using ordinal numbers from first to tenth.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>These students are waiting in a line to go into their classroom. Name the person in the 4th position.</td>
</tr>
<tr>
<td>Talk with students about the positions of each item by saying for example “The dog is first and the cat is second.” Begin with just a few words or images on the board and work your way up to give students practice using the first ten ordinal numbers. Introduce the word ‘last’ as well since this is a position related vocabulary word.</td>
</tr>
<tr>
<td>By simply talking about consistent, sequential daily activities, you are teaching ordinal numbers. For example, when I wake up in the morning, first I brush my teeth. The second thing I do is eat breakfast.</td>
</tr>
<tr>
<td>Ordinal numbers can also be taught to students when following Recipes. For example, “First, pour in the pudding mix. Second, pour in 2 cups of milk. Third, stir it all together.”</td>
</tr>
</tbody>
</table>
### 7.1 Find examples of points, lines, squares, circles, rectangles and triangles in the classroom, school and wider environment.

**Content Examples & Teaching Points**

In the classroom, the edges of objects and shelves form lines. Squares and rectangles are visible as doors, windows, table tops, books and so on. The tops of cups and glasses form circles. In a park, a slide might form a triangle with the ground.

Before discussing shapes, begin at the basics by identifying what is a point and a line for students. Build on this to show students that a line begins at a point and basic shapes are created using lines that join at a point.

A strong understanding of shapes can help students better recognize the numbers and how they look. Learning the differences in shapes requires students to focus on the specific characteristics, use observational skills to identify the different shapes, know how to compare different shapes and group similar shapes together.

### 7.2 Explore common shapes through play and the use of manipulatives.

**Content Examples & Teaching Points**

Students may explore common shapes through play with geoboards, play dough, sand or other manipulatives. They can also hunt for shapes in pictures.

Manipulative play in the early stages is about learning to use your hands. Fine motor skills develop through a number of different stages from sensory awareness to in-hand manipulation and tool-use.

### 7.3 Describe the properties of triangles, squares and rectangles in terms of the number of sides and corners.

**Content Examples & Teaching Points**

Through discussion and questioning, teachers may elicit from students the different properties of shapes.

For example, how many sides does this shape have?

- [ ] I have 4 sides. I have 4 corners. I am a square.
- [ ] I have 4 sides-2 long and 2 short. I have 4 corners. I am a rectangle.
- [ ] I have 3 sides. I have 3 corners. I am a triangle.

Recognizing and naming 2D shapes in different orientations and being able to differentiate between them is important.

2D shapes are actually flat and so cannot be handled or picked up.
### 7.4 Construct 2-D shapes using straws, sticks, clay, building blocks and other materials.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students may be given hands-on activities to create 2D shapes using various manipulatives, after discussion about the properties of the shapes and looking at specific examples of them.</td>
</tr>
<tr>
<td>Encourage students to develop strategies for accurate counting of sides, such as by marking each side as it has been counted. Not all same-sided shapes look the same, such as with irregular 2D shapes.</td>
</tr>
</tbody>
</table>
### 2.1 Find examples of patterns in the classroom, school and wider environment.

#### Content Examples & Teaching Points

Many classrooms and homes have floor coverings that have repeating patterns. They also occur in curtains, table cloths, clothing and on the covers of some exercise books.

The colours of traffic lights occur in a predictable sequence.

At this level, the focus should be on repeating patterns. However, another type of pattern occurs when there is a clear relationship between one item and the next, for example, when each object is bigger than the one next to it.

Patterns often exist in songs, rhymes and games that students are familiar with.

Instead of thinking math with numbers think about math with ‘things’. Patterns can be applied in many different situations, making them one of the powerful building blocks of mathematics

### 2.2 Sort objects and shapes based on their colour, size, number of sides or another attribute.

#### Content Examples & Teaching Points

Given a set of objects with different shapes, sizes and colours, ask students to sort them:

<table>
<thead>
<tr>
<th>sort</th>
<th>□□</th>
<th>△△</th>
<th>□□</th>
<th>△△</th>
</tr>
</thead>
<tbody>
<tr>
<td>sort by size</td>
<td>□□</td>
<td>△△</td>
<td>□□</td>
<td>△△</td>
</tr>
<tr>
<td>sort by shape</td>
<td>□□</td>
<td>△△</td>
<td>□□</td>
<td>△△</td>
</tr>
<tr>
<td>sort by colour</td>
<td>□□</td>
<td>△△</td>
<td>□□</td>
<td>△△</td>
</tr>
</tbody>
</table>

Sorting objects and shapes using specific attributes allows students to explore similarities and differences and then use these characteristics to create patterns for themselves. Sorting skills help other branches of mathematics, such as sets.

When teaching patterns, the teacher can review the counting principles.

### 2.3 Create patterns using objects, actions, shapes, colours, sounds or numbers.

#### Content Examples & Teaching Points

Patterns can be formed in many ways, for example by repeating colours or actions.

Patterns can be created by organizing pictures, symbols, objects and so on so that they are predictably repeated in some way.
### 2.4 Group 10 or fewer objects into sets of 2’s, 3’s, 4’s and 5’s without remainders.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many groups of 2’s can you get from the stars below?</td>
</tr>
<tr>
<td><img src="image1" alt="Stars" /></td>
</tr>
</tbody>
</table>

### 2.5 Count up to 10 objects by 1s and 2s, forwards and backwards.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting by 2s, or another number, is also called skip counting. It helps students notice numerical patterns. The more patterns they see in numbers the more generalizations they can make about how numbers work. Skip counting is often used for counting and grouping things – counting pairs of gloves, socks, and so on. Ask students to give real world examples of counting backwards, for example, at the start of a race (three, two, one, GO!) or when a space rocket is launching.</td>
</tr>
<tr>
<td><img src="image3" alt="Counting by 2s" /></td>
</tr>
</tbody>
</table>
### 8.1 Compare the length, height, weight, temperature and capacity of two objects using words such as longer, taller, shorter, lighter, heavier, colder, hotter, more full or emptier.

**Content Examples & Teaching Points**

Place a tick ✓ on the taller object and cross X out the shorter object.

To develop these understandings students need many opportunities to explore objects and their attributes and to discuss these experiences with others. They also need to be introduced to appropriate descriptive language: terms such as big, heavy, tall and empty.

### 8.2 Investigate the length of objects found in the classroom or wider environment, in non-standard units of measurement, such as finger lengths, pieces of string or lengths of a pencil.

**Content Examples & Teaching Points**

How many crayons long is the paintbrush?.

This paintbrush is _________ crayons long.

Encourage students to place units end to end as gaps or overlaps between the units will result in inaccurate measurements. Using a unit requires that students are able to count and understand that the last unit counted gives the measure of the object. It is useful to measure the same object with different units. This helps students understand that you need a smaller quantity of larger units to measure an object or vice versa.

Estimation is a useful skill to introduce alongside measuring with objects. This can be developed, for example, by asking students to guess how many cups of water will fit into the jug before they carry out their measurement.

### 8.3 Describe the position of two objects relative to each other in terms of distance and direction using phrases such as near to, far from, very far from, to the right of, below, above and so on.

**Content Examples & Teaching Points**

Give the position of the chicken in relation to the worm.

Using phrases such as near to, before, after, far from introduces students to the concept of measurement in a basic form as they describe distance and the position of an object in relation to another.
8.4 Describe the passage of time using terms such as minute, hour, day, week, month and year.

### Content Examples & Teaching Points

The focus of this learning outcome is not for students to tell time using a clock but to develop a concept of time.

**Circle how long it takes to do each activity.**

1. I ride my bike to school in 1 second 1 hour
2. When I wave to a friend, it takes 1 second 1 hour
3. The time I spend eating my lunch is 1 second 10 minutes
4. I celebrate my birthday. Every year Every month
5. I go to school for 1 month each year 5 days each week

Concepts of time can be developed in the following ways.

When students are doing a group task, tell them how much time they have at the beginning and tell them how much time they have left before the end.

Play one-minute games, for example: stack as many blocks as you can in one minute or pick up as many different objects as you can in one minute. As students play the game, call out the time left every 10 seconds.

Use a digital count down timer for group activities. Here the goal is not to pressure students or make them rush but to help them understand time’s passing. As they practice, students will get better at estimating the time it takes to do chores, homework, and other activities.

8.5 Correctly sequence the days of the week and months of the year using ordinal numbers.

### Content Examples & Teaching Points

There are many songs and rhymes that can be used to teach the order of the days of the week and months of the year.

**What day is it?**

**Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday.**

1. I am the 4th day of the week. There are 9 letters in my name. What day am I? __________
2. I am the 1st day of the week. The beginning of my name rhymes with fun. What day am I? __________
3. I am the last day of the week. I am often the favourite day! What day am I? __________

4. I am the last day before the weekend. You’ll find me on the 6th day. What day am I? __________
5. I am the 2nd day of the week, but the first day of the school week. What day am I? __________
6. I am the 3rd day of the week. The beginning of my name rhymes with new. What day am I? __________
7. I am the fifth day of the week. What day am I?

8.6 Identify the current dates and days of the month on a calendar or weather chart using ordinal numbers.

### Content Examples & Teaching Points

The Calendar below shows days and dates for this month. What is today’s date?

[Calendar image]

Talk about the **pattern of forming ordinal numbers.** Make sure that students know that except for **eleventh**, **twelfth**, and **thirteenth**, numbers ending with one, two, or three are irregular and should be said **first**, **second**, and **third** respectively.

Days of the month can be shared daily with students as ordinal numbers when the date is discussed orally or placed on blackboard heading, for example Today is the 16th of September.
### 8.7 Tell time to the hour using an analogue clock.

**Content Examples & Teaching Points**

Tell the time that is shown in the clock below:

This clock shows 5 o’clock because the short hand is pointing to 5 and the long hand is pointing straight up.

Provide opportunities for students to manipulate times on 12-hour analogue clock. Students will need to understand that the short hand is the hour hand and the long hand is the minute hand. When the short hand points to a particular number and the long hand is on the 12 that is the time to the hour. The clock in the example is showing five o’clock.

**Draw the hands on the clock to show 3 o’clock**

### 3.1 Add sets of up to ten objects including with the use of zero when adding.

**Content Examples & Teaching Points**

Mark bought 2 bags of chips at school. His mother went to the supermarket and bought 7 bags of chips. His dad did not buy any. How many bags of chips are there altogether?

- a) 12
- b) 13
- c) 9
- d) 10

Zero is abstract and good understanding of “something that represents nothing” is critical for further success and deeper understanding, including place value.

The zero property states that when zero is added to any number, the sum is the same as the original number.

### 3.2 Solve problems involving addition of up to 10 objects, using real life situations.

**Content Examples & Teaching Points**

If I have three bananas and my friend gives me two more bananas, how many bananas will I have altogether?

Encourage students’ own reasoning strategies and use of different strategies to master addition and introduce subtraction when students are ready.
### 5.1 Explain that a whole object can be divided into parts of equal and different sizes.

**Content Examples & Teaching Points**

Students can be shown how to divide objects, for example by taking a sheet of paper and folding or cutting it down the middle to get two halves.

- Understanding fractions means understanding all the possible concepts that fractions can represent.
- Get Hands On. The concept of a “fraction” is abstract and visualizing part vs. whole is a developmental skill.
- Manipulatives can help the concepts become more concrete.
- Name a half as one of two equal parts of an object, shape or quantity.

### 5.2 Describe fractions in everyday situations by using language such as ‘1 out of 2’.

**Content Examples & Teaching Points**

Fractions can be created by dividing things into equal parts. For example, dividing a tortilla in half.

- 1/2 is a fraction. It can be written with a slanted slash or the 1 on top of the 2 with the slash between the two numbers. The 1 is the numerator, and the 2 is the denominator.
- Fractions can also be explained to students by dividing objects into two, for example a pizza cut into two equal halves. Use language with students such as, James will get 1 out of the 2 slices of tortilla. James now has half of a tortilla.

### 5.3 Compose and decompose a region, shape or set of objects using halves and quarters, recognizing that the fractional parts are equal.

**Content Examples & Teaching Points**

Composing a shape using objects.

- Pattern blocks may be used as area models to compare fractional regions and explore how the regions change in relation to the whole.
- Fraction manipulatives aid in the learning process by setting a strong foundation from which to build upon. They are excellent learning tools and can be broken down into four main types: fraction pies, fraction sticks, fraction cubes and virtual manipulatives.
5.4 Match pictures of halves and quarters and objects in parts with the symbols \( \frac{1}{2} \) and \( \frac{1}{4} \).

### Content Examples & Teaching Points

<table>
<thead>
<tr>
<th>Fractions and Decimals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>This orange has been cut into two equal parts. Each part is one half of the orange.</strong></td>
</tr>
</tbody>
</table>

\[
\frac{1}{2} \quad \frac{1}{2}
\]

| Students can shade or colour paper to show fractions. For example, colour the circle in two equal parts to show half and four equal parts to show quarters. Write the symbol in each part. |

\[
\frac{1}{2} \quad \frac{1}{2}
\]

| Folding paper in halves and quarters will reinforce these concepts. When they fold the paper, students can write the symbols in the relevant parts. |

\[
\frac{1}{4} \quad \frac{1}{4} \\
\frac{1}{4} \quad \frac{1}{4}
\]
7.5 Identify rays, angles and planes in the classroom, school and wider environment.

This learning outcome aims to introduce the vocabulary terms. It is not necessary to draw or measure the angles, planes and rays.

**Rays**
A ray has a clear starting point but not a clear end.

Another real life example of a ray is rays of the sun. The ray of light starts at the sun and could go on forever.

A light from a flashlight is a ray.

**Angles**
An angle has two rays that come together in a vertex. Angles can also be formed when two or more lines intersect each other.

Students can look for angles in real life objects such as the centre of a clock. They can make their own angles using pencils or tooth picks.

**Planes**
A plane is a flat surface.

The floor and the top of a desk are planes.

The corners of doors and windows form angles.
### 7.6 Find examples of 3-D objects such as spheres, cubes, cylinders and cones in the classroom, school and wider environment.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students understand 3D objects better when they can see actual objects or pictures of these.</td>
</tr>
</tbody>
</table>

#### Spheres: globe, football

#### Cubes: dice, building blocks

#### Cylinders: chalk, food can, toilet paper roll, water pipe.

#### Cones: traffic cone, ice cream cone

### 7.7 Construct 3-D shapes and objects using straws, sticks, clay, building blocks and other materials.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim of this learning outcome is for students to explore the characteristics of 3-D shapes by making them.</td>
</tr>
</tbody>
</table>

Useful materials include straws, paletta sticks, play dough, tooth picks, and modelling clay. A fun activity is to construct shapes using spaghetti held together by pieces of marshmallow.
3.3 Subtract objects, including zero objects, from a set of up to ten.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use a ten frame and counters to show subtraction: 10 – 0 = 10</td>
</tr>
<tr>
<td>There are two rules for using zero in subtraction. Zero subtracted from any number is the original number (this is the counterpart of the zero property of addition), and any number subtracted from itself equals zero.</td>
</tr>
</tbody>
</table>

3.4 Solve problems involving subtraction of up to 10 objects, using real life situations.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ten birds sat on a wire. Three birds flew away. How many were left?</td>
</tr>
<tr>
<td>Total number of birds sat on a wire = 10</td>
</tr>
<tr>
<td>Number of birds flew away = 3</td>
</tr>
<tr>
<td>Therefore, number of birds left = 10 - 3 = 7</td>
</tr>
<tr>
<td>Use a variety of materials that students can manipulate to solve, act out and model the operation needed to solve the problem.</td>
</tr>
</tbody>
</table>

3.5 Add and subtract sets of up to ten objects with and without the use of concrete objects.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tens-frames may be used with counters to illustrate the understanding that ten is 4 and 6 or 3 and 7 as shown:</td>
</tr>
<tr>
<td>Addition can be done using manipulatives and provide students with the basic knowledge that they will use later on for subtraction as students will use addition as a basis for subtraction facts.</td>
</tr>
</tbody>
</table>

3.6 Combine, rearrange and separate objects to show addition and subtraction, including with the use of +, - symbols.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combining objects to show addition: 3 + 1 = 4</td>
</tr>
<tr>
<td>Help students develop operation sense to connect different meanings of addition and subtraction to each other.</td>
</tr>
<tr>
<td>Teacher formulates and assigns various addition and subtraction tasks.</td>
</tr>
<tr>
<td>Demonstrations of subtraction should include physically removing objects from a group, not just crossing them out on the board.</td>
</tr>
</tbody>
</table>
### 11.1 Gather data from environment through observation, counting, sorting and grouping of items such as objects and pictures.

#### Content Examples & Teaching Points

Sort the caps by colour, then count how many of each color are present.

- Grouping and sorting can be done with or without using numbers, such as separating students or objects into distinct groups, such as the colour of their t-shirts, or their hair colour.
- Actual objects can be used as data and objects grouped into a data display.

### 11.2 Organize and display data using concrete materials in tally charts and on pictorial representations.

#### Content Examples & Teaching Points

Make a picture graph by counting the number of animals.

- It is important that each object in a graph represents one object, except in cases where items are used in pairs, for example shoes. One object can also represent an idea, such as a person’s preference.
- The first step in interpretation is to know what it represents or what is the information given by it.
11.3 Interpret information presented in pictographs using a variety of data sets.

<table>
<thead>
<tr>
<th>Zoo Collections</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zoo 1</strong></td>
</tr>
<tr>
<td><strong>Zoo 2</strong></td>
</tr>
<tr>
<td><strong>Zoo 3</strong></td>
</tr>
<tr>
<td><strong>Zoo 4</strong></td>
</tr>
<tr>
<td><strong>Zoo 5</strong></td>
</tr>
</tbody>
</table>

**Content Examples & Teaching Points**

Look at the pictograph below and answer the following questions:

1. Which zoo has the largest number of jaguars?
2. Which two zoos have the same number of jaguars?
3. How many more jaguars does zoo 1 have than zoo 2?

Create a picture graph by first creating a key with a symbol and giving it numerical value, and then by displaying the data in repeated symbols that correspond to the numbers, including half and quarter symbol images.

They use critical and creative thinking as they construct and interpret simple data displays and give reasons for their interpretations.
Annual and Unit Planning
Learning Outcome Clusters
and
Teachers’ Toolkit

INFANT TWO
Annual and Unit Planning Learning Outcome Clusters
for Infant Two Mathematics

There are no learning outcomes for Algebra for infant two students.
There are no learning outcomes for Sets for infant two students.
There are no learning outcomes for Coordinate Graphs for infant two students.

**Numbers A**

1.12 Count up to 100 using a number chart.
1.13 Count groups of up to one hundred objects using the five counting principles of stable order, one-to-one correspondence, cardinality, abstraction and order irrelevance.
1.14 Match number names and numeric symbols for numbers from 0 to 100 both orally and in writing.
1.15 Apply the concept of zero to real-life situations.
1.16 Identify the position of an item in a group using ordinal numbers from first to one hundredth.

**Numbers B**

1.17 Compose 2-digit numbers from groups of tens and ones.
1.18 Decompose 2-digit numbers into groups of tens and ones.
1.19 Sequence a set of numbers between 0 and 100, in ascending or descending order, using a number line.
1.20 Identify the number that is ten more or ten less than a given number using a place value chart.
1.21 Sequence a set of non-consecutive numbers between 0 and 100 using a place value chart.
1.22 Compare numbers from 0 to 100 using the less than, greater than and equals signs.

**Geometry A**

7.8 Draw lines, rays and angles.
7.9 Differentiate between horizontal, vertical and diagonal lines.
7.10 Identify the similarities and differences between triangles, squares, rectangles and circles.
7.11 Create by drawing or modelling 2-D shapes with a specified number of sides.

**Patterns**

2.6 Identify patterns in pictures and artistic designs.
2.7 Create repeating patterns using actions, objects, shapes, letters, colours, sounds, and numbers.
2.8 Distinguish between odd and even numbers.
2.9 Estimate to the closest benchmark number, for example, 5, 10, 25 or 50 before counting a set of objects to find the exact amount.
Measurement A

8.8 Investigate the perimeter and area of 2-D shapes using non-standard measures.
8.9 Measure the length of lines, perimeter of shapes and real objects found in the environment using the customary units of feet and inches.
8.10 Investigate the volume of 3-D shapes using non-standard units of measurement.
8.11 Measure volume of containers using the customary units of cups and pints.
8.12 Measure the weight of objects using the customary units of pounds and ounces.
8.13 Compare the use of non-standard units to the use of customary units of measurement.

Addition and Subtraction A

3.7 Add a single digit number to a 2 digit number that ends in a zero.
3.8 Add a single digit number to any 2-digit number with the answer not exceeding 99.
3.9 Add, mentally, without the use of manipulatives, multiples of 10, with the sum not exceeding 100.
3.10 Subtract a single digit number from a 2-digit number without the need to borrow.

Measurement B - Time

8.14 Identify time as half hour, quarter hour to or past the hour using an analogue clock.
8.15 Apply the terms a.m. and p.m. to time
8.16 Explore the relationship between seconds, minutes, hours, days, weeks and a year.
8.17 Identify how many seconds have passed using the second hand of an analogue clock.
8.18 Identify the time to the nearest minute using both analogue and digital clocks.

Addition and Subtraction B

3.11 Add any two 2-digit numbers together with the answer not exceeding 100, vertically and horizontally with or without the use of a place value chart.
3.12 Subtract a single or 2 digit number from a 2-digit number, vertically and horizontally, without the need to borrow, with or without the use of a place value chart.
3.13 Complete number sentences with sums or differences up to 100 using the symbols +, −, =
3.14 Explore the additive identity property, that is if you add a number to 0, then the sum is the same number.

Fractions and Decimals

5.5 Compose and decompose a region, shape or set of objects using halves, thirds, quarters, and fifths.
5.6 Match pictures of fractional parts with the symbols ½, ⅓, ¼, and ⅕.

Multiplication and Division

4.1 Place up to 50 objects into groups of equal size.
4.2 Divide groups into equal parts using real objects or pictures.
4.3 Investigate that multiplication is the same as repeated addition.
4.4 Multiply two single digit numbers together using manipulatives arranged in groups, multiplication arrays and so on.
**Geometry B**

7.12 Create models of 3-D shapes and objects with specified properties, such as number of faces.

7.13 Compare 2-D shapes according to specific properties including length of sides, number of vertices and the approximate size of their internal angles.

7.14 Investigate the similarities and differences between symmetrical shapes.

**Data**

11.4 Gather data from picture and written sources and the environment through observation.

11.5 Organize and display data using concrete materials in tally charts and column representations.

11.6 Interpret information presented in simple column graphs using a variety of data sets.

11.7 Make predictions using graphs.
1.12 Count up to 100 using a number chart.

Number Charts are a useful tool for teaching young students counting and math because they display a specific range of numbers in big clear writing.

The number chart is used as scaffolding, that is, it is used to help students learn. With sufficient practice, they should increasingly be able to count without the use of the number chart.

Counting does not always start at 1. They should practice counting from different numbers, for example, the teacher can say, “start at 44”.

The focus should be on ensuring each individual student can count, rather than on whole-class chanting or choral response.

1.13 Count groups of up to one hundred objects using the five counting principles of stable order, one-to-one correspondence, cardinality, abstraction and order irrelevance.

The counting principles were introduced in infant one. The main purpose of this learning outcome is for students to apply the principles to larger groups of objects.
### 1.14 Match number names and numeric symbols for numbers from 0 to 100 both orally and in writing.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th>Number Name</th>
<th>Numerical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fifty-one</td>
<td>36</td>
</tr>
<tr>
<td>Ninety-three</td>
<td>24</td>
</tr>
<tr>
<td>Eighteen</td>
<td>51</td>
</tr>
<tr>
<td>Thirty-six</td>
<td>93</td>
</tr>
<tr>
<td>Twenty-four</td>
<td>18</td>
</tr>
</tbody>
</table>

The focus of this learning outcome is on matching the number names said orally with the numerals. Some students may be able to read and write the words (with or without the hyphen) but this is not essential at this stage in infant two.

Review this skill every day using flashcards and 5 minute games.

### 1.15 Apply the concept of zero to real-life situations.

**Content Examples & Teaching Points**

Zero is used with countable nouns but not uncountable ones. It would not be usual to say “there is zero water in the glass.” Instead, we would say “There is no water in the glass.”

**Example:**

There are four marbles in the red jar but there is zero in the blue jar.

Other examples:

“The number of elephants in the Belize Zoo is zero.”

“The student did not know the answers so she got zero on the test.”

“The red team scored three goals. The blue team got zero.”

“The chance of seeing cows falling from the sky is zero.”

### 1.16 Identify the position of an item in a group using ordinal numbers from first to one hundredth.

**Content Examples & Teaching Points**

Ordinal numbers tell the position of the object.

Identify the position of each runner by the colour of their shirt.

Provide objects to count such as marbles, beads and buttons, for example, line up five objects and then ask questions, such as: Which object is second in line? Which one is fifth?

Use real life examples such as finishing position in a race. It is important to include higher numbers.

“The cyclist was fifty-eighth in the race.”

“She caught the ball at the twentieth attempt.”

“The seventy-fifth customer to enter the store won a prize.”
### 1.17 Compose 2-digit numbers from groups of tens and ones.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composing is building a number from its parts, such as from its tens and ones.</td>
</tr>
<tr>
<td>Students need to develop automaticity with composing numbers because this will help build success with addition, subtraction, multiplication, and division.</td>
</tr>
<tr>
<td>Visualization is an important part of developing flexibility with number structure. For this reason, students will benefit from frequently working with spatial patterns, dot cards, ten frames and abacuses.</td>
</tr>
<tr>
<td>Composing numbers reinforces students' concepts of place value.</td>
</tr>
</tbody>
</table>

![Diagram of tens and ones](image)

### 1.18 Decompose 2-digit numbers into groups of tens and ones.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decomposing is breaking a number down into its parts, for example by tens and ones.</td>
</tr>
<tr>
<td>The practice of decomposing numbers allows young students to understand the patterns and relationships between digits within a larger number and between numbers within an equation.</td>
</tr>
<tr>
<td>Students can initially learn about breaking numbers into smaller components by using counters and interlocking blocks such as lego.</td>
</tr>
<tr>
<td>Students should get a lot of practice in decomposing numbers, both using real objects and orally.</td>
</tr>
<tr>
<td>The ability to rapidly decompose numbers develops flexibility in understanding and calculating with numbers. For example, later students will learn that 52+14 can be calculated as 50+2+10+4.</td>
</tr>
</tbody>
</table>

![Diagram of decomposing numbers](image)

### 1.19 Sequence a set of numbers between 0 and 100, in ascending and descending order, using a number line.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>The teacher can call out numbers in a jumbled order for the students to circle on the number line, for example:</td>
</tr>
<tr>
<td>A number line teaches the concept that numbers occur in a fixed pattern, not randomly. This means that the order of numbers never changes. A six always follows a five, ten always goes after nine, and so on.</td>
</tr>
<tr>
<td>59, 53, 43, 63, 48</td>
</tr>
<tr>
<td>If students find the words ascending and descending confusing, use “going up” and “going down” instead. Link ascending and descending to real life situations such as ascending and descending in an aeroplane.</td>
</tr>
<tr>
<td>The students should then write the numbers from smallest to largest (ascending) and from largest to smallest (descending).</td>
</tr>
</tbody>
</table>

![Number line](image)
### 1.20 Identify the number that is ten more or ten less than a given number using a place value chart.

**Content Examples & Teaching Points**

Following on from the previous learning outcome the concept of ten more and ten less can be introduced using a number line.

<table>
<thead>
<tr>
<th>Number</th>
<th>On the Number Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>21 22 23</td>
</tr>
<tr>
<td>32</td>
<td>31 32 33</td>
</tr>
<tr>
<td>42</td>
<td>41 42 43</td>
</tr>
</tbody>
</table>

Students’ attention should be drawn to the number in the tens position.

Blocks can also be used.

- **ten less**
- **ten more**

### 1.21 Sequence a set of non-consecutive numbers between 0 and 100 using a place value chart.

**Content Examples & Teaching Points**

This learning outcome is similar to 1.19 but in this case, a place value chart rather than a number line is used.

When sequencing numbers, students should look at the value in the tens column first. If these are the same, they should look at the number in the ones column.

### 1.22 Compare numbers from 0 to 100 using the less than, greater than and equals signs.

**Content Examples & Teaching Points**

When given two numbers represented by objects, students use comparison language and symbols to determine which is greater and which is smaller. Students can compare numbers using concrete manipulatives and pictures.

When a student compares numbers, they are deciding if a number is greater than, less than, or equal to another number.

Generally, students who are first learning to compare numbers need to start with hands-on comparing. Any small toy can be used as a manipulative. Make two groups of the toys. Have your students count each group and write the numbers down. Then have them decide which group is bigger and write the correct symbol between the numbers.
### 7.8 Draw lines, rays and angles.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th><strong>Content Examples &amp; Teaching Points</strong></th>
<th><strong>Using the words “ray”, “line” and “angle” as students draw, familiarizes students with the proper terminology.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>This learning outcome builds on knowledge introduced in infant one with the additional requirement that the items must be accurately drawn. This implies that students should add arrows and dots as per the diagrams below.</td>
<td>Students can incorporate the rays, lines and angles into drawings of real life situations. A real life example of a ray is rays of the sun. The ray of light starts at the sun and could go on forever.</td>
</tr>
<tr>
<td>Accuracy in drawing is essential. Teachers should monitor that the ruler is held with a firm grip and that lines are straight.</td>
<td>A line drawn to show a ball leaving a bat would be a ray. The bat is the starting point.</td>
</tr>
<tr>
<td></td>
<td>Students can demonstrate angles in pictures of tables, chairs, slides and other objects.</td>
</tr>
<tr>
<td></td>
<td>This learning outcome focuses on drawing. It is not necessary to measure the lines, angles or rays.</td>
</tr>
</tbody>
</table>

### 7.9 Differentiate between horizontal, vertical and diagonal lines.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th><strong>Content Examples &amp; Teaching Points</strong></th>
<th><strong>Use real objects and pictures to show vertical, horizontal and diagonal lines in real life.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The lines used in the previous learning outcome could be drawn in any direction. Learning outcome 7.9 introduces names for special types of line.</td>
<td>Use real objects and pictures to show vertical, horizontal and diagonal lines in real life.</td>
</tr>
<tr>
<td>A horizontal line goes from side to side but not up and down.</td>
<td></td>
</tr>
<tr>
<td>A vertical line goes up and down but not side to side.</td>
<td></td>
</tr>
<tr>
<td>A diagonal line is slanted. It goes both up and down and side to side.</td>
<td></td>
</tr>
</tbody>
</table>
### 7.10 Identify the similarities and differences between triangles, squares, rectangles and circles.

#### Content Examples & Teaching Points

Students will learn the attributes of shapes if they carry out their own investigations, for example by completing the following chart.

<table>
<thead>
<tr>
<th>Name</th>
<th>How Many Sides</th>
<th>How Many Corners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triangle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectangle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Square</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students should appreciate that a square is a special type of rectangle that has 4 equal sides. In other rectangles, only opposite sides are of equal length.

### 7.11 Create by drawing or modelling 2-D shapes with a specified number of sides.

#### Content Examples & Teaching Points

Examples of 2-D shapes.

 Students need to recognize that there are both straight sides and curved sides. Students should be encouraged to develop strategies for accurate counting of sides, such as by marking each side as it has been counted. Students also need to understand that not all same-sided shapes look the same, such as with irregular 2D shapes.
### 2.6 Identify patterns in pictures and artistic designs.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th>Simple repeating, increasing or alternating patterns exist when there is a relationship between each new element in a series and the one before it.</th>
<th>Patterns in artistic designs are all around us, for example in wall and floor coverings, table-cloths curtains and on clothing. Students can also look for patterns in pictures.</th>
</tr>
</thead>
<tbody>
<tr>
<td>When students identify a pattern, ask them to explain what makes it so. For example, ask them to explain what repeats. Students who are highly aware of patterns can spot this kind of regularity. They can reproduce patterns and predict how they will continue.</td>
<td></td>
</tr>
</tbody>
</table>

### 2.7 Create repeating patterns using actions, objects, shapes, letters, colours, sounds, and numbers.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th>Students will understand patterns better if they have the opportunity to make their own. The teacher’s role is to provide appropriate tools and some guidance. The most important instruction is that items are repeated in a special way to make the pattern.</th>
<th>Students can:</th>
</tr>
</thead>
<tbody>
<tr>
<td>For example: Make a pattern using the following blocks.</td>
<td>Make a pattern by shading in the squares of this grid using three different colours.</td>
</tr>
<tr>
<td>Students enjoy making patterns out of natural objects such as leaves.</td>
<td>Make up a song with repeating lines adding actions to the song. Create a repeating rhythm using clapping or a drum.</td>
</tr>
</tbody>
</table>
2.8 Distinguish between odd and even numbers.

Content Examples & Teaching Points

An even number of objects can be divided equally into two groups or into groups of 2. If a group cannot be divided equally, then it is an odd number.

An even number ends in 0, 2, 4, 6, or 8.
An odd number ends in 1, 3, 5, 7, or 9.

Six is even. Seven is odd.

After dividing seven into 2 equal groups, there is one left over – “the odd one out”.

2.9 Estimate to the closest benchmark number, for example, 5, 10, 25 or 50 before counting a set of objects to find the exact amount.

Content Examples & Teaching Points

Understanding benchmark numbers is a beginning step towards estimation, number sense and place value development.

Mike made a guess that there are about 10 marbles in the jar just by looking. Then he counted them to discover there were actually 8. This means Mike made a good guess.

As students make estimations, they will develop an increasingly strong sense of quantity. They should work with both small and relatively large quantities of objects.

Estimate to the nearest 25, how many bottle tops there are.
### 8.8 Investigate the perimeter and area of 2-D shapes using non-standard measures.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th>Perimeter</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter - How many pencils are needed to go around the top of the student's desk?</td>
<td>Perimeter is a one-dimensional measurement that represents the distance around a closed geometric figure or shape (no gaps).</td>
</tr>
<tr>
<td>Students can be encouraged to estimate before measuring.</td>
<td>Area is a two-dimensional measurement that represents the amount of space inside a two-dimensional shape.</td>
</tr>
<tr>
<td>Area - How many exercise books will it take to cover the teacher's desk?</td>
<td>Non-standard measures used to measure area must also be two-dimensional, for example pieces of paper. The objects used to make the measurements should all be the same size.</td>
</tr>
</tbody>
</table>

### 8.9 Measure the length of lines, perimeter of shapes and real objects found in the environment using the customary units of feet and inches.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th>What is the perimeter of the garden bed below?</th>
<th>In the customary system of measurement, the common units to measure length include inch, foot, yard, and mile.</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the customary system of measurement, the common units to measure length include inch, foot, yard, and mile.</td>
<td>At this stage, students are not necessarily calculating using formulas. They can measure all the sides and add them together.</td>
</tr>
</tbody>
</table>
### 8.10 Investigate the volume of 3-D shapes using non-standard units of measurement.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How many crayons can fit into a box?</strong></td>
</tr>
<tr>
<td>Explain to your students that measuring the volume of 3D shapes, is knowing the amount of space inside the 3D shape. Using unifix (interlocking) cubes or similar manipulatives, construct a cuboid with a height of 3 blocks, a length of 4 blocks and a width of 5 blocks. Ask the students to break it apart and count the blocks.</td>
</tr>
</tbody>
</table>

### 8.11 Measure volume of containers using the customary units of cups and pints.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The customary units for measuring volume are fluid ounces, cups, pints, quarts, and gallons. However, this learning outcome focuses on cups and pints.</strong></td>
</tr>
<tr>
<td><strong>Students should conduct experiments using real objects.</strong></td>
</tr>
<tr>
<td><strong>2 cups is the same as 1 pint.</strong></td>
</tr>
<tr>
<td>Milk is usually sold in pints. It is not only liquid that can be measured using cups. Many cooking recipes measure dry ingredients such as flour and sugar in cups. How many cups of water can be poured into a jug?</td>
</tr>
</tbody>
</table>

### 8.12 Measure the weight of objects using the customary units of pounds and ounces.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>This learning outcome can only be achieved if students weigh real objects. A scale will be required.</strong></td>
</tr>
<tr>
<td><strong>Once students can read the scale to the nearest whole pound, they can practice reading to the nearest half and quarter pound. Finally, they can look at the smallest lines on the scale to read ounces.</strong></td>
</tr>
</tbody>
</table>

### 8.13 Compare the use of non-standard units to the use of customary units of measurement.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non standard unit of measure</strong></td>
</tr>
<tr>
<td><strong>In infant one, students were introduced to measurement using non-standard measurements such as pencils, paper clips or parts of the body.</strong></td>
</tr>
<tr>
<td><strong>Standard unit of measure</strong></td>
</tr>
<tr>
<td><strong>Once students understand the concept of measuring using non-standard measures, then standard units and measuring tools such as rulers can be introduced.</strong></td>
</tr>
</tbody>
</table>
### 3.7 Add a single digit number to a 2 digit number that ends in a zero.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th>Essential previous knowledge for this learning outcome is that 2-digit numbers have a digit representing tens and another representing ones. This knowledge was reinforced in Numbers B.</th>
</tr>
</thead>
<tbody>
<tr>
<td>When adding a single digit number to a multiple of ten, such as 20, 30 and 40, the number in the tens column does not change.</td>
</tr>
<tr>
<td>20+7=27</td>
</tr>
<tr>
<td>70+5=75</td>
</tr>
</tbody>
</table>

40+3=43

This can be demonstrated as follows:

![Addition Diagram](image)

### 3.8 Add a single digit number to any 2-digit number with the answer not exceeding 99.

**Content Examples & Teaching Points**

| Students will make faster progress with addition if they can fluently count from 0 to 99. |
| This learning outcome is designed to be done mentally by “counting on”. |
| At first, students should practice using examples that do not require a change in the tens column, for example: |
| 23+4=27 |
| 76+1=77 |
| 12+7=19 |

Once this skill has been practiced and reinforced, students can begin to complete calculations requiring a change in the tens column.

| 23+9=32 |
| 76+7=83 |
| 12+8=20 |

When doing addition that requires a change to the tens column (for example 19+2=21), students need to have a strong understanding of place value especially that ten ones are the same as one ten.

Students developing addition skills can use their fingers, real objects or a number line to help them.

| 17+5= 22 |

![Addition Diagram](image)
### 3.9 Add, mentally, without the use of manipulatives, multiples of 10, with the sum not exceeding 100.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>For example</td>
</tr>
<tr>
<td>20+20=40</td>
</tr>
<tr>
<td>40+20=60</td>
</tr>
<tr>
<td>20+50=70</td>
</tr>
<tr>
<td>Instruction needs to focus on the importance of the tens digit. If students struggle to complete this mentally, a 0-100 number chart can be used. Draw attention to the idea that the tens digit changes while the ones digit remains the same.</td>
</tr>
</tbody>
</table>

### 3.10 Subtract a single digit number from a 2-digit number without the need to borrow.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similar to Learning Outcome 3.8, the intention is to introduce subtraction by counting backwards. Students can also physically remove objects from a group.</td>
</tr>
<tr>
<td>Before attempting to subtract from a 2-digit number, students should practice subtracting one single digit number from another. Automaticity and fluency in this is a key skill that should be constantly practiced.</td>
</tr>
<tr>
<td>When students first do calculations with 2-digit numbers, these should not require a change in the tens column.</td>
</tr>
<tr>
<td>For example</td>
</tr>
<tr>
<td>14-2=12</td>
</tr>
<tr>
<td>66-4=62</td>
</tr>
<tr>
<td>but not 23-6=17.</td>
</tr>
<tr>
<td>Word problems should also be used. For example, if there are twenty-five students in the class and three leave, how many students are left?</td>
</tr>
<tr>
<td>If there are thirty-eight marbles in a jar and Michelle removes five, how many are left?</td>
</tr>
<tr>
<td>Using a number line to count backwards may help some students.</td>
</tr>
<tr>
<td>26-4=22</td>
</tr>
<tr>
<td>(26-1-1-1-1)</td>
</tr>
</tbody>
</table>
8.14 Identify time as half hour, quarter hour to or past the hour using an analogue clock.

Content Examples & Teaching Points

The clocks below show time at the hour, quarter past the hour, half hour, and quarter to the hour on an analogue clock.

Students should practice using real clocks or ones they have made.

8.15 Apply the terms a.m. and p.m. to time.

Content Examples & Teaching Points

A.M and P.M is not read from the clock, but rather from what time of day it is. A.M. runs from midnight (12:00) to 11:59 (one minute before noon). At noon, it becomes P.M., and P.M. goes from noon (12:00) to 11:59 (one minute before midnight).

For young students, A.M. can be defined simply as the time before noon and P.M. as the time after noon. It is not necessary for Infant 2 students to memorize the terms ante meridian and post meridian.

It is important to ensure students do not think the A in A.M. means “after” or that the M means “midnight”.

Note that A.M. can also be correctly written as a.m. However A.m. would be incorrect. It is now increasingly usual to see the abbreviations without the full stops. However, Infant 2 should be taught to include them.

Examples:
I get up at seven A.M.
School finishes at two P.M.

8.16 Explore the relationship between seconds, minutes, hours, days, weeks and a year.

Content Examples & Teaching Points

Use the words to complete the sentences.

seconds, minutes, hours, day, days,
week, weeks, month, months, year, years

There are 60 _____ in 1 ______.
There are 7 _______ in 1 ____.
There are 24 _______ in 1 ____.
There are about 4 _______ in 1 _______.
There are 52 _______ or 12 _______ in 1 ____.

Discuss units of time with students in terms of real-life scenarios they can relate to. For example, measure how long something lasts such as, how many seconds can you hold your breath, or how many minutes long is your favorite t.v. show?

Students can estimate how long something takes and then conduct a real world observation to confirm their estimates. The teacher may have to help with this.

Note that this activity can be revisited throughout the school year.
A good game is to ask students to count up to ten saying the names of different places while someone else times how many seconds it takes. Saying “One Dangriga, two Dangriga, three Dangriga . . . ten Dangriga” takes about ten seconds.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Estimated Time</th>
<th>Observed Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jumping ten times.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking to the principal’s office</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riding a bus from P.G. to Belmopan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating breakfast.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growing a bean plant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Playing a game of volleyball</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.17 Identify how many seconds have passed using the second hand of an analogue clock.

Content Examples & Teaching Points

Look at the red hand (second hand) on the clock and count how many times it moves from the time it moves from a point until it returns to that same point.

This builds on the knowledge that there are sixty seconds in a minute. It also depends on the understanding that, when looking at the second hand, each dash on the outside of the display equals one second.

8.18 Identify the time to the nearest minute using both analogue and digital clocks.

Content Examples & Teaching Points

Both analogue and digital clock show fifteen minutes past four.

At this level, teachers can concentrate on the quarter hours – that is 15 minutes past, 30 minutes past and 45 minutes past (see learning outcome 8.14).
3.11 Add any two 2-digit numbers together with the answer not exceeding 100, vertically and horizontally with or without the use of a place value chart.

Content Examples & Teaching Points

A good understanding of place value is essential previous knowledge.

Calculating horizontally with two digit numbers is essentially the same skill as that of learning outcome 3.8. It can be done by counting on, using real objects as aids or using a number line.

Horizontally: 26+12=38

Adding vertically implies the use of pencil and paper. Students can start learning the essential skill of lining up the numbers correctly using single digit numbers. The next stage is adding a single digit to a 2-digit number.

\[
\begin{array}{c}
2 \\
+ 3 \\
5 \\
\end{array}
\quad
\begin{array}{c}
12 \\
+ 3 \\
15 \\
\end{array}
\]

It is worthwhile spending time to ensure the numbers in the ones column are written exactly one underneath the other.

The final step is to introduce adding two 2-digit numbers, again taking time to ensure the numbers are lined up correctly – that is in the correct column.

\[
\begin{array}{c}
12 \\
+ 23 \\
\hline
35 \\
\end{array}
\]

At this stage, it is important NOT to introduce calculations that require regrouping. This is a new skill.

Focus on the language of tens and ones and look at different methods to add the numbers including the column method.

Focus on the language of tens and ones and look at different methods to add the numbers including the column method.

3.12 Subtract a single or 2 digit number from a 2-digit number, vertically and horizontally, without the need to borrow, with or without the use of a place value chart.

Content Examples & Teaching Points

A good understanding of place value is essential previous knowledge.

Subtracting horizontally can be done by counting backwards, using real objects as aids or using a number line.

Horizontally: 26-12=14

Subtracting vertically implies the use of pencil and paper. As with addition, it is vital that numbers are lined up in the correct tens and ones columns. Similarly, the first step should be with single digit numbers followed by subtracting a single from a two digit number.

\[
\begin{array}{c}
32 \\
- 11 \\
\hline
21 \\
\end{array}
\]

At this stage, it is important NOT to introduce calculations that require borrowing. This is a new skill.

Focus on the language of tens and ones and look at different methods to add the numbers including the column method.
It is worthwhile spending time to ensure the numbers in the ones column are written exactly one underneath the other.

It is important that teachers always show the students to start with the ones when subtracting vertically.

### 3.13 Complete number sentences with sums or differences up to 100 using the symbols +, -, =

**Content Examples & Teaching Points**

A number sentence uses numerals and symbols to demonstrate a mathematical relationship, in this case, addition and subtraction.

78 - 45 = 33 is a valid number sentence.

Students should practice converting word problems into number sentences.

First there were 10 red balls. Three red balls were taken away, leaving seven.

Write a number sentence to show what happened.

The number sentence is 10 - 3 = 7

### 3.14 Explore the additive identity property that is if you add a number to 0, then the sum is the same number.

**Content Examples & Teaching Points**

The **additive identity property** says that if you add a number to zero or add zero to a number, then you get the same number back. The number zero is known as the identity element, or the additive identity. This is because zero has no value.

7 + 0 = 7
53 + 0 = 53
72 + 0 = 72
0 + 28 = 28

It is not necessary for students to learn the phrase “additive identity property” as long as they understand the concept.
### 5.5 Compose and decompose a region, shape or set of objects using halves, thirds, quarters, and fifths.

#### Content Examples & Teaching Points

<table>
<thead>
<tr>
<th>Figures can be composed and decomposed to form other figures and shape.</th>
<th>Students apply their understanding from recognizing halves and quarters to finding thirds and fifths. They continue to use the language of the ‘whole’ and ‘equal parts’ to understand that one third is equal to one part out of three equal parts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decomposing</td>
<td>Cutting up a real object into equal parts is the same as decomposing it. This can be done with paper, fruit, cakes or other objects. Once an object has been decomposed, putting it back to make a whole is the same as composing.</td>
</tr>
<tr>
<td>Composing</td>
<td>Interlocking blocks such as lego or unifix cubes can be used.</td>
</tr>
</tbody>
</table>

#### 5.6 Match pictures of fractional parts with the symbols \(\frac{1}{2}\), \(\frac{1}{3}\), \(\frac{1}{4}\), and \(\frac{1}{5}\).

#### Content Examples & Teaching Points

<table>
<thead>
<tr>
<th>Students need to know that a fraction has one number written above a line (the fractional line) and another number written below the line. The number above the fraction line (top number) is called the numerator and the number below (the bottom number) is called the denominator. These terms should be introduced at this stage but teachers can use more everyday language for clarity.</th>
<th>What fraction of each shape is coloured? Circle the correct answer.</th>
</tr>
</thead>
</table>
| The denominator tells how many total parts there are in the whole. The 4 in \(\frac{1}{4}\) indicates there are four total parts. The terms “quarter” and “fourths” should both be used. | \[
\begin{array}{cccc}
\frac{1}{2} & \frac{1}{3} & \frac{1}{4} & \frac{1}{5} \\
\end{array}
\]
| The numerator indicates the selected (that is shaded) part. The 1 in \(\frac{1}{4}\) indicates one part is shaded. In this diagram, one part is shaded and the total number of parts is four so the fraction shown is \(\frac{1}{4}\). | \[
\begin{array}{cccc}
\frac{1}{2} & \frac{1}{3} & \frac{1}{4} & \frac{1}{5} \\
\end{array}
\]
| The position of the shaded part and the type of shape do not change the fraction. These are all \(\frac{1}{4}\). | \[
\begin{array}{cccc}
\frac{1}{2} & \frac{1}{3} & \frac{1}{4} & \frac{1}{5} \\
\end{array}
\]
### 4.1 Place up to 50 objects into groups of equal size.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is designed to be a hands-on learning outcome using piles of small real objects such as bottle tops, beans, unit blocks, one-cent coins and counters. The intention of this learning outcome is that there should be no remainders.</td>
</tr>
<tr>
<td>Make groups of three from these bottle tops.</td>
</tr>
</tbody>
</table>

### 4.2 Divide groups into equal parts using real objects or pictures.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>The main difference between learning outcomes 4.1 and 4.2 is the progression from real objects to more abstract representations. Students may understand division more easily if it is introduced as sharing.</td>
</tr>
<tr>
<td>Word problems can be introduced. “If Mikel has six crayons and he wants to share them equally with three friends, how many crayons will each friend get?”</td>
</tr>
</tbody>
</table>

Word problems can be introduced. “If Mikel has six crayons and he wants to share them equally with three friends, how many crayons will each friend get?”
### 4.3 Investigate that multiplication is the same as repeated addition.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is the first time students have been introduced to the concept of multiplication. Teachers should not expect students to grasp the concept immediately. For some students, this may take some time and will require daily practice. It is essential that real objects are used. Look at these groups of bottle tops. They can be added together (2+2+2+2) which equals 8. However, we can also say there are 4 groups with 2 bottle tops in each. 4 times 2 equals 8.</td>
</tr>
<tr>
<td>After using real objects, students can interpret pictures of the same concept. The picture below shows five bags of apples. There are three apples in each bag. 3+3+3+3+3=15 This is the same as 5 times 3 equals 15. The times symbol (x) should also be introduced. Students can also look at tiles. This room has five rows of four tiles. You can add the rows to get the total number of tiles: 4+4+4+4+4=20. This is the same as 5 x 4 = 20.</td>
</tr>
</tbody>
</table>

### 4.4 Multiply two single digit numbers together using manipulatives arranged in groups, multiplication arrays and so on.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>An array is an arrangement of objects, pictures or numbers in columns or rows. Arrays help students visualize multiplication. Multiplication using an array</td>
</tr>
<tr>
<td>Students can be given a pile of real objects such as beans. They can be asked to arrange them in rows and columns of equal lengths.</td>
</tr>
<tr>
<td>This shows that 4x3 =12. Point out that 3x4 also equals 12.</td>
</tr>
</tbody>
</table>
### 7.12 Create models of 3-D shapes and objects with specified properties, such as number of faces.

**Content Examples & Teaching Points**

<table>
<thead>
<tr>
<th>Cubes have six faces. Each face is a square.</th>
<th>The easiest way of creating 3-D shapes is to use play-dough or modelling clay. A fun activity is to use marshmallow and toothpicks or pieces of spaghetti. Students can use their knowledge of 2D shapes to identify the shapes of faces on 3D shapes. Making models will help students develop the skill of visualizing 3D shapes from a 2D representation.</th>
</tr>
</thead>
</table>

| Square pyramids have five faces. | |

---

### 7.13 Compare 2-D shapes according to specific properties including length of sides, number of vertices and the approximate size of their internal angles.

**Content Examples & Teaching Points**

It is not necessary for students to measure the size of an angle in degrees to achieve this learning outcome. It is sufficient to notice that the angles in the triangle below are smaller than those of the square.

Recognizing and naming 2D shapes in different orientations and being able to differentiate between them is important.

2D shapes are actually flat and so cannot be handled or picked up.

<table>
<thead>
<tr>
<th>Shape</th>
<th>Name</th>
<th>Number of Sides</th>
<th>Number of Corners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pentagon</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hexagon</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Complete this chart:

- Ask students to find out how many sides a dollar coin has. Ask them to find out the name of this shape.
7.14 Investigate the similarities and differences between symmetrical shapes.

Content Examples & Teaching Points

If a figure can be folded or divided into half so that the two halves match exactly then such a figure is called a symmetric figure.

For example:

Cut out the shapes below. Fold along the dotted lines. The shape is symmetrical if the two halves match exactly.

<table>
<thead>
<tr>
<th>Symmetrical</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Symmetrical Shapes" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not Symmetrical</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image2" alt="Not Symmetrical Shapes" /></td>
</tr>
</tbody>
</table>

The concept of symmetry can be introduced using art. Fold a piece of paper in half for the students. Ask them to paint one half of a butterfly on one side while leaving the other side blank. Before the paint dries, they should fold the two halves together. This should create a whole butterfly with the two halves being the same.

Students should look for symmetry in the classroom and wider environment. Investigate if people’s faces are symmetrical.

There are a range of practical resources that can be used to introduce students to the concept of shapes being halved on their line of symmetry, such as mirrors and geoboards.
11.4 Gather data from picture and written sources and the environment through observation.

Content Examples & Teaching Points

This learning outcome is designed to develop the skill of accurate observation. Students should be given the opportunity to leave their classroom to collect data. For example they can:

- count the number of windows on a school building;
- count the bicycles parked at school, noting the colour of each one;
- count the plants in the garden, noting the number of each type.

A variety of sources can be used such as:

- types of animals in a picture
- number and colours of vehicles in a street scene
- types of buildings on a street (houses, shops, and so on.)
- gender of students in the playground.
- colour of cups students use to drink water.

11.5 Organize and display data using concrete materials in tally charts and column representations.

Content Examples & Teaching Points

Tally charts were introduced in infant one. Students can make a tally chart based on the data collected in learning outcome 11.4.

**Colours of Bicycles at School**

<table>
<thead>
<tr>
<th>Colour</th>
<th>Tally</th>
</tr>
</thead>
<tbody>
<tr>
<td>red</td>
<td>7/7/7</td>
</tr>
<tr>
<td>blue</td>
<td>6/6/6</td>
</tr>
<tr>
<td>black</td>
<td>7/7/7</td>
</tr>
<tr>
<td>green</td>
<td>6/6/6</td>
</tr>
<tr>
<td>yellow</td>
<td>6/6/6</td>
</tr>
</tbody>
</table>

This same data can be used to make a column graph.

For tally charts, students need to learn to make a single mark for 1, 2, 3 and 4 and then cross these four marks from left to right to indicate 5, as follows:

```
\[\text{\begin{tabular}{c}
\hline
\text{red} & 7/7/7 \\
\text{blue} & 6/6/6 \\
\text{black} & 7/7/7 \\
\text{green} & 6/6/6 \\
\text{yellow} & 6/6/6 \\
\end{tabular}}\]
```

They can use this to practice counting by fives.

Graphs are a common method to visually display data. The key point when introducing column graphs is that each column represents a certain number of items and that this is read from the side (y-axis). This may be a new concept for some students.

It can be introduced by physically building columns of blocks. This column represents 3.
11.6 Interpret information presented in simple column graphs using a variety of data sets.

Content Examples & Teaching Points

To interpret a graph or chart, read the title, look at the key, read the labels. Then study the graph to understand what it shows.

This learning outcome can use the same data that the students collected for the previous section. Using data they have collected makes learning more meaningful.

Questions can relate to interpreting a single piece of data:
- How many yellow bicycles are there?
- Questions can also require students to compare using greater or less than or most and fewest.
- Is the number of green bicycles greater or less than the number of red bicycles?
- Which colour has the most number of bicycles?
- Finally students can use addition and subtraction.
- What is the total of red and green bicycles added together?
- How many more black bicycles are there than yellow ones?

11.7 Make predictions using graphs.

Content Examples & Teaching Points

A prediction is more than just a guess. It is a guess based on looking at information we already have.

What is the weather most likely to be on Friday?

One way of making a prediction is to look at the outcome that occurs most often. This is the one most likely to occur again.
Annual and Unit Planning
Learning Outcome Clusters
and
Teachers’ Toolkit

STANDARD ONE
Annual and Unit Planning Learning Outcome Clusters for Standard One Mathematics

There are no learning outcomes for Sets for standard one students.
There are no learning outcomes for Algebra for standard one students.
There are no learning outcomes for Coordinate Graphs for standard one students.

**Numbers**

1.23 Apply the concept of thousands to real life situations.
1.24 Read, write and match numbers up to 1000 using numerical symbols and words.
1.25 Draw a segment of a number line to show a selection of positive numbers up to 1000.
1.26 Explain that each column of a place value chart is ten times more or less than the neighbouring column for numbers between 0 and 999.
1.27 Compare numbers up to 1000 using the symbols for equals (=), less than (<) and greater than (>).
1.28 State, read and write numbers in expanded form, up to 1000.

**Patterns**

2.10 Sequence non-consecutive positive numbers between 0 and 1000 in ascending and descending order, using the number line.
2.11 Identify the next, or a missing, object, action, shape, colour, sound or number in a series.
2.12 Create increasing, decreasing and alternating patterns using objects, actions, shapes, colours, sounds or numbers.
2.13 Describe increasing, decreasing and alternating number patterns and patterns of real objects, actions, sounds, colours and shapes.
2.14 Count forward and backward by 2's, 5's, 10's and 100's from any given starting number between 0 and 1000.

**Geometry**

7.15 Describe horizontal, vertical, diagonal, intersecting, parallel and perpendicular lines.
7.16 Draw common shapes with specified lengths of sides using a ruler.
7.17 Investigate how the perimeter of common shapes such as triangles, squares and rectangles is calculated.
7.18 Create compound shapes using manipulatives such as pattern blocks, sticks, straws, string or other materials.
7.19 Describe 3-D figures such as cones, cylinders, cubes, cuboids and pyramids.

**Addition and Subtraction A**

3.15 Add 2 digit numbers without regrouping using unit columns.
3.16 Subtract 2 digit numbers without regrouping using unit columns.
3.17 Add 2 digit numbers with regrouping using manipulatives such as base ten blocks or lego.
3.18 Subtract 2 digit numbers with regrouping using manipulatives such as base ten blocks or lego.
3.19 Add three 2-digit numbers with and without regrouping in unit columns.
Measurement A
8.19 Measure, compare and record the length of lines, distances and the size of objects using the customary units of inches, feet and yards.
8.20 Measure, compare and record the weight of various objects in the customary units of pounds and ounces.
8.21 Measure, compare and record the capacity of a container using the customary units of cups, pints, quarts and gallons.
8.22 Estimate the length, weight and capacity of objects before accurately measuring them.

Addition and Subtraction B
3.20 Show the relationship between addition and subtraction.
3.21 Add two 3 digit numbers without regrouping using unit columns.
3.22 Subtract two 3 digit numbers without regrouping using unit columns.
3.23 Add two 3-digit numbers with regrouping using manipulatives such as base ten blocks.
3.24 Subtract two 3-digit numbers with regrouping using manipulatives such as base ten blocks.

Measurement B
8.23 Convert among units within the customary system of length, weight and capacity.
8.24 Convert a length of time between minutes and seconds.
8.25 Identify the temperature of the environment, in either degrees Celsius or Fahrenheit, by using a thermometer with a scale.

Multiplication and Division A
4.5 Multiply, mentally, single digit numbers by 2, 3, 4, 5, and 10 with automaticity.
4.6 Explore the multiplicative identity of a number, that is if you multiply a number by 1, the product is that original number.
4.7 Round-off to the nearest ten to estimate when multiplying.
4.8 Multiply a 2-digit number by a single digit number.

Fractions and Decimals
5.7 Describe parts of a whole or of a set using fractions with numerators other than one, such as, 2/3, 3/4, 2/5, 5/6, 4/10.
5.8 Compare and sequence fractions with like denominators with the aid of pictures, the number line, fraction strips or other manipulatives.
5.9 Add two or more proper fractions with like denominators.
5.10 Convert fractions with tenths to decimals for example 3/10 is the same as 0.3
5.11 Add and subtract numbers with one decimal place.
5.12 State, read and write decimals to one decimal place.

Multiplication and Division B
4.9 Represent multiplication problems both horizontally and vertically.
4.10 Read and write multiplication number sentences that include the symbols x and =.
4.11 Multiply numbers by using a 12 by 12 chart.
**Multiplication and Division C**

4.12 Investigate that division is the same as repeated subtraction.
4.13 Divide single and 2-digit numbers by 2, 3, 4, 5, 10, without remainders.
4.14 Read and write division number sentences that include the symbols $\div$ and $\div=$.
4.15 Show the relationship between multiplication and division.
4.16 Solve word problems with real life applications using multiplication and division.

**Data**

11.8 Collect data in real life situations.
11.9 Represent data contained in a tally chart or frequency table using pictographs and bar graphs.
11.10 Analyse a tally chart of real life events that are based on chance.
11.11 Discuss situations that involve chance such as certain, impossible or equally likely events.
11.12 Investigate probability using tables and graphs.
Advisory Content Examples and Teaching Points

STANDARD ONE

1.23 Apply the concept of thousands to real life situations.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim of this learning outcome is to help students understand how big “thousands” are and how this relates to smaller numbers. It can be useful to contrast items typically counted in ones with those counted in tens, hundreds and thousands.</td>
</tr>
<tr>
<td>Students’ understanding can be assessed by asking them to discuss which of the following might be true.</td>
</tr>
<tr>
<td>(i) My friends and I played softball for thousands of hours last weekend.</td>
</tr>
<tr>
<td>(ii) A man won fifteen thousand dollars in the scratch game.</td>
</tr>
<tr>
<td>(iii) My journal has thousands of pages.</td>
</tr>
<tr>
<td>(iv) There are thousands of grains of sand in this jar.</td>
</tr>
<tr>
<td>(v) Thousands of people watched Belize play Mexico at football.</td>
</tr>
<tr>
<td>(vi) It is thousands of miles from Belmopan to Punta Gorda.</td>
</tr>
</tbody>
</table>

1.24 Read, write and match numbers up to 1,000 using numerical symbols and words.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Infant two, students mostly used numbers up to 99. As they enter standard one, it is important they understand that a three digit number is in the hundreds.</td>
</tr>
<tr>
<td>Students should write sentences and short paragraphs that require them to write numbers in words. For example, “The woman lived to be one hundred eight years old.” “Juana paid three hundred sixteen dollars for her new sofa.”</td>
</tr>
<tr>
<td>The hundreds column for the place value chart therefore needs introducing.</td>
</tr>
<tr>
<td>There are some conventions for using commas, hyphens and the word and.</td>
</tr>
<tr>
<td>To make it easier to read long numbers, commas are often added. A comma can be used in writing 1,000.</td>
</tr>
<tr>
<td>Compound numbers between twenty-one &amp; ninety-nine are hyphenated. Fractions are also hyphenated, for example two-thirds.</td>
</tr>
<tr>
<td>The use of and between the hundreds and tens is optional. It is used more in British English than North American. For example both two hundred twelve (U.S) &amp; two hundred and twelve (British) are considered correct. The word and is not used between thousands and hundreds.</td>
</tr>
</tbody>
</table>

### Numbers

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
<th>Number in Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>7</td>
<td>Two hundred forty-seven</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>Four hundred thirty-two</td>
</tr>
</tbody>
</table>
There are multiple skills involved in learning outcome 1.24. Student’s understanding can be evaluated in the following ways:

1. The teacher calls out a number in words and the students select the correct numerals from a set of options.
2. The teacher calls out a number in words and the students write down the numerals.
3. The teacher shows a number written in words and a student reads it out loud.
4. The teacher shows a number written in numerals and a student reads it out loud.
5. The teacher shows a number written in words and a student writes down the numerals.
6. The teacher shows a number written in numerals and a student writes down the words.

1.25 Draw a segment of a number line to show a selection of positive numbers up to 1,000.

Content Example & Teaching Points

A number line does not have to start at zero. A segment of a number line can start and end with any number. Students may be asked to create number lines with missing numbers that they share with classmates who fill in the gaps.

Games can be used to reinforce this concept. For example, musical chairs can be played with a number placed on each chair in sequence. Number lines can be drawn on the floor with chalk.

This activity encourages peer teaching, gets students to test their own knowledge and assist each other in the learning process.

1.26 Explain that each column of a place value chart is ten times more or less than the neighbouring column for numbers between 0 and 999.

Content Examples & Teaching Points

The place value of a digit increases by ten times as we move left on the place value chart and decreases by ten times as we move right.

In 555

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

The 5 in the hundreds column is worth 10 times more that the 5 in the tens column – 500 is 10x50.

The 5 in the tens column is worth 10 times more than the 5 in the ones column – 50 is 10x5.

The 5 in the tens column is worth 10 times less than the 5 in the hundreds column.
1.27 Compare numbers up to 1,000 using the symbols for equals (=), less than (<) and greater than (>).

Content Examples & Teaching Points

This builds on knowledge of the place value chart. It is important that students realise that the number in the hundreds column is the one they look at first.

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is greater than (&gt;)</td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

If the number in the hundreds column is the same, then they need to compare the numbers in the tens column, and so on.

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is greater than (&gt;)</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is less than (&lt;)</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

An additional rule is that a number with more digits is larger.
100 is larger than 99.

If two numbers have the same number of digits, the number with the bigger digit on the left hand side is greater.

If the leftmost digits are the same, we compare the next digit to the right and keep doing this until the digits are different.

Base ten blocks can be used to help students visualize this concept.
1.28 State, read and write numbers in expanded form, up to 1,000.

Content Examples & Teaching Points

A good understanding of place value is essential previous knowledge for this learning outcome.

Expanded form is a numeric form of writing a number to stretch out the different values into a number sentence.

For example:

123 = 100 + 20 + 3

Place value charts with a blank row can be used as follows:

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

This concept should be introduced using base ten blocks or other real objects.

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

Writing numbers in expanded form allows students to look at a number and identify the value of each digit.

Students write the expanded form of a number from hearing the word name of a number. Remind students that value means how much a number is worth.

Most standard one students will not have done enough multiplication to understand an alternative way of expanding numbers, that is:

123 = (1 × 100) + (2 × 10) + (3 × 1).

This form is introduced at a later grade level.
### 2.10 Sequence non-consecutive positive numbers between 0 and 1,000 in ascending and descending order, using the number line.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This learning outcome builds on the skill of using a segment of a number line covered in learning outcome 1.25.</td>
</tr>
<tr>
<td>For example, circle the following on the number line below and then write them from smallest to largest: 868, 860, 863, 867, 870.</td>
</tr>
<tr>
<td>Students should also be introduced to number lines that have intervals other than 1, such as 5 and 10. This will help with reading rulers and measuring scales.</td>
</tr>
<tr>
<td>Use the number line below to help you write these numbers in descending order, that is from largest to smallest. 560, 585, 570, 605, 595.</td>
</tr>
</tbody>
</table>

Students used the concept of ascending and descending order in both infant one and infant two. However, at the beginning of this learning outcome, it should be reviewed using single digit numbers. This can be done in a game, for example shake a dice three times and write the numbers in descending order.

Even after students have mastered arranging small numbers in order, they might get confused with ordering numbers such as 500, 290 and 179 if they do not have a strong understanding of place value.

### 2.11 Identify the next or a missing, object, action, shape, colour, sound, or number in a series.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This learning outcome builds on pattern work done in infant two. Teachers can start by reviewing this using simple world patterns.</td>
</tr>
<tr>
<td>What colour is the next ball in the series?</td>
</tr>
</tbody>
</table>

Students can be taught to ask a series of questions to help them find the next number in a series.

For example:

Are the numbers all ascending or descending?

51, 52, 53, 54 . . .

Is the gap between the numbers the same?

20, 24, 28, 32 (the gap is 4 in each case)

Does the gap between the numbers change in a regular way?

2, 4, 8, 16, 32 (the gap doubles in each case).
### Content Examples & Teaching Points

<table>
<thead>
<tr>
<th>Students will understand patterns better if they have the opportunity to make their own. The teacher’s role is to provide appropriate tools and some guidance. The most important instruction is that items relate to each other in a special way to make the pattern. For example: Make a decreasing pattern using the following blocks.</th>
<th>Students can: Make an alternating pattern by shading in this shape using two different colours.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students enjoy making patterns out of real objects such as beans.</td>
<td>Create an alternating pattern using three actions, for example, clap, stamp, jump, clap, stamp, jump. Students should apply the rules from learning outcome 2.11 when creating number patterns. For example, starting with 1, create a pattern that has a gap of 3 between each number (1, 4, 7, 10, 13 . . .).</td>
</tr>
</tbody>
</table>
### 2.13 Describe increasing, decreasing and alternating number patterns and patterns of real objects, actions, sounds, colours, and shapes.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This learning outcome assumes that students have a good grasp of the skills required for the two previous ones. It requires the students to work out what connects each item in the pattern and describe the relationship in words. For example, “in this pattern, each square is smaller than the one to the left.”</td>
</tr>
<tr>
<td>In this pattern, each number is 2 less than the one to its right. It is a decreasing pattern. 12, 10, 8, 6, 4 “The white beans and red beans alternate.” The type of bean changes every second one.</td>
</tr>
</tbody>
</table>

### 2.14 Count forward and backward by 2’s, 5’s, 10’s and 100’s from any given starting number between 0 and 1000.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting by a number other than one is called skip counting. To skip count you add the same number over and over, for example 5, 10, 15, 20, 25 involves adding 5 each time. Skip counting can start at any number. Students can be taught this skill by counting coins, bottle tops, counters or similar small objects.</td>
</tr>
<tr>
<td>Skip counting helps students see patterns in numbers as well as lays a great foundation for number sense and learning multiplication facts. The more patterns they see in numbers, the more generalizations they can make about how numbers work. A lot of time is to be spent on skip counting using number lines and charts so that the students can visualize what’s happening to the numbers. Skip counting can be linked to real life by using play money. For example, students can count out a pile of $100 notes. The use of games, such as jumping on a number line drawn on the floor, may also be very effective in helping students to visualize counting forwards and backwards.</td>
</tr>
</tbody>
</table>
7.15 Describe horizontal, vertical, diagonal, intersecting, parallel and perpendicular lines.

Content Examples & Teaching Points

The different lines required for this learning outcome are:

- **horizontal**
- **vertical**
- **parallel**
- **perpendicular**
- **intersecting**

Identify the lines in these flags. Which countries do they belong to?

![Flag Images]

As well as practicing drawing each type of line, students need to explain what gives each line its name. This can be done using familiar, everyday language supported by real-world examples.

A line that goes from side to side and not up and down is horizontal. The horizon is the line that runs from side to side and divides the land from the sky. The red lines at the top and bottom of the flag of Belize are horizontal.

A line that goes straight up and down is vertical. A flag pole is vertical.

A line that has a slope is diagonal. The flag of Jamaica has diagonal lines.

Intersecting lines are two lines that cross each other. The multiplication sign is made of two intersecting lines (x).

Two lines that run next to each other but never meet are parallel. Railway tracks make parallel lines. The red lines on the flag of Belize are also parallel lines. The equals sign (=) uses parallel lines.

Two lines that meet like a T are perpendicular. A flag pole is perpendicular to the ground.

7.16 Draw common shapes with specified lengths of sides using a ruler.

Content Examples & Teaching Points

The focus of this learning outcome is on practicing drawing accurately using a ruler.

Learning how to draw using a ruler is an important step in developing measurement skills.

Students should learn the following:

- Rulers have numbers and markings. Each number represents one inch. The smaller lines represent parts of an inch. Note that the zero is often not printed on the ruler. This can be called “the invisible zero”.

When drawing, the pencil should first be placed at the zero point on the ruler.

- It is important to have a strong grip on the ruler to make sure it does not move as the line is being drawn and that fingers are behind the drawing edge.

Some rulers have inches on one side and centimetres on the other. However, in this curriculum, the metric system is not used in lower division.

The act of drawing should end at the correct point, for example, at the 1 inch mark.

The edge of the shape is lined up to the zero point.

Teachers can use an observational checklist to evaluate this learning outcome.

7.17 Investigate how the perimeter of common shapes such as triangles, squares and rectangles is calculated.
Content Examples & Teaching Points

The perimeter of a shape is the distance around it.

One way of finding the perimeter is to measure the length of every side and add them all together. In this case, the perimeter of the triangle is 6ft+5ft+3ft = 14ft.

![Triangle Diagram](image)

To consolidate the concept of perimeter, students can measure the sides of many different shapes before they investigate how calculations can be used.

To find the perimeter of a rectangle or square students can add the lengths of all four sides.

The next step is to give students examples with information missing. They can measure all the sides. However, they can also be asked if they can think of another way of getting the answer.

In a rectangle, opposite sides are equal.

This means that Side A must be 4 inches and Side B must be 7 inches.

The total distance around the rectangle can be worked out in two ways:

Adding the lengths of all the sides together – 7+7+4+4=22

Or, in the case of rectangles, using a simple formula (two times the length added to two times the width)

2x7+2x4=22

This can be represented as 2xW + 2xL

If a shape is completely regular, then the perimeter can be calculated by multiplying the length of one side by the total number of sides.

![Regular Shape Diagram](image)

The perimeter of this triangle is 5+5+5=15. Since all sides are equal, students can both measure all three sides and add them together (5in+5in+5in=15in ) and multiply the length of one side by the total number of sides (5inx3in=15in).

Note that the only way to find the perimeter of an irregular shape is to measure all the sides and add them together.

Perimeter = 2ft+2ft+5ft+1ft + 3ft =13ft.
### 7.18 Create compound shapes using manipulatives such as pattern blocks, sticks, straws, string or other materials.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provided with pattern blocks, construction paper cut into different shapes or any other manipulatives, students can create compound shapes or a design or piece of art using the shapes, as shown in the example below.</td>
</tr>
<tr>
<td>Encourage students to mention the names of the different shapes that they will use when constructing compound shapes. Students may also work on square paper to create rough sketches of their compound shapes, before creating them.</td>
</tr>
</tbody>
</table>

![Compound Shapes Example](image)

### 7.19 Describe 3-D figures such as cones, cylinders, cubes, cuboids and pyramids.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This learning outcome requires students to use sentences to describe shapes. They can also give real life examples.</td>
</tr>
<tr>
<td>Teachers should introduce this topic by bringing in real world objects of different shapes such as:</td>
</tr>
<tr>
<td>- cornflakes box, dominoes</td>
</tr>
<tr>
<td>- dice, rubik’s cube</td>
</tr>
<tr>
<td>- tin of food, oats container, Pringles can</td>
</tr>
<tr>
<td>- ice cream cone, traffic cone.</td>
</tr>
<tr>
<td>Students can then hunt for similar shapes in the classroom, such as board erasers, glue stick and chalk.</td>
</tr>
<tr>
<td>Students will use their knowledge of 2D shapes to identify the shapes of faces on 3D shapes. To avoid over counting the faces, students can mark each face in some way.</td>
</tr>
<tr>
<td>Students should increasingly use geometry vocabulary such as “face”, “edge”, “vertex”, “curve” and “apex”. A vertex is where two edges meet. The tip of a cone is an apex because it is formed by one curved surface.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What am I?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A cuboid has 6 faces, 8 vertices and 12 edges. A cube is a cuboid that has all sides of the same length. Dice are cubes.</td>
</tr>
<tr>
<td><img src="image" alt="Cuboid" /></td>
</tr>
<tr>
<td>A toilet paper roll is a cylinder. It has a circle at each end.</td>
</tr>
<tr>
<td><img src="image" alt="Toilet Paper Roll" /></td>
</tr>
<tr>
<td>A cone has a circle at one end and an apex at the other.</td>
</tr>
<tr>
<td><img src="image" alt="Cone" /></td>
</tr>
<tr>
<td>A square pyramid has faces. The one at the bottom is a square. The ancient Egyptians built square pyramids.</td>
</tr>
<tr>
<td><img src="image" alt="Square Pyramid" /></td>
</tr>
</tbody>
</table>
### 3.15 Add 2 digit numbers without regrouping using unit columns.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This learning outcome was introduced in infant two. The emphasis in standard one can be on writing the sums correctly. Students should already be able to add single digit numbers fluently and accurately. If they cannot, it is important to spend time building this skill before proceeding to double digit addition. Adding a single digit to a 2-digit number without regrouping should be reviewed and practiced, for example, 24+5=29.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>For this learning outcome, students should practice using only sums that do not require changes in the tens column such as:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 5</td>
</tr>
<tr>
<td>+ 2 3</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>5 8</td>
</tr>
</tbody>
</table>

Students should make sure that:
- the top number in the ones column is exactly above the number below it;
- the top number in the tens column is exactly above the number below it;
- the ones column is added first, followed by the tens column.

### 3.16 Subtract 2 digit numbers without regrouping using unit columns.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>For this learning outcome, for each column, the digit in the first number should be higher than in the second. If the digit in the second number is higher, then regrouping or borrowing becomes necessary. This does not require regrouping because 5&gt;3 and 3&gt;2.</td>
</tr>
</tbody>
</table>

<p>| 3 5  |</p>
<table>
<thead>
<tr>
<th>- 2 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2</td>
</tr>
</tbody>
</table>

However, the following problem requires regrouping because the ones digit in the bottom number is higher than the ones digit in the top number. This should not be introduced at this stage. |

<p>| 4 3  |</p>
<table>
<thead>
<tr>
<th>- 2 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 8</td>
</tr>
</tbody>
</table>

When introducing this learning outcome, ensure that students can already mentally subtract single digit numbers, for example 7-4=3. If not, then spend time practicing and reinforcing this skill. Whenever students subtract using unit columns, they start with the numbers in the ones column, followed by the tens and then the hundreds. Problems related to real life examples should be used. For example: Miguel has 25 cents. He spends 13 cents, how much will he have left? Juanita began the day with 63 marbles. At break, she lost 11 marbles while playing a game with Teresita. How many marbles did Juanita have left? Marta finished a game with 53 points. Tony finished it with 85 points. How many more points did Tony have than Marta?
3.17 Add 2 digit numbers with regrouping using manipulatives such as base ten blocks or lego.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regrouping is changing a group of more than ten ones into separate groups of tens and ones. For example, 11 ones is the same as 1 ten and 1 one. The following requires regrouping because the sum of the digits in the ones column is more than 10.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
</tr>
</tbody>
</table>

8 + 5 = 13. This is regrouped as 10 + 3. The 10 is carried over to the tens column.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
</tr>
</tbody>
</table>

This can be done with base ten blocks.

Base ten blocks and lego blocks can also be used to reinforce the concept of regrouping before it is applied to addition.

- When using base ten blocks, students have to exchange ten unit blocks for one ten block.

Ten unit blocks have the same value as one ten block.

Now add the ones together.

This is more than ten, so we have to regroup by exchanging ten ones blocks for one ten block. This is put with the other tens.

Now adding everything together we get the final answer.

25 + 48 = 73
### 3.18 Subtract 2 digit numbers with regrouping using manipulatives such as base ten blocks or lego.

#### Content Examples & Teaching Points

A key concept in subtraction is regrouping by borrowing ten from the next column in the place value chart.

Regrouping is necessary when the top number in the ones column is smaller than the bottom number in the same column. This concept should first be introduced by subtracting a large single digit number from a 2 digit number.

In 21 - 8, 8 cannot be subtracted from 1, so regrouping is used.

<table>
<thead>
<tr>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

This can be demonstrated using base ten blocks placed in a large place value chart.

First try to subtract 8 ones blocks from the ones column. Since this is impossible, we have to exchange one of the ten block for ten ones blocks.

\[
\begin{array}{c|c}
\text{tens} & \text{ones} \\
2 & 1 \\
\hline
& 8 \\
\end{array}
\]

In the written sum, the 2 in the tens column is changed to a 1 and the 10 is added to the ones column to get 11.

\[
\begin{array}{c|c}
\text{tens} & \text{ones} \\
1 & 10 \\
\hline
& 11 \\
\end{array}
\]

Once students have grasped the concept by subtracting single digit numbers, they can be introduced to subtracting one 2-digit number from another.

In the following example, 8 cannot be subtracted from 5, so regrouping is necessary.

\[
\begin{array}{c|c}
\text{tens} & \text{ones} \\
3 & 5 \\
\hline
- & 8 \\
\end{array}
\]

Look at the ones column. 8 cannot be taken from 5 so we need to borrow.

Take one of the ten blocks and exchange it for ten ones.

\[
\begin{array}{c|c}
\text{tens} & \text{ones} \\
2 & 15 \\
\hline
1 & 8 \\
\end{array}
\]

In the written sum, the three in the tens column is changed to a 2 and the 5 in the ones column becomes 15. Since we are taking ten from the tens column, the 3 is changed to 2. (The 3 represents 30. After taking 10 from 30, there are 20 left.)

\[
\begin{array}{c|c}
\text{tens} & \text{ones} \\
2 & 15 \\
\hline
1 & 8 \\
\end{array}
\]

Now it is possible to take 8 from 15 in the ones column and 1 from 2 in the tens column to complete the calculation.

\[
\begin{array}{c|c}
\text{tens} & \text{ones} \\
2 & 15 \\
\hline
- & 8 \\
\end{array}
\]

Cross out the 2 and write 1.

This is 1+10
### 3.19 Add three 2-digit numbers with and without regrouping in unit columns.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is the first learning outcome that requires students to add three numbers together instead of only two. This requires holding something in working memory, which is a new technique that may need practicing mentally with single digit numbers first. 2+4+3=9 because 2+4=6 and 6+3=9. Students can use a variety of techniques, including using real objects and counting on.</td>
</tr>
</tbody>
</table>
| When introducing adding 3 numbers together in unit columns, start with calculations that do not require regrouping.  
\[
\begin{array}{c}
2 & 1 \\
1 & 2 \\
+ & 1 & 5 \\
\hline
4 & 8
\end{array}
\]  
Before introducing calculations that require regrouping, review the skills developed in learning outcome 3.17.  
\[
\begin{array}{c}
1 \\
2 & 9 \\
1 & 2 \\
+ & 1 & 5 \\
\hline
5 & 6
\end{array}
\]  
A 1 is added at the top of the tens column because 9+2+5=16, which is more than 9. |
### 8.19 Measure, compare and record the length of lines, distances and the size of objects using the customary units of inches, feet and yards.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use a ruler or a yard stick to measure different objects in and outside the classroom. For example, measure a pencil, an eraser, a notebook, a calendar or someone’s foot using a ruler. Outside the classroom use either a yard stick or a measuring tape to measure the school verandah, steps, length of a door or the length of a slide on the playground.</td>
</tr>
</tbody>
</table>

### 8.20 Measure, compare and record the weight of various objects in the customary units of pounds and ounces.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This learning outcome requires students to compare weights of objects using the same units, that is objects weighed in ounces are compared to each other, not to ones weighed in pounds. Comparing ounces and pounds is covered in Measurement B, learning outcome 8.23. Achieving this learning outcome requires students to carry out practical tasks using kitchen and bathroom scales. They need to learn how to read these scales properly and how to make accurate records.</td>
</tr>
</tbody>
</table>

Each short line indicates one ounce.
### 8.21 Measure, compare and record the capacity of a container using the customary units of cups, pints, quarts and gallons.

**Content Examples & Teaching Points**

In infant two, students were introduced to cups and pints but not quarts and gallons.

Students can explore the units of cups, pints, quarts and gallons by playing with different containers to determine their capacity.

Students should experiment pouring liquid into a variety of differently sized and shaped containers. Students will find out that the attributes of certain containers determines the capacity of the liquid they can hold. For example, they can experiment to see if a tall, thin container holds more or less liquid than a short, fat one.

For this learning outcome, comparing means using words such as larger than, smaller than and twice as large as.

Conversion between units is covered in learning outcome 8.23 in Measurement B.

### 8.22 Estimate the length, weight and capacity of objects before accurately measuring them.

**Content Examples & Teaching Points**

The key skill in this learning outcome is estimation, that is guessing a number that is close to the right answer based on previous experience.

How long do you think this pencil is?

![Pencil](image)

Now measure it using a ruler.

![Ruler](image)

Estimate the amount of orange juice by comparing it to the amount of lime juice.

There is about twice as much orange juice as lime juice. There is about one cup of lime juice and two cups of orange juice.
3.20 Show the relationship between addition and subtraction.

**Content Examples & Teaching Points**

Addition and subtraction are related because addition can be undone by subtraction.

If 2 is added to 1, the answer is 3, and if 2 is subtracted from 3, the answer is 1.

1 + 2 = 3 is undone by 3 - 2, which equals 1.

When one operation is undone by another, they have an inverse relationship.

This can be demonstrated with a simple activity.

Start with one block. Add two more. How many do we have?

1 + 2 = 3

Now take away two blocks from the three that you have. 1 block is left.

1 - 2 = 1

For each set of three different numbers, you can create two addition and two subtraction calculations that are related.

1 + 2 = 3
2 + 1 = 3
3 - 2 = 1
3 - 1 = 2

This can be demonstrated using numbers and symbols on cards.

3.21 Add two 3 digit numbers without regrouping using unit columns.

**Content Examples & Teaching Points**

This is the first time students are asked to add 3-digit numbers. It may be useful to review the three column place value chart first.

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
<th>Number in Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>7</td>
<td>Two hundred forty-seven</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>Four hundred thirty-two</td>
</tr>
</tbody>
</table>

Since regrouping is not involved, then the process for adding 3-digit numbers is the same as adding 2-digit numbers.

\[
\begin{array}{ccc}
1 & + & 2 \\
\hline
1 & 5 & 4 \\
\hline
2 & 7 & 7 \\
\end{array}
\]

\[
\begin{array}{ccc}
6 & + & 2 \\
\hline
4 & 4 & 0 \\
\hline
8 & 8 & 1 \\
\end{array}
\]
### 3.22 Subtract two 3 digit numbers without regrouping using unit columns.

**Content Examples & Teaching Points**

Subtracting two 3-digit numbers without regrouping is essentially the same as subtracting two 2-digit numbers.

Students should be required to complete real world word problems. They need to recognize phrases that indicate they need to subtract such as:

- "Find the difference" / "What is the difference"
- "How many were left"
- "How much more than"
- "How much less than"

Real world problems can be used to review measurement.

Ivan walked three hundred and twenty-eight yards. Debbie walked two hundred and eight yards. How many more yards did Ivan walk than Debbie?

\[
\begin{array}{c}
328 \\
- 208 \\
\hline
120 \\
\end{array}
\]

### 3.23 Add two 3-digit numbers with regrouping using manipulatives such as base ten blocks.

**Content Examples & Teaching Points**

Adding 3-digit numbers with regrouping uses the same techniques as adding 2-digit numbers with regrouping, so 2-digit addition should be reviewed and practiced first.

Sometimes, regrouping may have to be done more than once in the same problem.

\[
\begin{array}{c}
255 \\
+ 178 \\
\hline
433 \\
\end{array}
\]

Use base ten blocks to demonstrate this.

Create the two numbers to be added, 255 and 178.

When the ones are added, it is more than ten so regrouping is needed. The 13 ones become 1 ten and 3 ones.

The ten is added to the tens column. Now there are 1+5+7 tens to be added.

255+178=433

In writing, the regrouping is indicated by adding a one to the appropriate column.

\[
\begin{array}{c}
1 \\
255 \\
+ 178 \\
\hline
433 \\
\end{array}
\]
**3.24 Subtract two 3-digit numbers with regrouping using manipulatives such as base ten blocks.**

**Content Examples & Teaching Points**

Before introducing subtraction using 3-digit numbers, students should review and practice subtraction with regrouping using 1 and 2-digit numbers (learning outcome 3.18 in Addition and Subtraction A).

Students should then practice using 3-digit numbers in cases where regrouping is only required once.

363
- 171

Start by creating 363 using base ten blocks.

Now subtract 171 from 363 starting with the ones column, 3-1 is 2. However, in the tens column, 7 cannot be taken from 6 (60-70) so regrouping is necessary.

Change one of the hundreds into 10 tens. There are now 16 ten blocks so 7 can be taken away.

In writing:

<table>
<thead>
<tr>
<th>3</th>
<th>6</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Subtracting 3 digit numbers has an additional step in cases such as:

```
  1 0 0
-  2
```

Give students a hundred block and ask them to work out the procedure for subtracting two ones blocks.

First they will need to exchange the hundred block for ten tens blocks.

Next, exchange a tens block for ones. Note there are now 9 tens blocks left.

Now there are 9 tens and ten ones, so there are still one hundred blocks. Now the 2 ones can be subtracted leaving 98.

In writing this can be demonstrated in steps

```
   0 1 0 0
   -  2
   --- --- ---
   0 9 0 10
   -  2
   --- --- ---
   9  8
```

For Use in 2019-2020
This learning outcome focuses on understanding the relationship between customary units. It does not involve the metric system.

One introductory idea is to relate customary units of length to parts of the body. Ask students to measure objects using their thumbs, the length of their foot and the length of their stride. Ask them how many thumb lengths equal one foot and how many feet placed end to end equal one stride.

In some languages, the words for measurements are related to parts of the body. In Spanish, the word for thumb is *el pulgar* and an inch is *la pulgada*.

<table>
<thead>
<tr>
<th>Conversion Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length</strong></td>
</tr>
<tr>
<td>12 inches = 1 foot</td>
</tr>
<tr>
<td>36 inches = 1 yard</td>
</tr>
<tr>
<td>3 feet = 1 yard</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td>16 ounces = 1 pound</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
</tr>
<tr>
<td>2 cups = 1 pint</td>
</tr>
<tr>
<td>4 cups = 1 quart</td>
</tr>
<tr>
<td>2 pints = 1 quart</td>
</tr>
</tbody>
</table>

Real world word problems can be used. Since the focus is on the measurements, ensure the calculations are not too complex.

- Tina bought five pints of milk. How many cups did she have altogether?
- Miguel’s height is thirty-six inches. How tall is he in feet?
- David bought one and a half pounds of flour. How many ounces did he get?
- A goal in football is eight yards wide. How many feet is this?
- A tailor needs six feet of cloth to make a shirt. How many yards is this?
### 8.24 Convert a length of time between minutes and seconds.

**Content Examples & Teaching Points**

This learning outcome requires students to calculate the total number of seconds in a length of time such as one minute and ten seconds. However, they may not yet have the multiplication skills required to do this with larger numbers.

Provide students with a simple chart to use:

<table>
<thead>
<tr>
<th>Number of Minutes</th>
<th>Number of Seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>120</td>
</tr>
<tr>
<td>3</td>
<td>180</td>
</tr>
<tr>
<td>4</td>
<td>240</td>
</tr>
<tr>
<td>5</td>
<td>300</td>
</tr>
<tr>
<td>10</td>
<td>600</td>
</tr>
</tbody>
</table>

Using the chart, the conversion can be done as an addition problem as follows.

- 2 minutes and 12 seconds = 120 seconds + 12 seconds.
- 5 minutes and 38 seconds = 300 seconds + 38 seconds.

Real world word problems should be used.

It takes Lisa five minutes and twenty seconds to walk from her home to school. How many seconds is this in total?

### 8.25 Identify the temperature of the environment, in either degrees Celsius or Fahrenheit, by using a thermometer with a scale.

**Content Examples & Teaching Points**

This is the first learning outcome that refers to temperature, although students may be familiar with the concept from previous knowledge and social studies.

Students need to use temperature vocabulary. Temperature is measured in degrees. In Belize, the Fahrenheit temperature scale is used for the daily weather forecast. 100 degrees Fahrenheit is a hot day. It feels cold at night if the temperature is lower than 70 degrees Fahrenheit.

As digital thermometers become more common, traditional mercury or alcohol thermometers are increasingly rare. It may be necessary to make a model of a thermometer out of card to teach this learning outcome.

The main skill required for this learning outcome is reading a scale. Students should already be familiar with reading the scale on a ruler and on scales used for weighing food in the kitchen.

Some scales require counting by 2’s, 5’s or 10’s. In this thermometer, each short line is 2 more than the line below it.

When reading a thermometer, it is important to look carefully at the top of the line made by the mercury or alcohol.
### 4.5 Multiply, mentally, single digit numbers by 2, 3, 4, 5, and 10 with automaticity.

**Content Examples & Teaching Points**

| The focus of this learning outcome is “automaticity” which means being able to give the answer immediately and without having to work it out. Automaticity helps students do math quickly and accurately. | Students achieve automaticity through repetitive practice using games, flashcards and drills. This is not the same as chanting times tables. However, arrays can be used. |

### 4.6 Explore the multiplicative identity of a number, that is if you multiply a number by 1, the product is that original number.

**Content Examples & Teaching Points**

| When you multiply any number by 1, the answer is the same number.  
2x1=2  54x1=54  987x1=987. 
This also works for fractions. ½ x1= ½  
For example, if we give 10 apples to one child, the number of apples given away will be 10 x 1 = 10. That is, the number of apples remains the same. | The number 1 is called the multiplication identity or the identity element for multiplication of numbers because it does not change the identity (value) of the numbers during the operation of multiplication. |

### 4.7 Round-off to the nearest ten to estimate when multiplying.

**Content Examples & Teaching Points**

| There are two steps involved in this learning outcome: rounding off and multiplying. Since students may not be familiar with the concept of rounding off, this should be practiced first.  
A number is rounded to the nearest ten. It can be rounded up or rounded down. A number line can be used to demonstrate this.  
The closest "tens number" to 23 is 20.  
The closest "tens number" to 28 is 30.  
If a number ends in a 5, it is rounded up.  
75 is rounded up to 80. | Multiplying by ten can be done by adding a zero after the number. This works for any whole number, however large.  
5x10=50, 53x10=530.  
To help students understand this, review the learning outcome 1.26 Explain that each column of a place value chart is ten times more or less than the neighbouring column for numbers between 0 and 999.  

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

20 is ten times more than 2, so 2x10=20.  
200 is ten times more than 20, so 20x10=200.  
Discuss with students why rounding off to the nearest ten before multiplying is useful.  
For example, if you are in a store and you see that a toy boat costs $27, you can quickly estimate that ten boats will cost approximately $300. By first rounding 27 to 30 and then multiplying 30 by 10. |
### 4.8 Multiply a 2-digit number by a single digit number.

**Content Examples & Teaching Points**

| Writing and working out multiplication calculations horizontally is introduced in Multiplication and Division B, learning outcome 4.9. | Decomposing can be used as follows: 21 = 20 + 1, 
So 21 x 3 is 20 x 3 + 1 x 3 or 3 x 20 + 1 + 1 or 3 x 1

| The aim of this learning outcome is to develop fluency and automaticity in mental multiplication of 2 digit numbers. This should start with multiplying by 2 and 3. | 20 + 20 + 20 + 1 + 1 or 20 x 3 + 1 x 3 |

| For example 3 x 15 = 45, 13 x 3 = 39, 24 x 2 = 48, 50 x 2 = 100. Students should practice multiplying using repeated addition and decomposing. 21 x 3 = 20 x 3 + 1 x 3 = 63 This can be demonstrated using beans. |

| 21 x 3 can be calculated using repeated addition: 21 + 21 + 21 = 63 |

| 60 + 3 |
5.7 Describe parts of a whole or of a set using fractions with numerators other than one, such as \( \frac{2}{3} \), \( \frac{3}{4} \), \( \frac{2}{5} \), \( \frac{5}{6} \) and \( \frac{4}{10} \).

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>In infant two, students used fractions with a numerator of one, such as ( \frac{1}{2} ) and ( \frac{1}{4} ). This is the first time they will have used fractions with higher numbers as numerators. Begin by reviewing, ( \frac{1}{2} ), ( \frac{1}{3} ), ( \frac{1}{4} ) and ( \frac{1}{5} ) using shaded diagrams. Review that the number at the bottom, or the denominator, tells us how many total parts there are. This shape has been divided into a total of four parts and therefore the denominator is 4. Review that the top number, which is the numerator, tells us how many parts have been shaded. In this, one part has been shaded so the fraction is ( \frac{1}{4} ). Practice this with a variety of shapes, keeping the numerator at 1.</td>
</tr>
</tbody>
</table>

| Once students have clearly grasped the concept that \( \frac{1}{5} \) indicates one part out of a total of five, numerators other than one can be introduced. This shape has 3 parts in total so the denominator is 3. 2 parts are shaded so the numerator is 2. The fraction is \( \frac{2}{3} \). Practice with a variety of shapes. These have \( \frac{3}{4} \) shaded. |

\( \frac{1}{4} \) \( \frac{1}{4} \) \( \frac{1}{4} \) \( \frac{1}{4} \)
### Content Examples & Teaching Points

This learning outcome can be introduced as follows:

**Compare these two shapes. Which has the larger part shaded?**

![Fraction Shapes](image)

This shows that \( \frac{2}{3} \) is greater than \( \frac{1}{3} \)

**Study these three fraction strips, insert the numerators.**

![Fraction Strips](image)

Now write the fractions in order from smallest to largest.

\[
\frac{1}{5} < \frac{2}{5} < \frac{3}{5}
\]

**Students can now be introduced to fraction number lines.**

\[
\begin{array}{cccccc}
& & & \frac{1}{4} & \frac{2}{4} & \frac{3}{4} & 1 \\
& & & & & & \\
0 & & & & & & \\
\end{array}
\]

Note in this example \( \frac{1}{2} \) is written as \( \frac{2}{4} \) because students are comparing fractions with like denominators. Equivalent fractions are introduced in standard two.

The number line can be used to help solve real world problems such as:

**Corey cycled one quarter of a mile. Ashae cycled three quarters. Who cycled more?**

![Number Line](image)
5.9 Add two or more proper fractions with like denominators.

Content Examples & Teaching Points

This is the first time students have added fractions. The concept should be introduced using shaded diagrams, fraction strips, pictures and so on.

Adding fractions can make more sense if it is linked to real world situations.

If Dale has one quarter of a pizza and Delilah also has one quarter of a pizza. How many quarters do they have altogether?

This fraction strip shows \( \frac{1}{5} \).

\[
\begin{array}{cccc}
\frac{1}{5} & \frac{1}{5} & \frac{1}{5} & \frac{1}{5} \\
\end{array}
\]

What do we get if we add another \( \frac{1}{5} \) to this fraction strip?

Add \( \frac{1}{5} \)

\[
\begin{array}{cccc}
\frac{1}{5} & \frac{1}{5} & \frac{1}{5} & \frac{1}{5} \\
\end{array}
\]

\( \frac{1}{5} + \frac{1}{5} = \frac{2}{5} \)

5.10 Convert fractions with tenths to decimals for example 3/10 is the same as 0.3.

Content Examples & Teaching Points

This is the first time students have been introduced to numbers with decimals. The intention of this learning outcome is to focus on tenths between zero and one. Numbers with decimals above one will be covered in standard two.

The first step is to consolidate students’ understanding of tenths. This can be done using fraction strips and shaded shapes.

Once students have a strong grasp of tenths, decimals, that are numbers that represent fractions that have 10 as the denominator, can be introduced.

Note that only one decimal place is introduced in standard one.

Decimal strips, pictures and number lines should be used.

\[ 0.1 \ 0.1 \ 0.1 \ 0.1 \ 0.1 \ 0.1 \ 0.1 \ 0.1 \]

A decimal number line and a tenths number line can be compared.
5.11 Add and subtract numbers with one decimal place.

Content Examples & Teaching Points

As with 5.10, this learning outcome focuses on adding decimals between 0 and 1, that is 0.1, 0.2 to 0.9.

Note that sums, such as 0.6+0.7, that have an answer that exceeds 1 should be avoided since this introduces a new concept.

This learning outcome builds on the knowledge acquired in learning outcomes 5.9 and 5.10. Students need to understand that \( \frac{1}{10} + \frac{2}{10} = \frac{3}{10} \) is the same as 0.1+0.2=0.3.

This can be demonstrated using fraction strips or shaded diagrams.

One-tenth of this block is shaded pink

\[
\begin{array}{cccccc}
& & & & & \\
10 & & & & & \\
\end{array}
\]

Now shade two-tenths in blue. How many tenths are shaded altogether?

\[
\begin{array}{cccccc}
& & & & & \\
10 & 10 & & & & \\
\end{array}
\]

Now do the same using the decimal strips.

0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

At this stage, teacher may introduce the place value chart with decimals using a zero in the ones column.

<table>
<thead>
<tr>
<th>ones</th>
<th>tenths</th>
<th>Read as</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>zero point one or one tenth</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>zero point two or two tenths</td>
</tr>
</tbody>
</table>

This allows students to write calculations vertically.

\[
\begin{array}{c}
0.5 \\
- 0.2 \\
\hline
0.3
\end{array}
\]

Avoid calculations that require regrouping.

5.12 State, read and write decimals to one decimal place.

Content Examples & Teaching Points

This learning outcome should be taught at the same time as 5.11 and 5.12.

Students need to be comfortable with both ways of reading the numbers.

For example, 0.4 is zero point four as well as four tenths.
This learning outcome introduces several new concepts. Skills should be developed one step at a time and much careful explanation will be required.

Before introducing this learning outcome, practice mental multiplication using single digit numbers (see learning outcome 4.8).

When introducing the written calculations vertically, it is important to start with calculations that do not require regrouping – that is the product of the individual numbers being multiplied does not exceed 100. For example 24x2.

Write the larger number above the smaller number, making sure that the top ones number is exactly above the bottom one.

\[
\begin{array}{c}
2 \quad 4 \\
\times \quad 2 \\
\hline
4 \quad 8
\end{array}
\]

The number at the bottom is the multiplier.

The next step is to multiply the ones in the top number by the multiplier (2x4) followed by the tens (2x2).

The answers must be written in the appropriate column. Many students get this part wrong.

\[
\begin{array}{c}
2 \quad 4 \\
\times \quad 2 \\
\hline
4 \quad 8
\end{array}
\]

This procedure, without the need to regroup, should be practiced until students are performing it fluently.

When students have mastered this technique, introduce problems that require carrying over to the next column.

\[
\begin{array}{c}
1 \quad b \\
\times \quad 3 \\
\hline
3 \quad 6
\end{array}
\]

3x6 is 18 so a 1 needs to be added to the tens column.

\[
\begin{array}{c}
1 \quad 6 \\
\times \quad 3 \\
\hline
1 \quad 8
\end{array}
\]

3x1=3. 3+1=4

3x6=18, ten ones are moved to the next column, leaving 8 behind.

Students can use base ten blocks to check this.

First multiply the ones column by 3.

Now you have

Next multiply the tens column by 3.

Regrouping is required because there are too many ones blocks.
### 4.10 Read and write multiplication number sentences that include the symbols $\times$ and $=$.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This learning outcome can be taught at the same time as the previous one – when students are writing calculations horizontally.</td>
</tr>
<tr>
<td>An example of a multiplication number sentence is $25 \times 4 = 100$</td>
</tr>
</tbody>
</table>

### 4.11 Multiply numbers by using a 12 by 12 chart.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students can use a 12x12 chart to help them as they learn related multiplication skills. This enables them to focus on the skills being acquired rather than on calculating.</td>
</tr>
<tr>
<td>This learning outcome does not require memorization of the times table chart.</td>
</tr>
<tr>
<td>However, reading a 12x12 chart does require a skill that some students may not have acquired, that of finding a piece of data by looking at where a column meets a row.</td>
</tr>
<tr>
<td>In the example below, the answer to $12 \times 4$ is found by reading across from the 12 row until it meets the 4 column.</td>
</tr>
</tbody>
</table>

#### The 12 Times Table

<table>
<thead>
<tr>
<th>$\times$</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>15</td>
<td>18</td>
<td>21</td>
<td>24</td>
<td>27</td>
<td>30</td>
<td>33</td>
<td>36</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>24</td>
<td>28</td>
<td>32</td>
<td>36</td>
<td>40</td>
<td>44</td>
<td>48</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>45</td>
<td>50</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>12</td>
<td>18</td>
<td>24</td>
<td>30</td>
<td>36</td>
<td>42</td>
<td>48</td>
<td>54</td>
<td>60</td>
<td>66</td>
<td>72</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>14</td>
<td>21</td>
<td>28</td>
<td>35</td>
<td>42</td>
<td>49</td>
<td>56</td>
<td>63</td>
<td>70</td>
<td>77</td>
<td>84</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>16</td>
<td>24</td>
<td>32</td>
<td>40</td>
<td>48</td>
<td>56</td>
<td>64</td>
<td>72</td>
<td>80</td>
<td>88</td>
<td>96</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>18</td>
<td>27</td>
<td>36</td>
<td>45</td>
<td>54</td>
<td>63</td>
<td>72</td>
<td>81</td>
<td>90</td>
<td>99</td>
<td>108</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>90</td>
<td>100</td>
<td>110</td>
<td>120</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>22</td>
<td>33</td>
<td>44</td>
<td>55</td>
<td>66</td>
<td>77</td>
<td>88</td>
<td>99</td>
<td>110</td>
<td>121</td>
<td>132</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>24</td>
<td>36</td>
<td>48</td>
<td>60</td>
<td>72</td>
<td>84</td>
<td>96</td>
<td>108</td>
<td>120</td>
<td>132</td>
<td>144</td>
</tr>
</tbody>
</table>

This skill requires practice. Students can work in pairs. One setting the problem and the other finding the answer. This can also be done as a race.
### 4.12 Investigate that division is the same as repeated subtraction.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students should be familiar with subtraction. They have also practiced dividing objects into groups. This unit deepens their understanding of division.</td>
</tr>
<tr>
<td>Start reviewing by dividing real objects into groups. Use small numbers of objects as follows:</td>
</tr>
<tr>
<td>Divide these 8 bottle tops into groups of 2.</td>
</tr>
<tr>
<td>If we divide 8 bottle tops into groups of 2, we get 4 groups. We say this as “8 divided by 2 equals 4.”</td>
</tr>
<tr>
<td>The division symbol can be introduced at this point (see learning outcome 4.14).</td>
</tr>
<tr>
<td>Now take the same group of 8 bottle tops and take away 2. Keep taking away 2 until we have nothing left.</td>
</tr>
<tr>
<td>How many times do we have to subtract 2 from 8 to get 0?</td>
</tr>
<tr>
<td>Now subtract 2 more.</td>
</tr>
<tr>
<td>Keep subtracting 2 until you reach 0.</td>
</tr>
<tr>
<td>2 was subtracted from 8 four times. So 8-2-2-2-2=0.</td>
</tr>
<tr>
<td>and 8 divided by 2 is 4.</td>
</tr>
</tbody>
</table>

### 4.13 Divide single and 2-digit numbers by 2, 3, 4, 5, 10, without remainders.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim of this learning outcome is to develop students’ fluency in dividing numbers mentally.</td>
</tr>
<tr>
<td>This skill can be first developed by practicing dividing real objects into groups of equal size.</td>
</tr>
<tr>
<td>It can be further developed using games, flashcards and drills.</td>
</tr>
<tr>
<td>With no remainders:</td>
</tr>
<tr>
<td>All even numbers can be divided by 2.</td>
</tr>
<tr>
<td>All numbers ending in 5 or 0 can be divided by 5</td>
</tr>
<tr>
<td>All numbers ending in 0 can be divided by 10.</td>
</tr>
<tr>
<td>All multiples of 20 can be divided by 4, as can all numbers ending in 4 and 8, 16, 28, 32 and 36.</td>
</tr>
</tbody>
</table>

### 4.14 Read and write division number sentences that include the symbols ÷ and =.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>An example of a number sentence that includes the division and equals signs is 8÷2=4. This is read aloud as “eight divided by two equals four.</td>
</tr>
<tr>
<td>This skill is developed at the same time as other learning outcomes in this unit.</td>
</tr>
</tbody>
</table>
4.15 Show the relationship between multiplication and division.

Content Examples & Teaching Points

If you multiply a number by another, you can undo this operation by dividing by the same number. In other words, since $6 \times 3 = 18$, then $18 \div 3 = 6$.

Since division is the inverse, or opposite, of multiplication, you can use arrays to help students understand how multiplication and division are related.

The chart below is showing $4 \times 12 = 48$. However, it can also be used to show that $48 \div 12 = 4$.

4.16 Solve word problems with real life applications using multiplication and division.

Content Examples & Teaching Points

Students can begin to associate certain words or phrases with certain types of problem. For example, “double” means multiply by two. “Halve” or “cut in half” means divide by two.

Other words and phrases often used in division problems include:

- share
- into equal groups
- split up

Some examples of real world problems are:

- Michael wants to give three pencils to each of the other five students in his group. How many pencils will he need altogether?
- A bag of water costs 25 cents. How many bags can Shajida buy with 75 cents?
- A builder needs 10 concrete blocks for each row of a wall. The wall will be 8 rows high. How many blocks will he need.
11.8 Collect data in real life situations.

Content Examples & Teaching Points

This learning outcome relates to quantifiable data, that is, things or events that can be counted. Data can be collected by direct observation or through asking questions. For example, students can collect data from each other related to their favourite colour, the month of their birthday, the animals they have and so on.

In infant one and infant two, students used tally charts to record data. This should be reviewed.

<table>
<thead>
<tr>
<th>Favourite Colours</th>
<th>Tally</th>
</tr>
</thead>
<tbody>
<tr>
<td>blue</td>
<td>/////</td>
</tr>
<tr>
<td>green</td>
<td>///</td>
</tr>
<tr>
<td>orange</td>
<td>/</td>
</tr>
<tr>
<td>red</td>
<td>/////</td>
</tr>
<tr>
<td>yellow</td>
<td>///</td>
</tr>
</tbody>
</table>

11.9 Represent data contained in a tally chart or frequency table using pictographs and bar graphs.

Content Examples & Teaching Points

A tally chart is made by putting a mark every time something occurs. A frequency table uses numbers to give the total number of occurrences. Students should create frequency tables, pictographs and charts using the data collected in learning outcome 11.8.

At this level, it is sufficient for one block or image to represent one object from the data. The pictograph below shows that there were 2 red, 3 yellow and 1 blue bicycle at school. The left hand column is not part of the count.

<table>
<thead>
<tr>
<th>Favourite Colours</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>blue</td>
<td>4</td>
</tr>
<tr>
<td>green</td>
<td>2</td>
</tr>
<tr>
<td>orange</td>
<td>1</td>
</tr>
<tr>
<td>red</td>
<td>5</td>
</tr>
<tr>
<td>yellow</td>
<td>2</td>
</tr>
</tbody>
</table>

Colours of Bicycles at School
### 11.10 Analyse a tally chart of real life events that are based on chance.

**Content Examples & Teaching Points**

This learning outcome requires students to apply an understanding of probability to data they have collected.

The simplest task is tossing a coin.

<table>
<thead>
<tr>
<th>Coin Toss</th>
<th>Tally</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heads</td>
<td>//</td>
<td>5</td>
</tr>
<tr>
<td>Tails</td>
<td>///</td>
<td>7</td>
</tr>
</tbody>
</table>

Students can then answer the following questions.

1. How many times was the coin tossed?
2. Which result happened the most?
3. What is the difference between the number of “heads” and the number of “tails.”?

A good activity for increasing understanding of chance and probability is to record the sum of two dice rolls. 7 is the most likely result because it can be achieved in the most different ways (1+6, 2+5, 3+4, 4+3, 5+2, 6+1). The least likely results are 2 and 12 because they can only be achieved one way (1+1, 6+6).

However, because there is an element of chance, the results of a real life experiment might not be exactly as expected.

### 11.11 Discuss situations that involve chance such as certain, impossible or equally likely events.

**Content Examples & Teaching Points**

Students can discuss the data collected in learning outcomes 11.10 to attain learning outcome 11.11. Whenever a coin is tossed, the chance of getting heads is the same as the chance as getting tails.

They can also collect data from rolling a single dice and compare it to adding two dice together. When rolling a single dice, all results are equally likely.

An important understanding is that the chance of getting “heads” or a rolling a six is not affected by previous events. Even if I roll 6,6,6, then chance of getting another 6 is still the same as the chance of getting any other number.

Discussion of certain and impossible can begin with real life situations. Students need to understand the difference between very likely and certain, and between very unlikely and impossible.

This discussion can start by referring to natural and other real events.

In the dry season, it is very likely that the day will be hot. Is this certain or is it possible to get rain?

Is it very unlikely or impossible for there to be a snow storm in Belize?

If a team is winning a football game 10-0 at half time, are they certain to win?

It is certain that people will visit Mars. Do you agree?
11.12 Investigate probability using tables and graphs.

<table>
<thead>
<tr>
<th>Content Examples &amp; Teaching Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>This learning outcome requires students to conduct a simple experiment. It allows them to apply skills learnt throughout the unit.</td>
</tr>
<tr>
<td>For example:</td>
</tr>
<tr>
<td>This spinner has 3 red sections, 2 yellow sections and 1 blue section.</td>
</tr>
</tbody>
</table>

Spin it 30 times and record the results on a tally chart. Create a frequency table based on the tallies and then a bar graph based on the frequency table. Compare your group’s results with the results from other groups.

<table>
<thead>
<tr>
<th>Color</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>5</td>
</tr>
<tr>
<td>Yellow</td>
<td>10</td>
</tr>
<tr>
<td>Red</td>
<td>15</td>
</tr>
</tbody>
</table>

The expected results for the experiment with the spinner are as follows:

Did your group get exactly these results? If not, why do you think that happened? Did any group in the class get the expected results?
Definition of Terms used in the Learning Outcomes

12 by 12 Chart Multiplication chart.
2-digit Number A two-digit integer; from 10 to 99
Array An arrangement of objects, pictures, or numbers in columns and rows.
Attribute Characteristic or property of an object such as colour, shape, size.
Analogue Clock A clock that shows the time by the positions of the hour and minute hands.
Automaticity The ability to do things without occupying the mind with the low-level details required.
Bar graph A graph that visually displays data using horizontal or vertical bars whose lengths are proportional to quantities they represent.
Base Ten Blocks A set of blocks to represent ones, tens, hundreds, and thousands in the base-ten place-value system.
Benchmark Number Numbers against which other numbers or quantities can be estimated and compared.
Capacity The amount of space occupied by a 3-dimensional figure. Same as volume.
Chance The possibility that an outcome will occur in an uncertain event.
Compose Putting two or more parts together to make a whole.
Compound Shape A shape made by putting together, without overlap, two or more basic shapes.
Counting Principles Abstraction - is the counting and quantity principle referring to the understanding that any collection of objects can be counted, whether tangible or not.
Cardinality- the number of elements in a set or other grouping, as a property of that grouping.
One-to one correspondent- assigning of one, and only one, distinct counting word to each of the item to be counted.
Order irrelevance- the order in which items are counted is irrelevant.
Stable order- means knowing that the list of words used must be in a repeatable order.
Customary Units For Belize, the Imperial or English system of measures.
Decimal place The first digit after the decimal represents the tenths place.
Decompose To break down into parts.
Digit Any one of the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 in the base-ten numeration system.
Digital Clock A clock that shows the time with numbers of hours and minutes, usually separated by a colon.
Even number Counting number that is divisible by 2.
Fractional Part Part of a whole- fractions represent fractional parts of numbers, sets, or objects.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line Segment</td>
<td>A part of a line that is bounded by two distinct end points, and contains every point on the line between its endpoints.</td>
</tr>
<tr>
<td>Manipulatives</td>
<td>An object which is designed for children to learn concepts through developmentally appropriate hands-on experience.</td>
</tr>
<tr>
<td>Mentally</td>
<td>Computation done by people “in their heads,” either in whole or in part.</td>
</tr>
<tr>
<td>Non-standard Units of Measurement</td>
<td>Units of measurement that aren't typically used, such as a pencil, an arm, a toothpick, or a shoe.</td>
</tr>
<tr>
<td>Number</td>
<td>Symbols used for counting objects and measuring quantities.</td>
</tr>
<tr>
<td>Number Chart</td>
<td>Charts to find patterns in numbers, skip count, and learn multiplication tables</td>
</tr>
<tr>
<td>Number Line</td>
<td>Straight line on which each point represents a real number. It is a geometric representation of numerical values.</td>
</tr>
<tr>
<td>Number Name</td>
<td>Name of a number in word form.</td>
</tr>
<tr>
<td>Number Sentence</td>
<td>Either an addition sentence, subtraction sentence, multiplication sentence, or division sentence expressed using numbers or common symbols; 3+7=10.</td>
</tr>
<tr>
<td>Numeral</td>
<td>A word, symbol, or figure that represents a number. For example, six, VI, and 6 are all numerals that represent the same number.</td>
</tr>
<tr>
<td>Numerical Symbol</td>
<td>A single symbol (such as &quot;2&quot; or &quot;5&quot;) used alone, or in combinations (such as &quot;25&quot;); to represent numbers (such as the number 25) according to some positional numeral systems.</td>
</tr>
<tr>
<td>Odd number</td>
<td>A counting number that is not divisible by 2.</td>
</tr>
<tr>
<td>Ordinal number</td>
<td>The position or order of something in a sequence, such as first, third, or tenth.</td>
</tr>
<tr>
<td>Parallel lines</td>
<td>Lines in a plane that never meet. Two parallel lines are always the same distance apart.</td>
</tr>
<tr>
<td>Pattern</td>
<td>A repetitive order or arrangement.</td>
</tr>
<tr>
<td>Perimeter</td>
<td>The distance around the boundary of a 2-dimensional figure.</td>
</tr>
<tr>
<td>Perpendicular Lines</td>
<td>Two lines or two planes that intersect at right angles.</td>
</tr>
<tr>
<td>Pictograph</td>
<td>A graph constructed with pictures or symbols.</td>
</tr>
<tr>
<td>Place value</td>
<td>A system that gives a digit a value according to its position, or place, in a number.</td>
</tr>
<tr>
<td>Probability</td>
<td>A number from 0 through 1 giving the likelihood that an event will happen.</td>
</tr>
<tr>
<td>Property</td>
<td>Additive Identity Property -a real number added to zero will result in the sum of the real number.</td>
</tr>
<tr>
<td></td>
<td>Multiplicative identity property- a number multiply by 1, the result, or product, is that original number.</td>
</tr>
<tr>
<td>Ray</td>
<td>Portion of a line which starts at a point and goes off in a particular direction to infinity.</td>
</tr>
<tr>
<td>Real Life</td>
<td>Examples of situation that students are likely to be aware of or encounter outside of the classroom.</td>
</tr>
<tr>
<td>Real World</td>
<td>Relevant connections in math.</td>
</tr>
<tr>
<td>Recite</td>
<td>Formal reading aloud before an audience.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Regrouping</td>
<td>The process of making groups of tens when adding or subtracting two digit numbers (or more) and is another name for carrying and borrowing.</td>
</tr>
<tr>
<td>Segment of a Number Line</td>
<td>Part of a number line</td>
</tr>
<tr>
<td>Sequence</td>
<td>A list of numbers, often with an underlying rule that may be used to generate subsequent numbers in the list.</td>
</tr>
<tr>
<td>Set</td>
<td>A collection or group of objects, numbers, or other items.</td>
</tr>
<tr>
<td>Tally</td>
<td>To keep a record of a count, commonly by making a mark for each item as it is counted.</td>
</tr>
<tr>
<td>Tally Chart</td>
<td>A table to keep track of a tally, typically showing how many times each value appears in a set of data.</td>
</tr>
<tr>
<td>Unit Column</td>
<td>An arrangement of figures, one above the other.</td>
</tr>
<tr>
<td>Wider Environment</td>
<td>Informal learning environments, such as outside of school.</td>
</tr>
</tbody>
</table>