Fairfield Public Schools

Mathematics

Grade 2

Fairfield Public Schools Mathematics Curriculum

Grade 2

Grade 2 Mathematics Overview

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.

Grade 2 Mathematics Year-At-A-Glance

Pacing Guide

1st Marking Period			2nd Marking Period			3rd Marking Period			
September	October	November	December	January	February	March	April	May	June
Unit 1 Launch/ Fact Strategies + and -, Up to Twenty	Unit 2 Place Value to 1,000	Unit 3 Money	Unit 4 Addition & Subtraction to 100	Unit 5 Addition & Subtraction within 1000	Unit 6 Reasoning with Shapes	Unit 7 Linear Measurement with Standard Units	Unit 8 Exploring Early Multiplication and Division		

Grade 2 Overview

Central Understandings:
Insights learned from exploring generalizations through the essential questions. (Students will understand that…)

- Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools, and technologies.
- Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies, tools and technologies.
- Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools, and technologies.
- Data can be analyzed to make informed decisions using a variety of strategies, tools, and technologies.

Essential Questions

- How do patterns and functions help us describe data and physical phenomena and solve a variety of problems?
- How are quantitative relationships represented by numbers?
- How do geometric relationships and measurements help us to solve problems and make sense of our world?
- How can collecting, organizing and displaying data help us analyze information and make reasonable and informed decisions?

Assessments

- Formative Assessments
- Summative Assessments
- District –Wide Screening Tools

Content Outline:

Unit 1: Fact Strategies
Unit 2: Place Value
Unit 3: Money
Unit 4: Addition and Subtraction within 100
Unit 5: Addition and Subtraction within 1,000
Unit 6: Reasoning with Shapes
Unit 7: Linear Measurement and Time
Unit 8: Exploring Early Multiplication and Division

Mathematics Standards
CT Common Core State Standards (CCSS)

Fairfield Public Schools Skills Matrix (Skills Matrix)

Primary Resources

- About Teaching Mathematics Marilyn Burns
- Contexts for Learning Mathematics Fosnot et. Al.
- Scott Foresman Addison Wesley, 2004
- Teaching Student-Centered Mathematics- Van De Walle and Lovin

Grade Two Standards for Mathematical Practice The K-12 Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. This page gives examples of what the practice standards look like at the specified grade level.	
Standards	***Explanations and Examples***
Students are expected to: **1. Make sense of problems and persevere in solving them**.	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.
Students are expected to: **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. Second graders begin to know and use different properties of operations and objects.
Students are expected to: **3. Construct viable arguments and critique the reasoning of others.**	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.
Students are expected to: **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.
Students are expected to: **5. Use appropriate tools strategically.**	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.
Students are expected to: **6. Attend to precision.**	As 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.
Students are expected to: **7. Look for and make use of structure.**	Second graders look for patterns. For instance, they adopt mental math strategies based on patterns (making ten, fact families, doubles).
Students are expected to: **8. Look for and express regularity in repeated reasoning**.	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?"

Adapted from Connecticut Standards for Mathematics

Grade 2

Unit 1: Launch - Whole Number Concepts, Estimation and Computation using Addition and Subtraction within Twenty

The purpose of the launch is to establish classroom routines. 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. 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.

Big Ideas: The central organizing ideas and underlying structures of mathematics.	**Essential Questions**
• Identifying patterns in mathematics helps us to make generalizations • 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 • Equivalence may be shown as models and equations. • Commutative Property for addition: The order of addends does not change the result (6+7=13, 7+6=13) • 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 • Known facts can help to determine unknown facts e.g., 7+8=15, 15-7=8 and 15-8=7. • Numbers can be composed and decomposed to make estimation and mental computation easier. • Contextual problems can be represented and solved using a variety of problem structures (e.g., 9+_=17 or _+8=17 or 9+8=_). • Subtraction and addition are inversely related. • Some problems may have extraneous information. • Data can be organized and represented in multiple ways. • Data can be analyzed and interpreted in multiple ways. • Some graphic representations may work better than others for specific types of data. **Thinking Ahead, Linking Big Ideas among units:** **Unit 2: Place Value** • Our number system is structured around multiples of tens, e.g., 2 can represent 2 units, 2 groups of ten, 2 groups of hundreds, 2 groups of thousands. • Benchmark numbers help us to compute mentally.	• Why do benchmark numbers help solve problems? • How could we compose or decompose numbers to make them easier to add or subtract? • How do you know if expressions are equivalent? • Which strategy is the most efficient for adding or subtracting a given set of numbers and why? • Why is it important to analyze and interpret data? • How can data be presented in different ways? • How does the data support your conjecture? • How can you compare different sets of data? • What generalizations can be made from the set of data? • Can trends be identified? • What is the best way to organize a particular set of data and why? • How does organizing data help us understand information? • If you were to continue collecting data what do you think would happen?

Common Core State Standards
Grade 2
Unit 1: Whole Number Concepts, Estimation and Computation using Addition and Subtraction to Twenty

Represent and solve problems involving addition and subtraction.
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.

Add and subtract within 20.
2.0A.2. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Use Place Value understanding and properties of operations to add and subtract.
2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.

Represent and interpret data.
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.

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[1] using information presented in a bar graph.

Grade 2
Unit 2: Whole Number Place Value Concepts, Estimation and Computation using Place Value

The purpose of this unit is for students to extend their understanding of our place value system by identifying and using patterns. They use algebraic properties to compute and 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 number that will facilitate the work with addition and subtraction in later units.

Big Ideas: The central organizing ideas and underlying structures of mathematics.	**Essential Questions**
• Position of digits in numbers determines their value, e.g. 706 equals 7 hundreds, 0 tens, and 6 ones. • 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. • Skip counting can be more efficient than counting by ones. • Number patterns occur when skip counting, e.g. counting by tens off the decades; 24, 34, 44, 54 • 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 • Numbers can be compared using place value relationships. **Thinking Ahead, Linking Big Ideas among units:** **Unit 3: Money, Addition and Subtraction within 100 and 1000** • Computation with money amounts uses the same strategies as that of whole numbers. • Algebraic properties apply to computation with money in the same way they apply to whole numbers. • Taking numbers apart and recombining them in flexible ways makes mental computation easier. • The groupings of ones, tens, and hundreds can be taken apart in different ways. e.g., 256 can be 1 hundred, 14 tens, and 16 ones.	• What pattern do you see in our number system when you count by ___? • How do benchmark numbers help you solve problems? • How can you tell if your relationship is equal? • How does grouping numbers help you to solve problems? • How can you tell if two different representations of a quantity are equivalent?

Common Core State Standards
Grade 2
Unit 2: Whole Number Place Value Concepts, Estimation and Computation using Place Value

Number and Operations in Base Ten 2.NBT

Understand place value.

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:

a. 100 can be thought of as a bundle of ten tens — called a "hundred."

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).

2.NBT.2. Count within 1000; skip-count by 5s, 10s, and 100s.

2.NBT.3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

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.

Grade 2 **Unit 3: Whole Number Concepts, Estimation, and Computation with Money**	
The purpose of this unit is to develop money concepts. Students have multiple opportunities to identify, count, recognize, and use coins and bills. Students will make equivalent amounts using both coins and bills. Students will represent and model their thinking using a variety of models. Money is used to reinforce the understanding of our base ten place value system.	
Big Ideas: The central organizing ideas and underlying structures of mathematics.	**Essential Questions**
• Money is a real world tool. • Computation with money amounts uses the same strategies as computing with whole numbers. • Algebraic properties apply to computation with money in the same way they apply to whole numbers. • Partitioning money helps make combining and taking parting money amounts and computation easier. • The number of coins in a set does not necessarily indicate which of two sets has the greater value. • Making change can be thought of as a part-part-whole problem. • A coin or bill represents a quantity and can simultaneously be thought of as one or a group, e.g. 10 ones (pennies) make one ten (dime) three single dimes is the same as three groups of ten. **Thinking Ahead, Linking Big Ideas among units:** **Unit 4: Addition and Subtraction within 100** • Students need many opportunities to practice fact fluency with flexible strategies by adding and subtracting multiples of 10 using different starting points • Students have multiple opportunities explaining their addition and subtraction thinking. • Students identify number patterns beyond the tens	• How do you know if two equivalent expressions are equivalent? (e.g. .25= 1 quarter or 2 dimes and 1 nickel or 2 dimes, 5 pennies or 5 nickels • What patterns do you notice? e.g. counting by 5s, 10s • What patterns do you notice when you focus on net change? • How did you represent and record your thinking? • What strategies did you use are any strategies related? • How do benchmark numbers help you compute?

Common Core State Standards
Grade 2
Unit 3: Whole Number Concepts, Estimation, and Computation with Money

Number and Operations in Base Ten 2.NBT

Understand place value.

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:

a. 100 can be thought of as a bundle of ten tens — called a "hundred."

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).

2.NBT.2. Count within 1000; skip-count by 5s, 10s, and 100s.

2.NBT.3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

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.

Work with time and money.

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?

Grade 2
Unit 4: Whole Number Concepts, Estimation, and Computation within 100

The purpose of this unit is to develop algebraic concepts as students solve one- and two-step word problems involving different problem structures. Students 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. Students reinforce their understanding of our place value system by partitioning numbers into standard and non-standard forms including expanded notation, including regrouping numbers as they deepen their understanding of equivalence. The concept of multiple sets of 10s and 100s build understanding for the work with addition and subtraction in later units.

Big Ideas: The central organizing ideas and underlying structures of mathematics.	**Essential Questions**
• Flexible methods for computation require a good understanding of the operations and properties of the operations, the commutative and associative property. • Contextual problems can be represented and solved using a variety of problem structures (e.g., 90+_=170 or _+80=170 or 90+80=_). • Numbers can be regrouped into 10s and 100s when adding and subtracting. • Understanding place value strategies supports estimation. • Repeated addition and subtraction with the same number creates a repeating pattern in the ones and tens digits. • Benchmark numbers help make mental computation easier. **Thinking Ahead, Linking Big Ideas among units:** **Unit 5: Addition and Subtraction within 1000** • Students need many opportunities to practice fact fluency with flexible strategies by adding and subtracting multiples of 10 and 100 up to 900 using different starting points. • Students have multiple opportunities explaining their addition and subtraction thinking. • Students identify number patterns beyond the tens.	• What different strategies can we use to add and subtract? • How is a number line like a ruler? • How do benchmark numbers like 5 and 10 help you solve problems? • How do you know if your answer is correct? • How do you know if your strategy will work for all numbers? • How does making "friendly" numbers help you to solve the problem? • How can the number sentence be thought of in different ways? • Why is it important to consider the numbers first before you choose an efficient strategy to solve the problem? • How can you tell when a strategy is most efficient for a particular problem?

Common Core State Standards
Grade 2
Unit 4: Whole Number Concepts, Estimation, and Computation within 100

Represent and solve problems involving addition and subtraction.

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]

Understand place value.

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:

a. 100 can be thought of as a bundle of ten tens — called a "hundred."

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).

Use place value understanding and properties of operations to add and subtract.

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.

2.NBT.6. Add up to four two-digit numbers using strategies based on place value and properties of operations.

2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.

Relate addition and subtraction to length.

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.

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.

Grade 2
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. Numbers are partitioned in standard and non-standard forms including expanded notation. Students use algebraic properties of operation to deepen understandings of number relationships and equivalence. Multiple sets of 10s, 100s, 1000s build foundational understanding for later work with multiplication concepts. Algebraic properties are used to develop efficient strategies for computing with whole numbers.

Big Ideas: The central organizing ideas and underlying structures of mathematics.	**Essential Questions**
• Understanding place value helps to support efficient strategies when adding and subtracting within 1,000. • Position of digits in numbers determines their value. e.g., 7,066 equals 7 thousands, 0 hundreds, 6 tens and 6 ones. • Numbers can be mentally added by combining any parts in any order, but it is often easiest to add the greatest place values first. • Partitioning numbers can help support efficient computational strategies. • Contextual problems can be represented and solved using a variety of problem structures (e.g., 900+_=1700 or _+800=1700 or 900+800=_). **Thinking Ahead, Linking Big Ideas among units:** **Unit 6: Reasoning with Shapes** • Students develop spatial reasoning through identifying and visualizing spatial relationships. • Students develop fractional concepts as they decompose shapes.	• What patterns are in our number system when you count by 10, 100, 1000? • How are adding and subtracting by 10s, 100s, and 1,000s similar to skip counting by 10s, 100s, and 1,000s? • How do benchmark numbers help you solve problems? • What different strategies could we use to add and subtract numbers? • How does grouping numbers help solve problems? • How can you tell if two different representations of a quantity are equivalent? • How does understanding the base ten system help us to solve problems? • How does making "friendly" numbers help you to solve the problem? • How can the number sentence be thought of in different ways? • Why is it important to consider the numbers first before you choose an efficient strategy to solve the problem? • How can you tell when a strategy is most efficient for a particular problem?

Common Core State Standards
Grade 2
Unit 5: Whole Number Concepts, Estimation, and Computation within 1000

Number and Operations in Base Ten 2.NBT

Understand place value.

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:

a. 100 can be thought of as a bundle of ten tens — called a "hundred."

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).

Use place value understanding and properties of operations to add and subtract.

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.

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.

2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.

Relate addition and subtraction to length.

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.

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.

Grade 2

Unit 6: 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.

Big Ideas: The central organizing ideas and underlying structures of mathematics.	**Essential Questions**
• Shapes are alike and different based on their geometric attributes. • Shapes in different categories may share attributes. • Shapes and solids can be composed and decomposed (part-whole relations). • Fractional parts must be of equal size. • 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. • Benchmark fractions (halves, thirds and fourths) facilitate estimation. • The more the whole is divided into equal parts, the smaller the parts, e.g. fourths are smaller than halves. • 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. • Fractional parts can be represented as sets (or groups). **Thinking Ahead, Linking Big Ideas among units:** **Unit 7: Measurement** • Students measure length with non-standard units to standard units of measure. • Students will develop an understanding of time as measurement.	• 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? • How well do your estimated measures compare to the actual measures of shapes and why? • In what ways are shapes the same, similar or different when they are moved in space? • What attributes can you use to sort and classify two-dimensional shapes? • In what ways are shapes the same, similar, or different? • What attributes can you use to sort and classify two-dimensional shapes? • What is a fraction? • How can you tell when a fraction is larger/smaller when comparing fractions?

Common Core State Standards
Grade 2
Unit 6: Reasoning with Shapes

Reason with shapes and their attributes.

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.

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.

Grade 2

Unit 7: 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. Students develop an understanding of time as measurement and measure time to the nearest 5-minutes.

Big Ideas: The central organizing ideas and underlying structures of mathematics.	**Essential Questions**
• Different tools and 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 by laying them side by side and selecting an appropriate standard length unit of measure. • 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. • 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 • Benchmark fractions (halves, fourths) facilitate estimating time on the clock. • Time is the duration of an event from beginning to end. • Time can be measured in standard units (e.g. seconds, minutes, hours, days). • There are patterns and relationships among units of time measure.	• Why is it important to keep the unit of measure uniform when making measurements? • What do you notice about measuring the same objects with two different units of measure? • What is a benchmark measure and how does it help you estimate length? • What does the unit measure mean? • When measuring a given object, how is the size of the unit related to the number of units needed? • When is the accurate measure important and when is it practical to estimate? • How is a number line like a ruler? • Which is an appropriate tool and unit of measure to measure a given object and why? • How is the clock similar to a ruler? • How are units of time related to one another? • What does each hand on the clock represent? • How could you divide the clock into equal parts? • What are the two cycles in a 12 hour day?
Thinking Ahead, Linking Big Ideas: **Unit 8: Early Multiplication and Division** • Students begin to think of two numbers simultaneously as they consider the number of objects in a group and the number of groups they have.	

Common Core State Standards
Grade 2
Unit 7: Linear Measurement with Standard Units

Measure and estimate lengths in standard units.

2.MD.1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

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.

2.MD.3. Estimate lengths using units of inches, feet, centimeters, and meters.

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.

Relate addition and subtraction to length.

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.

Work with time and money.

2.MD.7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Reason with shapes and their attributes.

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, or four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Understand place value.

2.NBT.3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Grade 2 **Unit 8: 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.	
Big Ideas: The central organizing ideas and underlying structures of mathematics.	**Essential Questions**
• Skip counting can be used to find the total number of objects in a collection of equal groups. • Multiplication can be thought of as repeated addition. • Multiplication can be represented using models. • Algebraic properties apply to multiplication. • Multiplication and division are related.	• What different strategies can we use to add subtract and more efficiently? • How is multiplication related to addition? • How is division related to subtraction? • How do benchmark numbers, like 5 and 10, help you solve problems? • How do you know if your strategy will work for all numbers? • How does making "friendly" numbers help you solve the problem? • How can the number sentence be thought of in different ways? • Why is it important to consider the numbers first before you choose an efficient strategy to solve the problem?
Thinking Ahead, Linking Big Ideas: **Grade 3** • The focus of third grade is to shift from thinking additively to thinking multiplicatively • Students develop an understanding of fractions especially unit fractions • Student build on grade 2 work by analyzing two-dimensional shapes and describing attributes with greater specificity.	

Common Core State Standards
Grade 2
Unit 8: Whole Number Concepts, Estimation, and Computation with Exploring Early Multiplication and Division

Understand place value.

2.NBT.2. Count within 1000; skip-count by 5s, 10s, and 100s.

Work with equal groups of objects to gain foundations for multiplication.

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.

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.

Reason with shapes and their attributes.

2.G.2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.