

Specific Learner Expectations

<p><b>Data Handling</b></p> <p><i>Data can be recorded, organized, represented and summarized in a variety of ways to highlight similarities, differences and trends; the chosen format should illustrate the information without bias or distortion. Probability can be expressed qualitatively by using terms such as "unlikely", "certain" or "impossible". It can be expressed quantitatively on a numerical scale</i></p>	<p><b>Measurement</b></p> <p><i>To measure is to attach a number to a quantity using a chosen unit. Since the attributes being measured are continuous, ways must be found to deal with quantities that fall between numbers. It is important to know how accurate a measurement needs to be or can ever be.</i></p>	<p><b>Shape and Space</b></p> <p><i>The regions, paths and boundaries of natural space can be described by shape. An understanding of the interrelationships of shape allows us to interpret, understand and appreciate our two- and three-dimensional world.</i></p>	<p><b>Pattern and Function</b></p> <p><i>To identify pattern is to begin to understand how mathematics applies to the world in which we live. The repetitive features of patterns can be identified and described as generalized rules called "functions". This builds a foundation for the later study of algebra.</i></p>	<p><b>Number</b></p> <p><i>Numbers are used to interpret information, make decisions and solve problems. For example, the operations of addition, subtraction, multiplication and division are related to one another and are used to process information in order to solve problems. The degree of precision needed in calculating depends on how the result will be used.</i></p>
<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Compare objects</li> <li>· Identify which of two containers has more/less by directly comparing them</li> <li>· Identify which of two objects is larger/smaller by directly comparing them</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Recognize the meaning of the following mathematical terms related to size: big / large, little / small, heavy /light, full/ empty</li> <li>· Participate in measuring activities by filling and pouring</li> <li>· Be able to identify, compare, and describe attributes of objects and situations using the following terms: longer, shorter, heavier, lighter, more, less, hotter, colder</li> <li>· Be able to discuss common events in their daily routines using the following terms: before, after, bed time, story time, today, tomorrow</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Use 3D materials in play situations</li> <li>· Explore with 2D shapes: triangle, square, circle</li> <li>· Use the following positional vocabulary to talk about people and objects: next to, in front of, behind</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Identify simple patterns in the environment</li> <li>· Repeat simple patterns in music, literature and art, (clapping rhythms, repeating stories)</li> <li>· Continue simple patterns made with objects and describe them</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Rote count to 10</li> <li>· Identify random numerals from 1-5</li> <li>· Name amounts from 1-5</li> <li>· Sort real life objects into sets</li> <li>· Match two sets of five objects with 1:1 correspondence e.g. five dolls with five chairs</li> <li>· Accurately use the following language: more, as many, less</li> <li>· Experience counting rhymes and songs</li> </ul>

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<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Sort and describe objects</li> <li>· Create and compare pictographs</li> <li>· Use the terms more and less in order to compare data</li> <li>· Explain and discuss simple graphs and answer questions about the data</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Start to use comparative words (bigger, longer etc.)</li> <li>· Identify, compare and sequence events in their daily routine: before, after, bedtime, story time, today, tomorrow</li> <li>· Notice seasonal changes</li> <li>· Participate in measuring activities by direct comparison i.e. ordering two items by length, height, or weight</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Identify 2D shapes – circle, triangle, square, rectangle, oval</li> <li>· Find examples of 3D shapes in their environment</li> <li>· Talk about the regions and boundaries of their environment</li> <li>· Be familiar with positional words in their environment and their position in relation to things in it (next to, in front of, behind, etc.)</li> <li>· Find 2D materials in the environment</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Identify and create simple patterns using objects.</li> <li>· Find and describe simple patterns in music, literature and art (rhythm, story patterns)</li> <li>· Create and describe patterns with objects using the attributes of color and size</li> <li>· Continue a given pattern to three or more independent repetitions</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Use 1-1 correspondence up to 10</li> <li>· Rote count to 20</li> <li>· Model sets of 1-10 using manipulatives</li> <li>· Instantly recognize three objects</li> <li>· Automatically recall the number of dots on a dot pattern card (1-5)</li> <li>· Instant recognition of three objects</li> <li>· Model number relationship to 10. E.g. Show me one more than these three or take two away from these cubes</li> <li>· Describe concepts of addition and subtraction using their own words</li> <li>· Use mathematical language: more, less, the same, and number names</li> <li>· Name random numerals from 1 ~ 10</li> <li>· Name amounts in a set from 1 ~ 10</li> <li>· Describe the position of things in sequence using ordinal numbers (up to the 5th and last)</li> <li>· Use ordinal number to describe the position of the first three objects and the last object in a sequence (first, second, third, last)</li> </ul>

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<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Sort and label objects into sets by attributes (size, color, shape)</li> <li>· Create a graph of objects and compare quantities using number words (most, least and same)</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Identify, compare and describe attributes of objects and situations: longer, shorter, heavier, empty, full, hotter, colder</li> <li>· Estimate, measure, label and compare using non-standard units of measurement: length</li> <li>· Use a calendar to determine the date, and to identify the days of the week</li> <li>· Read and write the time to the hour</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Recognize, name, draw, compare and sort 2D shapes (square, triangle, rectangle, circle, and oval)</li> <li>· Sort, describe and compare 3D shapes according to attributes such as size or form</li> <li>· Explore and describe the paths, regions and boundaries of their immediate environment and their position using positional words (inside, outside, above, below, up, down)</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Create simple patterns and more complex patterns (a, a, b, b; a, b, b, a, b, c)</li> <li>· Skip count in 2s/5s to 20 and 10s to 100 using strategies such as tally marks</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Use 1-1 correspondence up to 20</li> <li>· Rote count to 50</li> <li>· Read, write, count, model, compare and order numbers, both forwards and backwards, to 20</li> <li>· Estimate quantities to 20</li> <li>· Use ordinal numbers to describe the position of things in a sequence (up the 20th term of the sequence)</li> <li>· Use the language of mathematics: more, less, number names, total, add, subtract, equals, etc.</li> <li>· Decompose into two sets and compose two sets into one set of manipulative realizing that the amount stays the same</li> <li>· Model numbers to 10 in multiple ways</li> <li>· Model addition facts to 10 from a given equation, using manipulatives</li> <li>· Automatically recall double facts to 20 (10+10)</li> <li>· Verbally count on 1 or 2 more / 1 or 2 less from a given number up to 50</li> <li>· Automatically recall the number of dots on a dot pattern card 1 – 10</li> <li>· Count on from a hidden set up to 20</li> <li>· Begin to build a mathematical vocabulary in order to explain how a problem was solved</li> </ul>

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<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>Sort and label objects into sets by one or more attributes</li> <li>Discuss and compare data represented in teacher-generated diagrams: tree, Venn and Carroll</li> <li>Collect, display and interpret data for the purpose of finding information</li> <li>Understand the purpose of graphing data</li> <li>Create a pictograph and simple bar graph from a graph of objects, and interpret data by comparing quantities: more, fewer, less than, greater than</li> <li>Discuss, identify, predict and place outcomes in order of likelihood: impossible, unlikely, likely and certain</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>Estimate, measure, label and compare using non-standard units of measurement: length, mass, time and temperature</li> <li>Understand why we use standard units of measurement to measure</li> <li>Use standard units of measurement to measure</li> <li>Use a calendar to determine the date, and to identify and sequence days of the week and months of the year</li> <li>Estimate, identify and compare lengths of time: second, minute, hour, day, week, month</li> <li>Read and write the time to the hour, half hour and quarter hour using both analog and 24 hour digital clocks</li> <li>Begin to understand the concept of worth and recognize Euro currency</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>Use what they know about 3D shapes to see and describe 2D shapes</li> <li>Sort and label 2D and 3D shapes using appropriate mathematical vocabulary: sides, corners, circle, sphere, square, cube</li> <li>Create 3D shapes</li> <li>Find and explain symmetry in their immediate environment</li> <li>Create and explain simple symmetrical designs</li> <li>Give and follow simple directions, describing paths, regions and boundaries of their immediate environment and their position using positional words (left, right, forward, backward)</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>Create, describe and extend complex patterns</li> <li>Recognize, describe and extend patterns in numbers: odd and even, skip counting, 2s, 5s and 10s to 100</li> <li>Identify patterns and rules for addition: <math>4 + 3 = 7, 3 + 4 = 7</math> (commutative property)</li> <li>Identify patterns and rules for subtraction: <math>7 - 3 = 4, 7 - 4 = 3</math></li> <li>Model, with manipulatives, the relationship between addition and subtraction: <math>3 + 4 = 7, 7 - 3 = 4</math></li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>Read, write, and model numbers, using the base 10 system, to 100</li> <li>Rote count (in 1s, 2s, 5s and 10s)</li> <li>Compare and order numbers, both forwards and backwards, to 100</li> <li>Estimate quantities to 100</li> <li>Use mathematical vocabulary and symbols of addition and subtraction: add, subtract, difference, sum, +, -</li> <li>Read, write and model addition and subtraction to 20</li> <li>Automatically recall double+1, doubles+2, adding 0, 1 &amp; 10 subtracting 0,1,10 &amp; all</li> <li>Automatically recall combinations that equal 10 (10 frame)</li> <li>Automatically recall the number of dots on a 10 frame and random dot flash cards 1 – 10</li> <li>Verbally count on or back from any given number up to 100</li> <li>Describe the meaning and use of addition and subtraction</li> <li>Explore and model multiplication using their own language/methods</li> <li>Use fraction names (half, quarter) to describe part and whole relationships</li> <li>Reasonably estimate answers</li> <li>Select and explain an appropriate method for solving a problem</li> </ul>

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<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Discuss, compare and create data represented in diagrams: Carroll, Venn</li> <li>· Design a survey, process and interpret the data (teacher design)</li> <li>· Collect and display data in a bar graph and interpret results</li> <li>· Use probability to explain possible outcomes using the terms “likely” or “unlikely”</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Select appropriate tools and units of measurement</li> <li>· Model addition and subtraction using money</li> <li>· Measure, label and compare using formal methods and standard units of measurement: length, mass, capacity, time and temperature (time to five minutes)</li> <li>· Measure, label and compare perimeter and area</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Sort, describe and model regular and irregular polygons: triangles, hexagons, trapeziums</li> <li>· Identify, describe and model congruency in 2D shapes</li> <li>· Combine and transform 2D shapes to make another shape</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Understand and use the relationship between addition and subtraction: <math>4 + 3 = 7</math>, <math>7 - 3 = 4</math></li> <li>· Analyze patterns in number systems to 100</li> <li>· Recognize, describe and extend more complex patterns in numbers</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Read, write and model numbers, using the base 10 system to 1000</li> <li>· Count, compare and order numbers to 1000</li> <li>· Estimate quantities to 100</li> <li>· Count in 3s, 4s, 6s, and explore other numbers on a hundred chart</li> <li>· Read, write and model addition and subtraction to 100 with and without regrouping</li> <li>· Automatically recall basic addition and subtraction facts (up to 20)</li> <li>· Compare fractions using manipulatives and using fractional notation</li> <li>· Understand and model the concept of equivalence to 1: two halves = 1, three thirds = 1</li> <li>· Select and explain an appropriate method for solving a problem</li> </ul>

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<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Discuss, compare and create data using diagrams</li> <li>· Design a survey, process and interpret the data (student design)</li> <li>· Collect and display data in a bar graph and interpret results using scale</li> <li>· Understand the purpose of a database by manipulating the data to answer questions and solve problems</li> <li>· Use probability to determine mathematically fair and unfair games</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Estimate, measure, label and compare using formal methods and standard units of measurement: length, mass, time, and temperature in customary units</li> <li>· Select appropriate tools and units of measurement</li> <li>· Describe measures that fall between numbers on a measure scale: <math>3\frac{1}{2}</math>kg, between 4 cm and 5 cm</li> <li>· Estimate, measure, label and compare perimeter and area</li> <li>· Read and write the time (to the minute and second), using intervals (of 10 minutes, 5 minutes and 1 minute), on 12-hour and 24-hour clocks</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Sort, describe and model regular and irregular polygons: triangles, hexagons, trapezoid (looking at angles)</li> <li>· Create symmetrical patterns, including tessellation</li> <li>· Identify lines and axes of reflective and rotational symmetry</li> <li>· Understand an angle as a measure of rotation by comparing and describing rotations: whole turn (360); half turn (180); quarter turn (90); north, south, east and west on a compass</li> <li>· Locate features on a grid using coordinates</li> <li>· Understand and use the vocabulary of types of angles: straight and right</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Identify patterns and rules for multiplication and division: <math>4 \times 3 = 12</math>, <math>3 \times 4 = 12</math>, <math>12:3 = 4</math>, <math>12:4 = 3</math></li> <li>· Model (with manipulatives) the relationship between multiplication and division</li> <li>· Model (with manipulatives) the relationship between multiplication and addition (repeated addition)</li> <li>· Model (with manipulatives) the relationship between division and subtraction</li> <li>· Model multiplication as an array</li> <li>· Understand and use number patterns to solve problems (missing numbers)</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Read, write and model numbers, using the base 10 system to 10,000</li> <li>· Estimate quantities to 1,000</li> <li>· Use number patterns to learn multiplication tables: (1 to 10)</li> <li>· Model addition and subtraction equations to 1000 (with and without regrouping)</li> <li>· Use mathematical vocabulary and symbols of multiplication and division: times, divide, product, quotient</li> <li>· Use and describe multiple strategies to solve addition, subtraction, multiplication and division problems</li> <li>· Read, write and model multiplication and division problems</li> <li>· Model addition and subtraction of fractions with the same denominator</li> <li>· Use mathematical vocabulary and symbols of fractions: numerator, denominator, equivalence</li> <li>· Model simple equivalency of fractions with manipulatives (<math>1/2 = 3/6</math>)</li> <li>· Reasonably estimate answers: rounding and approximation</li> <li>· Select and explain an appropriate method for solving a problem</li> <li>· Understand that in the base 10 system each move from right to left is multiple of 10</li> </ul>

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<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Find, describe and explain the mode, median and range in a set of data and its use</li> <li>· Use the scale on the vertical axis of a bar graph to represent large quantities</li> <li>· Create, interpret, discuss and compare data displays (pictograph, bar graphs)</li> <li>· Interpret, discuss and compare data from teacher generated line and pie graph</li> <li>· Use a numerical probability scale 0 to 1 or 0% to 100%</li> <li>· Design a survey and systematically collect, organize and record the data in displays: pictograph and bar graph</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Describe measures that fall between numbers on a measure scale using decimal notation (3.2 cm)</li> <li>· Select and use appropriate standard units of measurement when estimating, describing, comparing and measuring</li> <li>· Use measuring tools, with simple scales, accurately to the nearest whole unit</li> <li>· Determine the relationships between area and perimeter</li> <li>· Estimate, measure, label and compare using formal methods and standard units of measurement, the dimensions of area and perimeter with conceptual understanding?</li> <li>· Use and construct timetables (12-hour and 24-hour) and time lines</li> <li>· Calculate elapsed time to minute (not more than 24 hours)</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Use the geometric vocabulary of 2-D and 3-D models and pictures: edge, vertex, and face</li> <li>· Classify, sort and label all types of triangles and quadrilaterals: equilateral, right-angled, parallelogram, kite, square, rectangle</li> <li>· Describe, classify and model 3-D shapes</li> <li>· Read, locate, and plot coordinates in quadrant 1</li> <li>· Understand and use the vocabulary of types of angles; obtuse, acute, straight</li> <li>· Understand and use the vocabulary of types of lines: perpendicular, parallel, intersecting</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Recognize and describe more complex patterns in number functions</li> <li>· Understand and use the relationship between multiplication and addition</li> <li>· Understand and use the relationship between division and subtraction</li> <li>· Understand and use the relationship between division and multiplication</li> <li>· Model, explain, and extend simple number patterns</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Read, write and model numbers, using the base 10 system to millions and to hundredths</li> <li>· Automatically recall and use basic number facts using addition, subtraction, multiplication and division</li> <li>· Read, write, and model addition and subtraction to one million</li> <li>· Create and solve multiple digit multiplication and division problems (4972 x 3, 7845 ÷ 4)</li> <li>· Read, write and model addition and subtraction of fractions with related denominators (1/4, 1/2, 1/8, 1/16)</li> <li>· Read, write and model improper fractions and mixed numbers (with manipulatives)</li> <li>· Compare and order fractions (with manipulatives)</li> <li>· Model equivalency of fractions: <math>\frac{2}{4} = \frac{1}{2}</math></li> <li>· Use the mathematical vocabulary of fractions: improper, mixed numbers</li> <li>· Round decimals to a given place or whole number</li> <li>· Read, write and model the addition and subtraction of decimals to the tenths and hundredths</li> <li>· Use mathematical vocabulary and symbols of multiplication and division: factor, divisor, dividend, multiple</li> <li>· Understand that in the base 10 system each move from right to left is a multiple of 10 and each move left to right is a divisor of 10</li> </ul>

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<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Create, interpret, discuss and compare data displays (pictograph, pie chart, bar/line graph) including how well they communicate information</li> <li>· Find, describe and explain the range, mode, median and mean in a set of data and understand their use</li> <li>· Determine the experimental probability of an event</li> <li>· Design a survey and systematically collect, organize and record the data in displays: circle graph (pie chart), line graph or bar</li> <li>· Use a complex scale (starting at first data point) on a vertical graph to represent large quantities</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· select and use appropriate standard units of measurement when estimating, describing, comparing and measuring</li> <li>· Use measuring tools, with simple scales, accurately to the nearest half unit</li> <li>· Develop procedures for finding area, perimeter and volume</li> <li>· Determine the relationships between area, perimeter and volume</li> <li>· Estimate, measure, label and compare, using formal methods and standard units of measurement, the dimensions of area, perimeter and volume of rectangles including simple irregular shapes</li> <li>· Use decimal notation in measurement: 3.2cm, 1.47kg</li> <li>· Measure and construct angles in degrees using a protractor</li> <li>· Determine times worldwide</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Understand and use the vocabulary of types of angle: obtuse, acute, straight, reflex</li> <li>· Understand and use geometric vocabulary for circles: diameter, radius, circumference (no formula)</li> <li>· Use a compass</li> <li>· Understand and use the vocabulary of lines, rays and segments: parallel, perpendicular</li> <li>· Read and plot coordinates in four quadrants</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Apply the relationship between multiplication and division (inverse function)</li> <li>· Model, explain, and extend complex number patterns</li> <li>· Use real-life problems to create a number pattern, following a rule</li> </ul>	<p><b>Students will be able to</b></p> <ul style="list-style-type: none"> <li>· Read, write and model numbers, using the base 10 system, to millions and beyond; and to thousandths and beyond</li> <li>· Automatically recall and use basic number facts using addition, subtraction, multiplication and division</li> <li>· Create and solve multiple digit multiplication and division problems</li> <li>· Read, write and model improper fractions and mixed numbers</li> <li>· Compare and order fractions with related denominators (without manipulatives)</li> <li>· Simplify fractions</li> <li>· Read, write and model multiplication and division of decimals only in dividend (with reference to money)</li> <li>· Read, write and model benchmark percentages (25%, 50%, 75%, 100%)</li> <li>· Select and defend the most appropriate and efficient method of solving a problem: mental estimation, mental arithmetic, pencil and paper algorithm, calculator</li> <li>· Identify patterns and rules for addition, subtraction, multiplication and division, also multiply using common denominators</li> <li>· Interchange fraction, decimal and percent (benchmark percentages)</li> <li>· Addition and subtraction of decimals</li> <li>· Order of operations multiplication, division, addition, subtraction</li> </ul>