Course Information

Grade(s):	Grade 1
Discipline/Course:	Mathematics
Course Title:	Grade 1 Mathematics
Prerequisite(s):	Grade K Mathematics
Course Description: *Program of Studies*	Grade one students develop, discuss and use efficient, accurate and generalizable methods to solve real world problems. Students develop a conceptual understanding of addition and subtraction, and use a variety of strategies to solve problems. Students develop fluency of basic addition and subtraction facts with sums to twenty. They develop an understanding of whole number relationships and place value concepts grouping tens and ones. Students develop an understanding of the meaning and processes of measurement. Students reason about attributes of geometric shapes, as well as compose and decompose plane or solid figures.
Course Essential Questions:	● Why do we count? ● How are shapes related to each other? ● What patterns and relationships do we find with numbers in our number system?
Course Enduring Understandings:	● There are patterns that occur in our number system. ● Cardinality - the last number tells 'how many' when counting . ● Ordinal numbers are numbers that are counted once and only once in conventional order. ● Numbers can be composed and decomposed (eg. 12 is 10 and 2 more). ● Conservation of number - the arrangement of objects does not affect how many there are. ● Subitizing (perceptual) is the instant recognition of a number of objects. ● Unitizing is recognizing that numbers count not only objects, but groups of objects, e.g. 1 thing, and one group of (10) things. ● Numbers can be combined and separated (eg. Adding 10 more to a group of 9 gives you 19).

	• Objects can be described and compared using measurable attributes. • Objects can be sorted and classified by attributes. • Shapes can be composed and decomposed.
Course Standards *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:** MP.1. Make sense of problems and persevere in solving them. *In first 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. Younger students 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 are willing to try other approaches.* MP.2. Reason abstractly and quantitatively. *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.* MP.3. Construct viable arguments and critique the reasoning of others. *First graders construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They also 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 questions.* MP.4. Model with mathematics. *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.* MP.5. Use appropriate tools strategically. *In first grade, students begin to consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, first graders decide it might be best to use colored chips to model an addition problem.* MP.6. Attend to precision. *As young children begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and when they explain their own reasoning.* MP.7. Look for and make use of structure. *First graders begin to discern a pattern or structure. For instance, if students recognize 12 + 3 = 15, then they*

	also know 3 + 12 = 15. (Commutative property of addition.) To add 4 + 6 +4, the first two numbers can be added to make a ten, so 4 +6 +4 = 10 +4 = 14. MP.8. Look for and express regularity in repeated reasoning. *In the early grades, students notice repetitive actions in counting and computation. When children have multiple opportunities to add and subtract "ten" and multiples of "ten" they notice the pattern and gain a better understanding of place value. Students continually check their work by asking themselves, "Does this make sense?"* Adapted from the Connecticut Standards for Mathematics
FPS Academic Expectation(s):	**Exploring and Understanding** *When students engage in problem solving situations, they should be able to understand the problem, determine relevant information, and ask relevant additional questions.* **Synthesizing and Evaluating** *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.* **Creating and Constructing** *Engaged in a problem solving situation, students should implement a plan.* **Conveying Ideas** *Students should be able to use correct mathematical language and logically display their work for the desired problem.* **Collaborating Strategically** *Students should be able to work collaboratively to solve problems.* **Using Communication (Media) Tools** *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. Fairfield Public School units
Additional Resources (Optional)	Illustrative Mathematics About Teaching Mathematics, Marilyn Burns

	Contexts for Learning Mathematics, Fosnot et al.

Unit 1

Unit 1: Whole Number Concepts, Estimation and Computation using Addition and Subtraction to Ten	The purpose of the unit is to establish classroom routines using the context of mathematics. The first unit is intended to engage students in thinking about previously taught material differently while the focus of the lessons is on learning how to engage one another as mathematicians using 21st century skills and developing a community of mathematical thinkers. Some examples include; turn & talk, think-pair-share, justify reasoning, and constructing viable arguments. 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. Students build on key number concepts to develop fluency of addition and subtraction within ten.
Learning Goals	
Standard(s):	**Operations and Algebraic Thinking** **Represent and solve problems involving addition and subtraction.** 1.OA.1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. 1.OA.2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. **Understand and apply properties of operations and the relationship between addition and subtraction.** 1.OA.3. Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11

	is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12 (Associative property of addition). 1.OA.4.Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8. Add and subtract within 20. **Add and subtract within 20.** 1.OA.5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). **Work with addition and subtraction equations.** 1.OA.7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2. 1.OA.8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = _ – 3, 6 + 6 = _. **Number and Operations in Base Ten** **Extend the counting sequence.** 1.NBT.1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. **Measurement and Data** **Represent and interpret data** 1.MD.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Essential Question(s):	● Why do benchmark numbers help solve problems? ● How could you compose or decompose numbers to make addition or subtraction easier to envision? ● What does equivalent mean? ● How can we find out the information we need to find the answer to a problem?
Enduring Understanding(s):	● When counting a set, the last number said is the number of objects in a set (Cardinality). ● If there is a corresponding object matched to each object in a set, the totals of the sets are equivalent (one-to-one correspondence). ● Numbers grow by one, and exactly one, each time (Hierarchical Inclusion). ● The quantity stays the same regardless of the arrangement (Conservation of Number). ● Identifying patterns in mathematics helps us to make generalizations about our number system. ● Commutative Property for addition: The order of addends does not change the result ● (5+2+7, 2+5=7). ● Associative Property for addition: the grouping of addends can change and will not change the sum (5+3)+2=5+(3+2). ● Equivalence can be represented in many ways. ● Using known understandings of equivalence can help to find solutions to unknown problems. ● Numbers can be composed and decomposed to make computations easier. ● Numbers can flexibly combine numbers using a variety of strategies. ● Contextual problems can be represented using a variety of problem structures. ● A variety of strategies can be used to solve addition and subtraction problems.
Learning Goal(s): *Students will be able to use their learning to:*	Develop fluency of addition and subtraction within ten. Plan, conduct and investigate efficient strategies for counting a set of objects, and determining that the last number said is the number of objects in the set. Analyze investigate how whole numbers grow by one, and exactly one each time.

	Develop and use models to represent contextual word problems using a variety of problem structures. Ask questions and investigate the meaning of equivalence and how it can be represented in different ways. Construct explanations using patterns, structures and the relationship between addition and subtraction. Represent thinking using models and numbers, defend reasoning and question peers for deeper understanding and clarification.

Unit 2

Unit 2: **Whole Number Concepts, Estimation and Computation using Addition and Subtraction within Twenty**	The purpose of this unit is to shift students from relying on counting strategies to strategies that involve composing and decomposing numbers. Students develop foundational understanding of algebraic properties. They understand that numbers can be grouped in a variety of ways, or presented in a different order, and the quantity will stay the same. Students develop automaticity with basic facts by focusing on number relationships and the use of benchmark numbers to develop efficient strategies for computing.
Learning Goals	
Standard(s):	**Operations and Algebraic Thinking** **Represent and solve problems involving addition and subtraction.** 1.OA.1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

	1.OA.2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. **Understand and apply properties of operations and the relationship between addition and subtraction.** 1.OA.3. Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.) 1. OA.4.Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8. Add and subtract within 20. **Add and subtract within 20.** 1.OA.5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). 1.OA.6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). **Work with addition and subtraction equations.** 1.OA.7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2. 1.OA.8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = _ – 3, 6 + 6 = _.

	Number and Operations in Base Ten **Extend the counting sequence.** 1.NBT.1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. **Measurement and Data** **Represent and interpret data** 1.MD.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
Essential Question(s):	● How could you compose or decompose numbers to make them easier to visualize the process and mentally add and subtract? ● How do benchmark numbers help us think about solving problems? ● Which strategy is the most efficient for adding or subtracting a given set of numbers and why? ● How can you tell if two different number representations of an amount are equivalent?
Enduring Understanding(s):	● Compensation and Equivalence, e.g. when you lose one but gain it, the total stays the same (5+3 is equivalent to 4+4). ● A collection of objects can be thought of as one group (Unitizing). ● Numbers can be grouped in a variety of ways, or presented in a different order, and the amounts stay the same. ○ commutativity- 5+3=3+5 ○ associativity- (5+3)+2=5+(3+2) ● Flexibility in composing and decomposing numbers leads to a generalization about the way in which the parts are related to the whole and can be used to solve addition and related subtraction problems. (5+3=8 then 8-3=5). ● Addition and subtraction are inversely related.

Learning Goal(s): *Students will be able to use their learning to:*	Plan and conduct an investigation of how sums of numbers grouped in different ways or in a different order stay the same. Develop and use models to represent how addition and subtraction are inversely related. Ask questions and investigate how a collection of objects can be thought of as one group, e.g. ten object can be thought of as one group of ten. Construct explanations using patterns and structures of how parts are related to the whole and how they can be used to solve addition and subtraction problems. Use tools and clear and precise language to describe reasoning related to compensation and equivalence.

Unit 3

Unit 3: **Whole Number Concepts, Estimation and Computation using Addition and Subtraction within 100**	The purpose of this unit is to encourage student mastery of key number facts and fact strategies for single-digit addition and subtraction. Students will use models such as math rack to see number combinations, find the sum of two numbers, and compare two numbers to find the difference between them. Place value concepts will be reinforced as a means to solve addition combinations to 20, and students will make use of unifix cubes to develop an understanding of subtraction as a difference. Students gain a deeper understanding of the meaning of equivalence as they investigate larger numbers ithin 100.

Learning Goals	
Standard(s):	**Operations and Algebraic Thinking** **Understand and apply properties of operations and the relationship between addition and subtraction.** 1.OA.3. Apply properties of operations as strategies to add and subtract.2 Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known (Commutative property of addition). To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12 (Associative property of addition). **Add and subtract within 20.** 1.OA.5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). **Work with addition and subtraction equations.** 1.OA.7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2 **Number and operations in base ten** **Extend the counting sequence.** 1.NBT.1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. **Understand place value**. 1.NBT.2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones — called a “ten.” b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

	Use place value understanding and properties of operations to add and subtract. 1.NBT.4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. 1.NBT.6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.
Essential Question(s):	● Why does place determine value? ● How can benchmark numbers, like five and ten, help us to add and subtract? ● How can we think about what we know about numbers first to help us choose an efficient strategy to solve a problem?
Enduring Understanding(s):	● Numbers can be decomposed and the smaller amounts can be added in varying orders, yet still be equivalent (Associative and Commutative properties). ● There are place value patterns that occur when adding on groups of ten. ● Place determines value, e.g. one can represent 1 or 1 ten or 1 hundred depending on place. ● A collection of objects can be thought of as one group (Unitizing). ● Flexible methods of computing vary with the numbers in the situation or problem.
Learning Goal(s): *Students will be able to use their learning to:*	Analyze and interpret how and why place determines value and how this understanding can be used to add and subtract numbers. Look for and make use of structures when composing and decomposing quantities to efficiently add,

	subtract, and find missing addends. Construct viable arguments and critique the reasoning of others when comparing numbers using symbols such as <, > or =.

Unit 4

Unit 4: Geometry: Defining Attributes and Partitioning 2-D and 3-D Shapes	The purpose of this unit is to develop relationships among geometric shapes. Students compose and decompose plane or solid figures and build understanding of part-whole relationships, as well as the properties of the original and composite shapes. They recognize and compare shapes from different perspectives and orientations. Students partition shapes into fractional parts.
Learning Goals	
Standard(s):	**Geometry** **Reason with shapes and their attributes.** 1.G.1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. 1.G.2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

	1.G.3. Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.
Essential Question(s):	● What makes shapes alike and different? ● What shapes make up larger shapes? ● How does breaking a larger shape into smaller shapes help you to think about the attributes of the shape? ● What is a fraction? ● How can different shapes be divided into two equal parts and four equal parts? ● How can you tell when a fraction is larger/smaller when comparing fractions?
Enduring Understanding(s):	● Shapes can be composed and decomposed into other shapes. ● There are attributes used to define shapes. ● The ability to perceive shapes from different viewpoints helps us understand relationships between 2-D and 3-D figures and mentally change the position and size of shapes. ● Fractional parts must be of equal size. ● The more the whole is divided into equal parts, the smaller the parts (ex. fourths are smaller than halves). ● Fractional parts have special names that tell how many parts of that size are needed to make the whole (ex. fourths require four parts to make a whole). ● Size of the whole matters when comparing fractional parts, e.g. ½ pizza is different than ½ cookie.
Learning Goal(s): *Students will be able to use their learning to:*	Investigations about the attributes used to describe different 2-D and 3-D shapes. Develop and use models to represent fractions as equal parts of a whole.

	Ask questions and investigate the relationship of fractions of a set of objects. Identify and describe attributes of different shapes and compare them.

Unit 5

Unit 5: **Place Value**	The purpose of this unit is to develop the understanding of place value and extend the counting sequence using real world experiences. Students develop an understanding of whole number relationships using place value concepts. Data is gathered in order for students to study patterns in our place value system and deepen the understanding of place value concepts. Number lines are introduced as a model to support understanding of addition, subtraction, place value and counting sequences.
Learning Goals	
Standard(s):	**Number and Operations in Base Ten** **Extend the counting sequence.** 1.NBT.1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. **Understand place value.** 1.NBT.2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones — called a "ten." b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). 1.NBT.3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the

	results of comparisons with the symbols >, =, and <. Use place value understanding and properties of operations to add and subtract. 1.NBT.5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. **Measurement and Data** **Represent and interpret data** 1.MD.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
Essential Question(s):	● What pattern do you see in our number system when you count by a given number? ● How do you determine the value of a number given its place in the number? ● How can a number be decomposed in different ways? ● What is the most efficient way to compose or decompose a number? ● How do benchmark numbers help you determine the total number of objects?
Enduring Understanding(s):	● A digit can represent ones or tens or hundreds, depending on where it is placed. ● Place value patterns occur when making and adding groups of ten. ● Compensation and Equivalence: when you lose one but gain it, the total stays the same. (Ex.9+1 is equivalent to 8+2 and both are equivalent to one group of 10). ● A collection of objects can be thought of as one group (Unitizing). ● Numbers can be decomposed in many ways, e.g. groupings of ones, tens, and hundreds can be thought of as, 23=2 tens and 3 ones, or 1 ten and 13 ones, or 23 ones) ● Commutative Property for addition: The order of addends does not change the result (5+2+7, 2+5=7). ● Associative Property for addition: the grouping of addends can change and will not change the sum (5+3)+2=5+(3+2).

Learning Goal(s): *Students will be able to use their learning to:*	Analyze and interpret efficient counting patterns using groups of fives, tens and ones. Develop and use models to represent how quantities can be composed and decomposed. Represent numbers and number relationships on a number line and use tools like the number line to add, subtract and count within 120.

Unit 6

Unit 6: **Exploring Whole Number Concepts, Estimation and Computation using Addition and Subtraction Multi-digit Numbers**	Computation strategies and estimation become more significant as students evaluate the efficiencies of alternative strategies. Algebraic properties are applied to whole numbers when students compute using partial sums. Although greater numbers are explored, automaticity with basic facts with addition and subtraction 0-10 is the goal by the end of grade 1. Students will use a variety of strategies that will be modeled including math racks and fact families to build understanding of problem structures with missing addends. Place value concepts will be reinforced with addition and subtraction. Students will use strategies as flexible methods of computing that vary with the numbers and the situation. Students will flexibly, accurately, and efficiently add and subtract within twenty using a variety of strategies.
Learning Goals	
Standard(s):	**Operations and Algebraic Thinking** **Understand and apply properties of operations and the relationship between addition and subtraction.**

	1.OA.3. Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.) **Add and subtract within 20.** 1.OA.5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). **Work with addition and subtraction equations.** 1.OA.7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2 **Number and operations in base ten** **Extend the counting sequence.** 1.NBT.1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. **Understand place value.** 1.NBT.2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones — called a “ten.” b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). **Use place value understanding and properties of operations to add and subtract.** 1.NBT.4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. 1.NBT.6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.
Essential Question(s):	● How do partial sums make it easier to do mental computations? ● How are addition and subtraction related? ● How do tools like estimation help us to solve problems? ● How can we think about what we know about numbers first to help us choose an efficient strategy to solve a problem? ● How do you know which operation to use when solving a problem?
Enduring Understanding(s):	● The use of algebraic properties (associative and commutative properties), can make mental computation easier. ● Using place value patterns help make adding and subtracting easier. ● Compensation and Equivalence, e.g. when you lose one but gain one, equivalence is maintained (19+9 is equivalent to 20+8). ● Equivalence can be represented in many ways.
Learning Goal(s): *Students will be able to use their learning to:*	Model with mathematics by drawing pictures and writing equations to match story problems. Reason abstractly and quantitatively to understand that addition and subtraction are inversely related. Look for and make use of structure when choosing an appropriate and efficient strategy for adding and subtracting within 20.

Unit 7

Unit 7: Measurement	The purpose of the unit is to develop an understanding of the meaning and processes of measurement. It focuses on helping students understand what it means to estimate and measure length using a variety of non-standard and standard units. Students will describe the relationship between the size of the measurement unit and the number of units needed to measure something. Students apply their understanding of measurement to time to the hour and half hour. Students will learn to use measurement tools including the digital and analog clock.
Learning Goals	
Standard(s):	**Measurement and Data** **Measure lengths indirectly and by iterating length units.** 1.MD.1. Order three objects by length; compare the lengths of two objects indirectly by using a third object. 1.MD.2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. **Tell and write time** 1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks. **Geometry** **Reason with shapes and their attributes.** 1. G.3. Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares (Students do not need to learn formal names such as “right rectangular prism”).

Essential Question(s):	● What patterns occur when measuring the same objects with two different non-standard units of measure? ● When measuring a given object, how is the size of the unit related to the number of units needed? ● How can the length of two different objects be compared by using a third object? ● 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? ● How are units of time related to one another?
Enduring Understanding(s):	● Different units are appropriate for measuring specific objects in different contexts. ● Estimation helps develop familiarity with the specific unit of measure being used. ● Direct comparisons can be made by measuring the difference in length between two objects. ● Time is the duration (e.g. of an event) that can be measured from beginning to end. ● Time can be measured in standard units (e.g. seconds, minutes, hours, days). ● There are tools used for measuring time, i.e. clocks. ● Fractions are relations: duration can be thought of in fractional parts (e.g. half past, quarter till, quarter after).
Learning Goal(s): *Students will be able to use their learning to:*	Estimate using non-standard forms of measurement to construct viable arguments and critique the reasoning of others for the length of objects. Use appropriate tools to measure length, compare length, and read time to the hour and half hour. Tell time using understanding of mathematics to estimate and evaluate duration of time.