Lower School Mathematics Outcomes

| Strand | Specific Expectation Grade 1 |
|---|---|
| **Operations and Algebraic Thinking** | • Demonstrates understanding of the meaning of the equal sign, and determines if equations involving addition and subtraction are true or false.<br>• Represents and solves word problems involving addition and subtraction within 20.<br>• Describes number patterns, such as odd and even numbers and skip count by 2, 5, 10. |
| **Number and Operations in Base 10** | • Extends the counting sequence beyond 100.<br>• Identifies and understands place value in three-digit numbers.<br>• Uses symbols and the language of mathematics to compare two 2-digit number For example, more, less, equal, to, <, >, = .<br>• Fluently solves addition and subtraction facts within 20.<br>• Uses mental and written strategies for addition of two-digit numbers.<br>• Uses mental and written strategies for subtraction of two-digit numbers. |
| **Number and Operations - Fractions** | • Identifies and describes simple fractions as parts of circles and rectangles *(including language of whole, halves and fourths*). |
| **Measurement** | • Uses appropriate tools and techniques to estimate and measure length, and temperature.<br>• Tells and writes time in hours and half hours using digital and analog clocks.<br>• Identifies and compares values of coins and bills.<br>• Understands that the calendar can be used to determine the date, and to identify and sequence days of the week and months of the year. |
| **Data Handling** | • Organizes represents and asks and answers questions about data in various ways. |
| **Geometry** | • Composes and names 2D and 3D shapes.<br>• Recognizes symmetry in shapes and objects. |

Lower School Mathematics Outcomes

| Strand | Specific Expectation Grade 2 |
|---|---|
| **Operations and Algebraic Thinking** | • Understand the inverse relationship between addition and subtraction.<br>• Use repeated addition to find the total number of objects arranged in rectangular arrays. |
| **Number and Operations in Base 10** | • Count within 1000; skip-count by 5s, 10s, and 100s.<br>• Fluently add and subtract within 20 using mental strategies.<br>• Identify and understand place value in four-digit numbers.<br>• Read, write and model numbers to 1000 using base-ten numerals, number names, and expanded form.<br>• Use symbols and the language of mathematics to compare and order whole numbers up to 1,000 For example, more, less, equal to, <, >, = .<br>• Solve addition and subtraction problems of multi-digit whole numbers.<br>• Add and subtract within 1000, using strategies, based on place value, properties of operations, and/or the relationship between addition and subtraction.<br>• Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.<br>• Represent and solve 1 and 2-step word problems involving addition and subtraction within 100. |
| **Number and Operations - Fractions** | • Identify and describe simple fractions as parts of circles and rectangles *(including language of whole, halves, thirds and fourths*). |
| **Measurement** | • Estimate, measure and compare the length of an object by using appropriate tools and units of inches, feet, centimeters, and meters.<br>• Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.<br>• Demonstrate understanding of a thermometer.<br>• Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using dollar and cent symbols appropriately. |

Lower School Mathematics Outcomes

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| **Data Handling** | • Collect and organize data to create line plots-bar graphs, and pictographs.<br>• Analyze and interpret data on a bar graph.<br>• Solve word problems using data. |
| **Geometry** | • Identify and draw 2D and 3D shapes having specified attributes, such as a given number of angles or a given number of equal faces.<br>• Divide a rectangle into squares in order to calculate area. |

Lower School Mathematics Outcomes

| Strand | Specific Expectation Grade 3 |
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| **Operations and Algebraic Thinking** | • Represent and solve problems involving multiplication and division.<br>• Understand properties of multiplication and the relationship between multiplication and division.<br>• Use multiplication and division within 100 to solve word problems.<br>• Solve word problems using the four operations with a letter to stand for the unknown quantity.<br>• Describe rules for patterns using words, symbols, and tables. |
| **Number and Operations in Base 10** | • Demonstrate automaticity with multiplication facts through 10 x 10.<br>• Demonstrates place value understanding up to 100,000.<br>• Order and compare whole numbers up to 1,000,000.<br>• Use place value understanding to round whole numbers to the nearest 10 and 100.<br>• Make and explain reasonable estimations for addition and subtraction problems within 1,000.<br>• Use place value understanding and properties of operations to perform multi-digit arithmetic.<br>• Fluently add and subtract within 1000 using strategies and algorithms based on place value.<br>• Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division.<br>• Use and describes a variety of strategies to solve problems involving multiplication of two and three- digit whole numbers by 1-digit numbers.<br>• Interpret whole-number quotients of whole numbers.<br>• Understand division as an unknown-factor problem. |
| **Number and Operations - Fractions** | • Express whole numbers as fractions.<br>• Understand and represent a fraction as a number on the number line.<br>• Recognize and generate simple equivalent fractions.<br>• Compare two fractions with the same numerator or the same denominator by reasoning about their size.<br>• Represent the results of fraction comparisons with the symbols >, =, or <, and justify the conclusions. |

Lower School Mathematics Outcomes

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| **Measurement** | • Measure to the nearest inch, half-inch, and quarter-inch.<br>• Measure to the nearest centimeter and half-centimeter.<br>• Tells and writes time to the nearest minute.<br>• Solve problems that measure elapsed time.<br>• Estimate and solve word problems involving measurement using both US Customary and Metric standard units of weight, volume, and capacity. |
| **Data Handling** | • Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories.<br>• Find the maximum, minimum and range of a data set.<br>• Ask and answer one- and two-step questions using information presented in scaled bar graphs. |
| **Geometry** | • Identify describe, model and compare attributes of 2D and 3D shapes.<br>• Identify and describe different types of angles (right, acute, obtuse).<br>• Understand concepts of area and perimeter and relates them to multiplication and addition.<br>• Estimate, describe and use strategies to solve problems involving area and perimeter of polygons. |

Lower School Mathematics Outcomes

| Strand | Specific Expectation Grade 4 |
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| **Operations and Algebraic Thinking** | • Identify equivalent multiplication expressions.<br>• Simplify expressions that involve applying rules of the order of operations.<br>• Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted.<br>• Represent word problems using equations with a letter standing for the unknown quantity.<br>• Find all factor pairs for a whole number in the range 1-100.<br>• Recognize that a whole number is a multiple of each of its factors.<br>• Generate a number or shape pattern that follows a given rule. |
| **Number and Operations in Base 10** | • Demonstrate automaticity with multiplication facts through 12 x 12, and proficiency with related division facts.<br>• Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.<br>• Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form.<br>• Use place value understanding to round multi-digit whole numbers to any place.<br>• Fluently add and subtract multi-digit whole numbers using the standard algorithm.<br>• Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations.<br>• Apply the rules for order of operations when solving number sentences. (PEMDAS)<br>• Use and describe a variety of strategies to solve problems involving the division of multi-digit whole numbers by 1 and 2-digit divisors. |
| **Number and Operations - Fractions** | • Read, write, model, and compare fractions and explains strategies used.<br>• Understand the relationships between fractions and decimals.<br>• Use and describe a variety of strategies to solve problems involving addition and subtraction of fractions with like and unlike denominators.<br>• Use and describe a variety of strategies to solve problems involving addition and subtraction of fractions with mixed numbers. |

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| | • Extend understanding of fraction equivalence and ordering.<br>• Understand decimal notation for fractions, and compare decimal fractions.<br>• Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. |
| **Measurement** | • Solve problems involving metric measurement and conversion of metric measurements.<br>• Know relative size of measurement units within one system of units including km, m, cm; kg, g, lb, oz, l, ml, hr, min, sec.<br>• Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, (including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit). |
| **Data Handling** | • Collect and organize data to create frequency tables, bar graphs, and line plots.<br>• Describe and explain the range, mode, median of a data set.<br>• Use graphs to ask and answer questions, make predictions and draw conclusions of a data set. |
| **Geometry** | • Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines.<br>• Classify 2D figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size.<br>• Identify line-symmetric figures and draw lines of symmetry.<br>• Solve word problems that involve calculating area and perimeter.<br>• Apply the area and perimeter formulas for rectangles, polygons and irregular shapes in real world and mathematical problems. |