## Course Information

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| **Grade(s):** | Grade 2 |
| **Discipline/Course:** | Mathematics |
| **Course Title:** | Grade 2 Mathematics |
| **Prerequisite(s):** | Grade 1 Mathematics |
| **Course Description:** *Program of Studies* | In Grade 2 students build fluency with whole number multi-digit computation in addition and subtraction. Students solve problems within 1000, by applying their understanding of models for addition and subtraction, using properties of operations. They use their understanding of the base ten structure to develop place value concepts. Students use standard units of measure (metric and U.S. customary). Students use measurement tools to understand length. Students describe and analyze shapes by examining their sides and angles. Students investigate, describe and reason about composing and decomposing shapes to make other shapes. |
| **Course Essential Questions:** | ● How does understanding our place value system make computing multi-digit numbers easier?<br>● How do tools like the number line and estimation, help us to visualize our process (computational strategy) and know our computation is accurate?<br>● How could composing or decomposing numbers make addition or subtraction easier to envision the process?<br>● How can the understanding of the number system help to understand relative length of objects?<br>● How does knowing a shape's attributes help to compare shapes? |
| **Course Enduring Understandings:** | ● There are place value patterns in our base-ten number system.<br>● Identifying patterns in mathematics helps us to make generalizations.<br>● Equivalence is represented with models and equations.<br>● Algebraic properties help us to compute more efficiently.<br>● Addition and subtraction are inversely related and understanding of one can help us to think |

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| | about and understand the other.<br>● Measurement uses iterated units with no gaps or overlaps.<br>● Different size units can be used to measure the same object yielding a different number of units, but the length of the object is unchanged.<br>● Shapes can be described and organized by their attributes. |
| **Course Standards**<br>*Note: The Board of Education adopted elementary mathematics standards for this course will remain the same; however, the sequence of units and standards among units may shift over time in response to student performance needs.* | **Students are expected to:**<br>MP.1. Make sense of problems and persevere in solving them.<br>*In second grade, students realize that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. They may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They make conjectures about the solution and plan out a problem-solving approach.*<br>MP.2. Reason abstractly and quantitatively.<br>*Younger students recognize that a number represents a specific quantity. They connect the quantity to written symbols. Quantitative reasoning entails creating a representation of a problem while attending to the meanings of the quantities. Second graders begin to know and use different properties of operations and objects.*<br>MP.3. Construct viable arguments and critique the reasoning of others.<br>*Second graders may construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They practice their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?", "Explain your thinking," and "Why is that true?" They not only explain their own thinking, but listen to others' explanations. They decide if the explanations make sense and ask appropriate questions.*<br>MP.4. Model with mathematics.<br>*In early grades, students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed.*<br>MP.5. Use appropriate tools strategically.<br>*In second grade, students consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be better suited. For instance, second graders may decide to solve a problem by drawing a picture rather than writing an equation.*<br>MP.6. Attend to precision.<br>*As children begin to develop their mathematical communication skills, they try to use clear and precise* |

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| | *language in their discussions with others and when they explain their own reasoning.*<br>MP.7. Look for and make use of structure.<br>*Second graders look for patterns. For instance, they adopt mental math strategies based on patterns (making ten, fact families, doubles).*<br>MP.8. Look for and express regularity in repeated reasoning.<br>*Students notice repetitive actions in counting and computation, etc. When children have multiple opportunities to add and subtract, they look for shortcuts, such as rounding up and then adjusting the answer to compensate for the rounding. Students continually check their work by asking themselves, "Does this make sense?"*<br><br>Adapted from the Connecticut Standards for Mathematics |
| **FPS Academic Expectation(s):** | **Exploring and Understanding**<br>*When students engage in problem solving situations, they should be able to understand the problem, determine relevant information, and ask relevant additional questions.*<br>**Synthesizing and Evaluating**<br>*Engaging in a problem solving situation, students should be able to analyze the most efficient approach, and reflect on the process used to solve the problem.*<br>**Creating and Constructing**<br>*Engaged in a problem solving situation, students should implement a plan.*<br>**Conveying Ideas**<br>*Students should be able to use correct mathematical language and logically display their work for the desired problem.*<br>**Collaborating Strategically**<br>*Students should be able to work collaboratively to solve problems.*<br>**Using Communication (Media) Tools**<br>*Students should be able to explore and choose the correct tools to illustrate their mathematical work to solve a specific problem.* |
| **Duration:** | 1 year |
| **Course Materials/Resources:** | Bridges 2nd ed.<br>Fairfield Public Schools Units |

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| **Additional Resources (Optional)** | Illustrative Mathematics<br>About Teaching Mathematics, Marilyn Burns<br>Contexts for Learning Mathematics, Fosnot et al. |

## Unit 1

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| **Unit 1: Whole Number Concepts, Estimation and Computation using Addition and Subtraction within Twenty** | The purpose of this unit is to establish classroom routines and develop a community of mathematical thinkers. The first unit is intended to engage students in thinking differently about previously taught material. The lessons focus on learning how to engage one another as mathematicians using 21st century skills in contextual mathematical situations and problems. Student discourse is enhanced by using turn & talk and think-pair-share strategies, justifying reasoning and constructing viable arguments for their mathematical thinking. Students represent their thinking using mathematical models and numbers, questioning peers for deeper understanding and clarification. The correctness of solutions lies within the logic of the mathematics. |
| **Learning Goals** | |
| **Standard(s):** | **Represent and solve problems involving addition and subtraction.**<br>2.0A.1. Use addition and subtraction within 100 to solve one and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, for example, by using drawings and equations with a symbol for the unknown number to represent the problem.<br><br>**Add and subtract within 20.**<br>2.0A.2. Fluently add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.<br><br>**Use Place Value understanding and properties of operations to add and subtract.** |

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| | 2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.<br><br>**Represent and interpret data.**<br>2.MD.10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. |
| **Essential Question(s):** | ● Why do addition and subtraction strategies work using place value and the properties of operations?<br>● How do patterns in data help to understand number relationships? |
| **Enduring Understanding(s):** | ● Identifying patterns in mathematics helps us to make generalizations<br>● Using a benchmark numbers makes mental computation easier, like using 10 to compute with 9s and 8s e.g. 9+8= (10-1) + (10-2) or 20-3= 17<br>● Equivalence may be shown through models and equations.<br>● Commutative Property for addition: The order of addends does not change the result ( 6+7=13, 7+6=13).<br>● Associative Property for addition: flexibly combine numbers using a variety of strategies e.g., 6+7 can be thought of as 6+ (4+3) or (6+4)+3.<br>● Known facts can help to determine unknown facts e.g., 7+8=15, 15-7=8 and 15-8=7.<br>● Numbers can be composed and decomposed to make estimation and mental computation easier.<br>● Contextual problems can be represented and solved using a variety of problem structures (e.g., 9+_=17 or _+8=17 or 9+8=_).<br>● Subtraction and addition are inversely related.<br>● There are different efficient strategies to compute mentally depending on the numbers in the problem.<br>● Data can be organized and represented in multiple ways to help us visualize quantities and relationships. |
| **Learning Goal(s):**<br>*Students will be able to* | Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four |

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| *use their learning to:* | categories.<br><br>Analyze and interpret mental strategies to fluently add and subtract within 20.<br><br>Know from memory all sums of two one-digit numbers.<br><br>Develop and use models to represent addition and subtraction within 100 to solve one and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions.<br><br>Ask questions, investigate and solve simple put-together, take-apart, and compare problems using information presented in a bar graph.<br><br>Construct explanations using patterns, structures and relationships of why addition and subtraction strategies work, using place value and the properties of operations.<br><br>Use tools and clear and precise language to defend or counter the reasoning of self or others. |

- How can different objects be measured and compared?
- How do attributes of shapes help to describe the relationship of different shapes?

**Unit 2**

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| **Unit 2: Whole Number Place Value Concepts, Estimation and Computation using Place Value** | Algebraic properties are used to compose and decompose numbers to make computation easier. Numbers are partitioned in standard and non-standard forms, including expanded notation and regrouping, to deepen understanding of equivalence. The concept of multiple sets of 10s and 100s builds foundational understanding of magnitude of number that will facilitate the work with addition and subtraction in later units. |
| **Learning Goals** | |
| **Standard(s):** | **Number and Operations in Base Ten 2.NBT**<br><br>**Understand place value.**<br>2.NBT.1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:<br>a. 100 can be thought of as a bundle of ten tens — called a "hundred."<br>b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).<br><br>2.NBT.2. Count within 1000; skip-count by 5s, 10s, and 100s.<br><br>2.NBT.3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.<br><br>2.NBT.4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons. |
| **Essential Question(s):** | ● Why does place determine value?<br>● What pattern do you see in our number system when you count by a given number?<br>● How can the same quantity be represented in different ways and why is it important to understand different ways for representing a number? (equivalence) |

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| **Enduring Understanding(s):** | ● Position of digits in numbers determines their value, e.g. 706 equals 7 hundreds, 0 tens, and 6 ones.<br>● A collection of objects can simultaneously be thought of as one group and as a collection, e.g. 10 ones make one ten and 10 tens make one hundred.<br>● Skip counting can be more efficient than counting by ones.<br>● Number patterns occur when skip counting, e.g. counting by tens off the decades; 24, 34, 44, 54.<br>● Numbers can be composed or decomposed in order to compute, e.g. 17+8 can be thought of as 17 + (3+5) or (17+3) +5.<br>● Numbers can be compared using place value relationships. |
| **Learning Goal(s):**<br>*Students will be able to use their learning to:* | Analyze and interpret patterns in our number system to determine that 100 can be thought of as a bundle of ten tens — called a "hundred" and that the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds.<br><br>Develop and use models to understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.<br><br>Construct explanations using patterns, structures and relationships to count within 1000 including skip-counting by 5s, 10s, and 100s.<br><br>Reason abstractly and quantitatively to compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons. |

## Unit 3

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| **Unit 3: Unit 3 Time, Money and** | The purpose of this unit is to develop algebraic concepts and deepen place value understandings as students solve one- and two-step word problems involving different problem structures. Students |

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| **Addition and Subtraction to 100** | develop skills to flexibly, accurately and efficiently add and subtract within 100. Students communicate their thinking and justify their strategies both verbally and in written form while using appropriate models. Students develop an understanding of time as measurement and measure time to the nearest 5-minutes, using a.m. and p.m. Students solve word problems involving money, using $ and ¢ symbols appropriately. |
| **Learning Goals** | |
| **Standard(s):** | **Represent and solve problems involving addition and subtraction.**<br>2.OA.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.1.<br><br>**Use place value understanding and properties of operations to add and subtract.**<br>2.NBT.5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.<br><br>2.NBT.6. Add up to four two-digit numbers using strategies based on place value and properties of operations.<br><br>2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.<br><br>**Relate addition and subtraction to length.**<br>2.MD.5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.<br><br>2.MD.6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram. |

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| | **Work with time and money.**<br>2.MD.7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.<br><br>2.MD.8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have? |
| **Essential Question(s):** | ● How can we use our understanding of place value to help us mentally compute or think about number relationships and equivalence?<br>● How can we think about what we know about numbers first to help us choose an efficient strategy to solve a problem?<br>● How do benchmark numbers help us to think about number relationships and figure out problems?<br>● How can duration be thought of in fractional parts and how does a clock divided into equal segments help us to tell time and duration?<br>● How can we use place value to understand money values? |
| **Enduring Understanding(s):** | ● Durations of time can be measured and a standard unit of measurement is needed.<br>● Grouping larger units encompasses smaller units.<br>● Duration of time can be cut into equal (fractional) parts.<br>● Numbers can be grouped and regrouped into equivalent forms.<br>● Place determines value.<br>● Place value patterns occur when adding or subtracting groups of ten.<br>● Flexible methods for computation require a good understanding of the operations and properties of the operations, the commutative and associative properties.<br>● Contextual problems can be represented and solved using a variety of problem structures (e.g., 90+_=170 or _+80=170 or 90+80=_).<br>● Numbers can be regrouped into 10s and 100s when adding and subtracting.<br>● Understanding place value strategies supports estimation.<br>● Repeated addition and subtraction with the same number creates a repeating pattern in the ones and tens digits.<br>● Benchmark numbers help make mental computation easier. |

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| **Learning Goal(s):**<br>*Students will be able to use their learning to:* | Analyze and interpret word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.<br><br>Develop and use models to tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.<br><br>Reason abstractly and quantitatively to fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.<br><br>Construct explanations using patterns, structures and relationships to explain why strategies work when solving addition and subtraction problems within 100.<br><br>Use appropriate tools to represent whole numbers as lengths of a number line diagram with equally spaced points and represent whole-number sums and differences within 100 on a number line. |

## Unit 4

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| **Unit 4: Linear Measurement with Standard Units** | The purpose of this unit is to shift student thinking from measuring length using non-standard units to using standard units of measure (metric and U.S. Customary). Students develop estimation strategies using units of inches, feet, centimeters, and meters. Students describe the relationship between the size of the measurement unit and the number of iterations of the units needed to measure objects. |
| **Learning Goals** | |
| **Standard(s):** | **Measure and estimate lengths in standard units.**<br>2.MD.1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.<br><br>2.MD.2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.<br><br>2.MD.3. Estimate lengths using units of inches, feet, centimeters, and meters.<br><br>2.MD.4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.<br><br>**Relate addition and subtraction to length.**<br>2.MD.6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.<br><br>**and interpret data.**<br>2.MD.9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units. |

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| | 2.MD.10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.<br><br>**Use place value understanding and properties of operations to add and subtract.**<br>2.NBT.5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. |
| **Essential Question(s):** | ● Why is it important to keep the unit of measure consistent when making measurements?<br>● What is a benchmark measure and how does it help you estimate length?<br>● When measuring a given object, how is the size of the unit related to the number of units needed?<br>● Which is an appropriate tool and unit of measure to measure a given object and why?<br>● How can data be presented in different ways help us think and give us a better understanding about relationships?<br>● How does organizing data help us understand information? |
| **Enduring Understanding(s):** | ● The distance between demarcations rather than the demarcations themselves determine length.<br>● Different tools and units are appropriate for measuring specific objects in different contexts.<br>● The ability to estimate helps develop familiarity with the specific units of measure.<br>● Direct comparisons can be made by measuring the difference in length between two objects by laying them side by side and selecting an appropriate standard length unit of measure.<br>● Inches, feet and yards are US Customary standard units used to measure length. Centimeters and meters are standard units used in the metric system to measure length. |
| **Learning Goal(s):**<br>*Students will be able to use their learning to:* | When measuring objects, reason abstractly about how the size of the unit is related to the number of units needed.<br><br>Develop and use models to estimate lengths in customary and metric units.<br><br>Ask questions and investigate how comparisons can be made by measuring the difference in length |

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| | between two objects by laying them side by side.<br><br>Use tools and clear and precise language to defend or counter one's reasoning about what tools are most appropriate to measure a given object. |

## Unit 5

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| **Unit 5: Whole Number Concepts, Estimation, and Computation within 1000** | The purpose of this unit is to build on student understanding of the structure of our base ten place value system. Students use algebraic properties of operations to deepen understanding of number relationships and equivalence. Multiple sets of 10s, 100s, and 1000s build foundational understanding for later work with multiplication concepts. Algebraic properties are used to develop efficient strategies for computing with whole numbers. Students solve word problems involving money, using $ and ¢ symbols appropriately. |
| **Learning Goals** | |
| **Standard(s):** | **Number and Operations in Base Ten 2.NBT**<br>**Understand place value.**<br>2.NBT.1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:<br>a. 100 can be thought of as a bundle of ten tens — called a "hundred."<br>b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).<br><br>**Use place value understanding and properties of operations to add and subtract.**<br>2.NBT.7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.<br><br>2.NBT.8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.<br><br>2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations. |

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| | **Relate addition and subtraction to length.**<br>2.MD.5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.<br><br>2.MD.6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.<br><br>**Work with time and money.**<br>2.MD.8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have? |
| **Essential Question(s):** | ● What patterns are in our number system when you count by 10, 100, 1000?<br>● How do properties of operation help us solve addition and subtraction problems within 1000?<br>● How does grouping numbers help solve problems?<br>● How can thinking of equivalent representations of numbers help make computation easier?<br>● How does understanding the base ten system help us to solve problems?<br>● How does understanding place value concepts help to compute with money amounts? |
| **Enduring Understanding(s):** | ● Unitizing numbers continues and applies to larger numbers in our number system, i.e. through 1000.<br>● Place determines value.<br>● Equivalent values and expressions can be represented differently.<br>● Commutativity and associativity applies to larger numbers.<br>● Place value patterns result when adding or subtracting tens and when making groups of tens.<br>● Partial sums can help to mentally compute and estimate.<br>● Contextual problems can be represented and solved using a variety of problem structures (e.g., 900+_=1700 or _+800=1700 or 900+800=_).<br>● Coins and dollars unitize money amounts. |

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| **Learning Goal(s):**<br>*Students will be able to use their learning to:* | Analyze and solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.<br><br>Reason abstractly and quantitatively to fluently add and subtract within 1000 using a variety of strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.<br><br>Construct explanations using patterns, structures and relationships to explain why strategies work when solving addition and subtraction problems within 1000.<br><br>Use appropriate tools to represent whole numbers as lengths of a number line diagram with equally spaced points and represent whole-number sums and differences within 1000 on a number line. |

## Unit 6

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| **Unit 6: Geometry; Reasoning with Shapes** | The purpose of this unit is to develop spatial reasoning through the identification and visualization of spatial relationships. Students develop fractional concepts as they decompose shapes into equal parts. Students work with the part-whole relationships using equal groups and equal shares of a whole unit. Students identify, describe and draw triangles, quadrilaterals, pentagons and hexagons. Pentagons, triangles, and hexagons appear as both regular (equal sides and equal angles) and irregular. Grade 2 students begin to develop greater specificity of language to describe attributes of shapes. |
| **Learning Goals** | |
| **Standard(s):** | **Reason with shapes and their attributes**.<br>2.G.1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.<br><br>2.G.3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. |
| **Essential Question(s):** | ● How can shapes be composed and decomposed to make other shapes?<br>● What attributes can be used to sort and classify two-dimensional shapes?<br>● When is a fractional part of a given shape the same or different?<br>● Why does the size of the whole matter when comparing fractional parts? |
| **Enduring Understanding(s):** | ● Shapes can be classified based on their attributes.<br>● Shapes and solids can be composed and decomposed (part-whole relations).<br>● Shapes can be decomposed into fractional parts of equal size.<br>● The bottom number of a fraction tells the number of equal parts. The top number tells how many of the equal parts are being named.<br>● Benchmark fractions (halves, thirds and fourths) facilitate estimation.<br>● The more the whole is divided into equal parts, the smaller the parts, e.g. fourths are smaller than halves. |

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| | ● Fractions are relations: the size of a fractional part is relative to the size of the whole and the size of the whole (unit) is important. |
| **Learning Goal(s):**<br>*Students will be able to use their learning to:* | Draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.<br><br>Identify the attributes of shapes and classify them in different ways.<br><br>Look for and make use of structure as they identify triangles, quadrilaterals, pentagons, hexagons, and cubes.<br><br>Develop and use models to represent benchmark fractions to facilitate estimation.<br><br>Investigate how the more the whole is divided into equal parts, the smaller the parts, e.g. fourths are smaller than halves.<br><br>Ask questions and investigate how the size of a fractional part is relative to the size of the whole and explain why the size of the whole matters, especially when comparing fractional parts. |

## Unit 7

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| **Unit 7: Whole Number Concepts, Estimation, and Computation by Exploring Early Multiplication and Division** | The purpose of this unit is to develop foundational skills for understanding multiplication as a more efficient method for addition. Students deepen their understanding of addition and subtraction with whole numbers as they use part-whole relationships with equal-sized groups. Students understand odd and even numbers by investigating numbers using strategies like dividing sets into equal-sized groups and skip counting. |
| **Learning Goals** | |
| **Standard(s):** | **Understand place value**.<br>2.NBT.2. Count within 1000; skip-count by 5s, 10s, and 100s.<br><br>**Work with equal groups of objects to gain foundations for multiplication.**<br>2.OA.3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.<br><br>2.OA.4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.<br><br>**Reason with shapes and their attributes.**<br>2.G.2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.<br>**Work with time and money.**<br><br>2.MD.8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and |

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| | ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have? |
| **Essential Question(s):** | ● How is multiplication related to addition?<br>● How is division related to subtraction?<br>● How can we represent equivalent values and expressions differently? |
| **Enduring Understanding(s):** | ● Equivalent values and expressions can be represented differently.<br>● Equivalent values can be substituted.<br>● Skip counting can be used to find the total number of objects in a collection of equal groups.<br>● Multiplication can be thought of as repeated addition.<br>● Multiplication can be represented using models.<br>● Commutative and associative properties apply to multiplication.<br>● Multiplication and division are inversely related. |
| **Learning Goal(s):**<br>*Students will be able to use their learning to:* | Reason abstractly and quantitatively to represent equivalent values and expressions in different ways.<br><br>Develop and use models to represent multiplication as repeated addition.<br><br>Make use of structure through skip-counting equal groups to find the total number of objects in a collection..<br><br>Construct explanations using patterns, structures and relationships of the commutative and associative properties of multiplication. |