Richmond Public Schools

Curriculum Framework

2nd Grade

Strand: Number Sense
2.1 The student will a) read, write, and identify the place and value of each digit in a three-digit numeral, with and without models; b) identify the number that is 10 more, 10 less, 100 more, and 100 less than a given number up to 999; c) compare and order whole numbers between 0 and 999; and d) round two-digit numbers to the nearest ten.
Suggested Pacing
1st Nine Weeks
Related Spiraling Standards

Grade 1 Related Standards	**Grade 3 Related Standards**
1.2 The student, given up to 110 objects, will a. group a collection into tens and ones and write the corresponding numeral; b. compare two numbers between 0 and 110 represented pictorially or with concrete objects, using the words greater than, less than or equal to; and c. order three or fewer sets from least to greatest and greatest to least. 1.5 The student, given a familiar problem situation involving magnitude, will a. select a reasonable order of magnitude from three given quantities: a one-digit numeral, a two-digit numeral, and a three-digit numeral (e.g., 5, 50, 500); and b. explain the reasonableness of the choice.	3.1 The student will a. read, write, and identify the place and value of each digit in a six-digit whole number, with and without models; b. round whole numbers, 9,999 or less, to the nearest ten, hundred, and thousand; and c. compare and order whole numbers, each 9,999 or less

Essential Questions	Common Misconceptions
• How do patterns in our place value number system help us read, write, and compare whole numbers? • How can we use models to demonstrate the value of each digit in a two- or three-digit number? • What does it mean to round numbers to the nearest 10? Why is rounding numbers useful? • How can a number line be used to round numbers to the nearest ten? • What words and symbols are used to compare and order whole numbers? • How do patterns in place value help us to find 10 more or 10 less (100 more 100 less) than a number?	• Students may confuse the order of the place value names, ordering them OTH (ones, tens, hundreds) instead of HTO (hundreds, tens, ones) • Students may compare and order numbers by the first digit only, thus not understanding that 254 is greater than 75. • When rounding, the student may confuse where on the number line a given number falls. For example, the student may not know that 72 is between 70 and 80. • When counting tens and ones (or hundreds, tens, and ones), students misapply the procedure for counting on and treats tens and ones (or hundreds, tens, and ones) as separate numbers. • Students have an alternative conception of multidigit numbers and see them as numbers independent of place value. • Students recognize simple multidigit numbers, such as thirty (30) or 400 (four hundred), but they do not understand that the position of a digit determines its value, i.e. students mistake the numeral 306 for thirty-six. • Students lack the concept that 10 in any position (place) makes one (group) in the next position and vice versa.
Understanding the Standard	**Essential Knowledge and Skills**
• The number system is based on a simple pattern of tens where each place has ten times the value of the place to its right. • Numbers are written to show how many hundreds, tens, and ones are in the number. • Opportunities to experience the relationships among hundreds, tens, and ones through hands-on experiences with manipulatives are essential to developing the ten-to-one place value concept of our number system and to understanding the	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Demonstrate understanding of the ten-to-one relationships among ones, tens, and hundreds, using manipulatives. (a) • Write numerals, using a model or pictorial representation (i.e., a picture of base-10 blocks). (a) • Read three-digit numbers when shown a numeral, a model of the number, or a pictorial representation of the number. (a)

value of each digit in a three-digit number. This structure is helpful when comparing and ordering numbers. ● Manipulatives that can be physically connected and separated into groups of tens and leftover ones (e.g., snap cubes, beans on craft sticks, pennies in cups, bundle of sticks, beads on pipe cleaners, etc.) should be used. ● Ten-to-one trading activities with manipulatives on place value mats provide experiences for developing the understanding of the places in the base-10 system. ● Models that clearly illustrate the relationships among ones, tens, and hundreds, are physically proportional (e.g., the tens piece is ten times larger than the ones piece). ● Flexibility in thinking about numbers is critical (e.g., 84 is equivalent to 8 tens and 4 ones, or 7 tens and 14 ones, or 5 tens and 34 ones, etc.). This flexibility builds background understanding for the ideas used when regrouping. When subtracting 18 from 174, a student may choose to regroup and think of 174 as 1 hundred, 6 tens, and 14 ones. ● Hundreds charts can serve as helpful tools as students develop an understanding of 10 more, 10 less, 100 more and 100 less. ● Rounding a number to the nearest ten means determining which two tens the number lies between and then which ten the number is closest to (e.g., 48 is between 40 and 50 and rounded to the nearest ten is 50, because 48 is closer to 50 than it is to 40). ● Rounding is an estimation strategy that is often used to assess the reasonableness of a solution or to give an estimate of an amount. ● Vertical and horizontal number lines are useful tools for developing the concept of rounding. Rounding to the nearest ten using a number line is done as follows:	● Identify and write the place (ones, tens, hundreds) of each digit in a three-digit numeral. (a) ● Determine the value of each digit in a three-digit numeral (e.g., in 352, the 5 represents 5 tens and its value is 50). (a) ● Use models to represent numbers in multiple ways, according to place value (e.g., 256 can be 1 hundred, 14 tens, and 16 ones, 25 tens and 6 ones, etc.). (a) ● Use place value understanding to identify the number that is 10 more, 10 less, 100 more, or 100 less than a given number, up to 999. (b) ● Compare two numbers between 0 and 999 represented with concrete objects, pictorially or symbolically, using the symbols (>, <, or =) and the words greater than, less than or equal to. (c) ● Order three whole numbers between 0 and 999 represented with concrete objects, pictorially, or symbolically from least to greatest and greatest to least. (c) ● Round two-digit numbers to the nearest ten. (d)

○ Locate the number on the number line. ○ Identify the two closest tens the number comes between. ○ Determine the closest ten. ○ If the number in the ones place is 5 (halfway between the two tens), round the number to the higher ten. ● Mathematical symbols (>, <) used to compare two unequal numbers are called inequality symbols.	
Vocabulary	**Instructional Activities Organized by Learning Objective**
Ones, tens, hundreds, round, describe, compare, order, between, less than (<), greater than (>), equal to (=), place, value, least, greatest, digit, one-digit, two-digit, three-digit, locate, closest	**Textbook:** **enVision Math** 2.1a ● Topic 4 Interactive Math Story: Collections for Counting ● Lesson 4-1 Models for Tens and Ones (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, Practice Master, The Language of Math) ● Lesson 4-2 Models for Tens (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, Practice Master, The Language of Math) ● Topic 17 Interactive Math Story: Hundreds of Windows ● Lesson 17-1 Building 1,000 (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, Practice Master, The Language of Math) ● Lesson 17-2 Counting Hundreds, Tens, and Ones (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, Practice Master, The Language of Math)
Assessment	
Powerschool – Exam identifier	

	● Lesson 17-3 Reading and Writing Numbers to 1,000 (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, Practice Master, The Language of Math) 2.1b ● Lesson 17-5 Patterns with Numbers on Hundreds Charts (Problem of the Day, Problem Based Interactive Learning, Develop the Concept: Visual, Reteaching Master, Practice Master) 2.1c ● Lesson 17-6 Comparing Numbers to 1,000 (Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, Practice Master, The Language of Math) EnVision Math : Lesson 4-7 Order Numbers (Problem of the Day, Problem Based Interactive Learning, Develop the Concept: Visual, Reteaching Master, Practice Master) 2016 ● Lesson 17-8 Ordering Numbers (Problem of the Day, Problem Based Interactive Learning, Develop the Concept: Visual, Reteaching Master, Practice Master) 2016 2.1d ● Teacher Edition: Online Printable Resources VA-4 Rounding Whole Numbers (pg. VA14-15) **Eureka Math:** 2.1 a ● GRADE 2 MODULE 3: Place Value, Counting, and Comparison of Numbers 2.1b ● GRADE 2 MODULE 3-TOPIC G: Finding 1, 10, and 100 More or Less than a Number

	● GRADE 2 MODULE 4-LESSON 17: Using Mental Strategies to Relate Compositions of 10 tens as 1 hundred to 10 ones as 1 ten. 2.1c ● GRADE 2 MODULE 3-TOPIC F: Comparing Two Three-Digit Numbers 2.1d ● GRADE 2 MODULE 2-TOPIC C: Rounding to the nearest Ten and Hundred ● GRADE 3 MODULE 2-LESSON 17: Estimate sums by rounding and apply to solve measurement word problems. **Notes** ● Interactive Notebooks MATH Grade 2 (2015) ○ Place Value (p25-28)(a) ○ Reading and Writing numbers (p26-27) (a) ○ Comparing and Order Numbers (p28-29)(c) **Resources** ● **Print** o Teaching Student-Centered Mathematics (K-3 2006) ▪ Activity 2.1: Make Sets of More/Less/Same p. 38 (c) ▪ Activity 2.2: Find the Same Amount p. 38 (c) ▪ Activity 2.30: Missing Numbers p. 58 (a) ▪ Activity 4.1: One-Two-More-Than Dice p. 100 (expand to 100 more and less) (b) ▪ Activity 5.2: Groups of 10 p. 130 (a) ▪ Activity 5.4: Odd Groupings p. 133 (a) ▪ Activity 5.5: Three Other Ways p.133 (a) ▪ Activity 5.6: Base-Ten Riddles p. 134 (a) ▪ Activity 5.8: Counting with Base-Ten Models p. 145 (b)

	▪ Activity 5.12: Models with the Hundreds Chart (c) ▪ Activity 5.14: Say It/Press It p. 140 (a) ▪ Activity 5.15: Show It/Press It p. 140 (a) ▪ Activity 5.16: Digit Change p. 140 (a) ▪ Activity 5.17: Who Am I? P. 142 (a) ▪ Activity 5.18: Who Could They Be? p.143 (a) ▪ Activity 5.19: Close, Far, and In Between p. 143 (c) ▪ Activity 5.21: Numbers, Squares, Sticks, and Dots p.145 (a) o FACEing Math: Primary Number Sense (2010) ▪ Lesson 2: Reading, Writing, Counting 1-1000 (a,b) ▪ Lesson 4: Place Value 1-1000 (a) ▪ Lesson 6: Greater than, less than, equal to 1000 (c) o Printable Instructional Activities and Resources ▪ 2-Digit base tens (a) ▪ 3- Digit Base tens (a) ▪ Race to 100 (b) ▪ Race to 500 (b) ▪ Comparing Base ten number pictures (c) ▪ Ordering Numbers on Place Value Paths (c) ▪ Rounding Houses (d) ▪ Digit Card Rounding (d) ● **Technology-based** o Gizmo: Rounding Whole Numbers (Number Line) (d) o Gizmo: Modeling Whole Numbers and Decimals (Base-10 Blocks) (a) o Place Value Activities Activities (a)

	○ Place Value Hockey educational review game (Level 1 only) (a) ○ Base Ten Fun educational review game (a) ○ Ordering Numbers- educational game (c) ○ Ten More or Less (b) **Station Activities/Manipulatives** ● Place value cubes: Using place value cubes, the student will roll a number and write the number in a Place Value Chart. (a) ● Base 10 Magnetic Kits: Using the base 10 magnetic kit and given numbers up to 3 digits, the student will identify the value of each digit in a number and build the number. (a) ● Foam Base 10s: Using the foam base 10s and given numbers up to 3 digits, the student will identify the value of each digit in a number and build the number. (a)
Cross-Curricular Connections	**Differentiation**
Literature Connections ● **Counting on Frank** by Rod Clement ○ Use some numbers such as 745 jellybeans to find place value and round. ● **A Place for Zero by Angeline** by Sparagna LoPresti ○ Look at different numbers then practice adding a zero into different places to make different numbers. Tie in comparing numbers with and without zeros.For example: 105 is a lot different than 15--the zero in the tens place changes the number completely. ● **Sir Cumference and All the King's Tens** by Cindy Neuschwander	● FACEing Math: Primary Number Sense (2010) ○ Lesson 1: Reading, Writing, Counting 1-100 (a,b) *lesson only goes to 100* ○ Lesson 3: Place Value 1-100 (a) *lesson only goes to 100* ○ Lesson 5: Greater than, less than, equal to 100 (c) *lesson only goes to 100*

○ How could you use place value to plan a party for your friends or classmates? ● **A Million Dots** by Andrew Clements ○ Have pre-printed sheets with a million (or 100, 1000- adjust as necessary)circles, Xs, etc and ask students to group the objects and count them. What is the most efficient way to count a large group of something? ● **How Many Seeds in a Pumpkin?** by Margaret McNamara ○ Collect one small, one medium, and one large pumpkin and ask students to estimate how many seeds will be in each pumpkin. Then, count the seeds using knowledge of place value and compare the pumpkins. ○ Questions to ask: Did the larger pumpkin have the most seeds? ● **The Wing Wing Brothers Math Spectacular!** by Ethan Long ○ Use examples from the story to explore comparing numbers. ● **More or Less** by Stuart J. Murphy Use examples from the story to explore comparing numbers.	

Strand: Number Sense	
2.2 The student will a) count forward by twos, fives, and tens to 120, starting at various multiples of 2, 5, or 10; b) count backward by tens from 120; and c) use objects to determine whether a number is even or odd	
Suggested Pacing	
1st Nine Weeks	
Related Spiraling Standards	
Grade 1 Related Standards 1.1 The student will a. count forward orally by ones to 110, starting at any number between 0 and 110; b. write the numerals 0 to 110 in sequence and out-of-sequence; c. count backward orally by ones when given any number between 1 and 30; and d. count forward orally by ones, twos, fives, and tens to determine the total number of objects to 110.	**Grade 3 Related Standards** 3.4 The student will c. demonstrate fluency with multiplication facts of 0, 1, 2, 5, and 10;
Essential Questions	**Common Misconceptions**
● How can we use tools (objects, number lines, hundred charts, and calculators) to help us find patterns in numbers? ● How can patterns in our number system help us skip count by 2s, 5s, and 10s, no matter what number we start with? ● Where are skip-counting patterns found in our everyday lives?	● Students often confuse how the pattern continues after 100. ● Students often forget that numbers ending in 0 are even, e.g. 20, 30.

• What patterns are formed by even and odd numbers? • How can we use pairing and grouping to demonstrate that a number is odd or even?	
Understanding the Standard	**Essential Knowledge and Skills**
• Collections of objects can be grouped and skip counting can be used to count the collection. • The patterns developed as a result of grouping and/or skip counting are precursors for recognizing numeric patterns, functional relationships, concepts underlying money, and telling time. Powerful models for developing these concepts include counters, number charts (e.g., hundreds charts, 120 charts, 200 charts, etc.) and calculators. • Skip counting by fives lays the foundation for reading a clock to the nearest five minutes and counting nickels. • Skip counting by tens lays the foundation for use of place value and counting dimes. • Calculators can be used to display the numeric patterns resulting from skip counting. Use the constant feature of the four-function calculator to display the numbers in the sequence when skip counting by that constant. • Odd and even numbers can be explored in different ways (e.g., dividing collections of objects into two equal groups or pairing objects). When pairing objects, the number of objects is even when each object has a pair or partner. When an object is left over, or does not have a pair, then the number is odd.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Determine patterns created by counting by twos, fives, and tens to 120 on number charts. (a) • Describe patterns in skip counting and use those patterns to predict the next number in the counting sequence. (a) • Skip count by twos, fives, and tens to 120 from various multiples of 2, 5 or 10, using manipulatives, a hundred chart, mental mathematics, a calculator, and/or paper and pencil. (a) • Skip count by two to 120 starting from any multiple of 2. (a) • Skip count by five to 120 starting at any multiple of 5. (a) • Skip count by 10 to 120 starting at any multiple of 10. (a) • Count backward by 10 from 120. (b) • Use objects to determine whether a number is even or odd (e.g., dividing collections of objects into two equal groups or pairing objects). (c)
Vocabulary	**Instructional Activities Organized by Learning Objective**

forward, backward, even, odd, multiples, skip counting, twos, fives, tens, patterns, collections, groups, divide, number charts, equal groups, pairs	**Textbook:** **enVision Math** 2.2a ● Lesson 4-8 Number Patterns on a Hundred Chart (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity*, Reteaching Master, Practice Master, The Language of Math) ● Virginia Handbook pg. VA7-8 2.2b ● EnVision Math : Lesson 4-8 Number Patterns on a Hundred Chart (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity*, Reteaching Master, Practice Master, The Language of Math) ● EnVision: Virginia Handbook pg. VA7-8 2.2c ● EnVision Math : Lesson 4-9 Even and Odd (Problem Based Interactive Learning, Develop the Concept, Reteaching Master, Practice Master, The Language of Math) ● EnVision: Virginia Handbook pg. VA7-8 **Eureka Math:** 2.2 a ● GRADE 2 MODULE 3: Place Value, Counting, and Comparison of Numbers to 1,000 2.2 b ● GRADE 2 MODULE 3: Place Value, Counting, and Comparison of Numbers to 1,000 2.2 c ● GRADE 2 MODULE 6 Topic D: The Meaning of Even and Odd Numbers
Assessment	
Powerschool – Exam identifier	

Notes

- Interactive Notebooks MATH Grade 2 (2015)
  - Skip Counting (22-23) (b)
  - Even and Odd Numbers (16-17) ©

Resources

- **Print**
  - Teaching Student-Centered Mathematics (K-3 2006)
    - Activity 5.2: Groups of 10 p. 130 (a)
    - Activity 5.10: Skip-Count Patterns p.138 (a)
  - Printable Instructional Activities and Resources
    - Activity : Climb the Ladder
    - Resource 1-200 Counting Chart
    - Resource: Odd/Even Circles
    - Activity: Tile Pairs
    - Activity: Counting by Multiples
- **Technology-based**
  - **Skip Count Balloon Pop** (a)
  - **Balloon Pop Skip Count** (a)
  - **Even/Odd interactive skill practice** (c)
  - **Counting by 5s to 120 Video** (b)
  - **Counting By 2s to 120 Video** (b)
  - **Counting by 10s to 120 Video** (b)

Station Activities/Manipulatives

- Square tiles: Using square tiles, the student will demonstrate a given number in pairs to determine if there are any leftovers and identify whether the number is even or odd. (c)
- Insect, fruit and pet counters: Given the insect, fruit or pet counters, the students will arrange the counters in groups of 5s to count by 5's to 120. (a)

	• Counting and sorting set: Using the counting and sorting set, the students will arrange the counters in groups of 2s to count by 2s to 120. (a) • Linking cubes: Given the linking cubes and number cards or tiles, the students will link the cubes into linked chains of 10 to match the given number with each chain and count by 10s to 120. (a)
Cross-Curricular Connections	**Differentiation**

Literature Connections
• **The Crayon Counting Book** by Jerry Pallotta and Pam Ryan
  ○ Students skip count using crayons.
• **Even Steven and Odd Todd** by Kathryn Cristaldi
  ○ Even and Odd Street: Students will create two houses--one will be for Even Street (that must be numbered with an even house number) from written or oral directions. All houses will be identical. The other house will be for Odd Street and will be an original creation, numbered with an even house number.
• **Bears Odd, Bears Even** by Harriet Ziefert
  ○ Demonstrate the difference between even and odd numbers using counting bears.
• **One Odd Day** by Doris Fisher
• **If You Were an Odd Number** by Marcie Aboff
  ○ Go on an Odd Number walk and look for examples of odd numbers - three chairs in the lobby, five books on the table.
• **Christopher Counting** by Valerie Gorbechov
• **Count the Monkeys** by Mac Barnett
	• FACEing Math: Primary Number Sense (2010)
	  ○ Lesson 7: Counting by 2s, 5s, 10s (*lesson has counting backwards by 2s, 5s, and includes numbers up to 1000)*

○ Use the 100s chart to illustrate skip counting by coloring in different patterns with different colors. Encourage students to recognize patterns and create their own. ● **Counting Coconuts** by Wendi Silvano ● **Counting Envelopes** by Becca Moss ● **One is a Drummer, a Book of Numbers** by Roseanne Thong ● **The King's Commissioners** by Aileen Friedman	

<table>
<tr><th colspan="2">Strand: Number Sense</th></tr>
<tr><td colspan="2">2.3 The student will
a) count and identify the ordinal positions first through twentieth, using an ordered set of objects; and
b) write the ordinal numbers 1st through 20th.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">2nd Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

1.3 The student, given an ordered set of ten objects and/or pictures, will indicate the ordinal position of each object, first through tenth.</td><td><u>Grade 3 Related Standards</u>

N/A</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>● How do ordinal numbers help us identify items?
● How are ordinal numbers named and written?
● How are ordinal numbers different from counting numbers?
● How can we use objects to model the ordinal positions from the first to the twentieth positions?</td><td>● Students may struggle with where to begin counting and may always start from left to right without paying close attention to directions.</td></tr>
<tr><th>Understanding the Standard</th><th>Essential Knowledge and Skills</th></tr>
<tr><td>● The cardinal and ordinal understanding of numbers is necessary to quantify, measure, and identify the order of objects.
● The ordinal meaning of numbers is developed by identifying and verbalizing the place or position of objects in a set or</td><td>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
● Count an ordered set of objects, using the ordinal number words first through twentieth. (a)
● Identify the ordinal positions first through twentieth, using an ordered set of objects presented in lines or rows from</td></tr>
</table>

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<tr>
<td>sequence (e.g., a student's position in line when students are lined up alphabetically by first name).
● The ordinal position is determined by where one starts in an ordered set of objects or sequence of objects (e.g., from the left, right, top, bottom).
● Ordinal position can also be emphasized through sequencing events (e.g., days in a month or events in a story).
● Practical applications of ordinal numbers can be experienced through calendar and patterning activities.</td>
<td>○ left to right;
○ right to left;
○ top to bottom; and
○ bottom to top. (a)
● Write 1st, 2nd, 3rd, through 20th in numerals. (b)</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>Instructional Activities Organized by Learning Objective</td>
</tr>
<tr>
<td>first (1st), second (2nd), third (3rd), fourth (4th), fifth (5th), sixth (6th), seventh (7th), eighth (8th), ninth (9th), tenth (10th), eleventh (11th), twelfth (12th), thirteenth (13th), fourteenth (14th), fifteenth (15th), sixteenth (16th), seventeenth (17th), eighteenth (18th), nineteenth (19th), twentieth (20th), ordinal, forward, backward, left, right, top, bottom, position, ordered set</td>
<td rowspan="3">Textbook-
enVision Math
● Virginia Handbook pg. VA 5 - 6 (a,b)

Eureka Math:
2.3 a
● GRADE K MODULE 6: Describe the relative position of shapes using ordinal numbers. through 10
2.3 b
● GRADE K MODULE 6: Describe the relative position of shapes using ordinal numbers. through 10

Notes

Resources
● Print
o Printable Instructional Activities and Resources
▪ Ordinal Number Cards
▪ Ordinal Number Word Cards</td>
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<td>Assessment</td>
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<td>Powerschool – Exam identifier</td>
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Ordinal Number Mix-up activity

Technology-based

Ordinal Numbers Game interactive skill practice only goes to 10th place (a)
Practice Ordinal Numbers interactive skill practice (a)

Station Activities/Manipulatives

Insect, fruit and pet counters: Using the insect, fruit, or pet counters, the student will create a line of counters and identify the ordinal position of each counter through the 20th position. (a)
Linking cubes: Given the linking cubes and a sentence strip, the student will identify the ordinal position of each cube through the 20th position and write that ordinal number below each cube. (b)

</td></tr>
<tr><td>Cross-Curricular Connections</td><td>Differentiation</td></tr>
<tr><td>
Literature Connections

Henry the Fourth by Stuart J. Murphy
There Was an Old Lady Who Swallowed… series by various authors

Explore the various things an old lady swallows and the order in which she does so.

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Richmond Public Schools

Curriculum Framework

2nd Grade

<table>
<tr><th colspan="2">Strand: Number Sense</th></tr>
<tr><td colspan="2">2.4 The student will
a) name and write fractions represented by a set, region, or length model for halves, fourths, eighths, thirds, and sixths;
b) represent fractional parts with models and with symbols; and
c) compare the unit fractions for halves, fourths, eighths, thirds, and sixths, with models.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">2nd Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

1.4 The student will
a. represent and solve practical problems involving equal sharing with two or four sharers; and
b. represent and name fractions for halves and fourths, using models.</td><td><u>Grade 3 Related Standards</u>

3.2 The student will
a. name and write fractions and mixed numbers represented by a model;
b. represent fractions and mixed numbers with models and symbols; and
c. compare fractions having like and unlike denominators, using words and symbols (>, <, =, or ≠), with models

3.5 The student will solve practical problems that involve addition and subtraction with proper fractions having like denominators of 12 or less.</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>● How can we model fractional parts of a region or area? How are the parts identified?</td><td>● Students may think $\frac{1}{2}$ is smaller than $\frac{1}{6}$ because 2 is smaller than 6.</td></tr>
</table>

• How can we model fractional parts of a set? How are the parts identified? • How can we model fractional parts of a length model? How are the parts identified? • Why are the words part, whole, and equal important when working with fractions? • What do we need to think about when we compare fractions or put them in size order?	• Students may confuse the numerator and denominator and what each represents. • Students may struggle counting on the length model, starting at 1 instead of 0. • Students write fraction as part/part instead of part/whole. • Students do not understand that when finding fractions of amounts, lengths, or areas, the parts need to be equal in size.
Understanding the Standard	**Essential Knowledge and Skills**

• Students need opportunities to solve practical problems involving fractions in which students themselves are determining how to subdivide a whole into equal parts, test those parts to be sure they are equal, and use those parts to count the fractional parts and recreate the whole.
• Counting unit fractional parts as they build the whole (e.g., one-fourth, two-fourths, three-fourths, and four-fourths), will support students understanding that four-fourths makes one whole and prepares them for the study of multiplying unit fractions (e.g., $4 \times \frac{1}{4}$ is $\frac{4}{4}$ or one whole) in later grades.
• When working with fractions, the whole must be defined.
• A fraction is a numerical way of representing part of a whole region (i.e., an area model), part of a group (i.e., a set model), or part of a length (i.e., a measurement model).
• In a region/area model, the parts must have the same area.
• In a set model, the set represents the whole and each item represents an equivalent part of the set. For example, in a set of six counters, one counter represents one-sixth of the set. In the set model, the set can be subdivided into subsets with the same number of items in each subset. For example, a set of six counters can be subdivided into two subsets of three
	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
	• Recognize fractions as representing equal-size parts of a whole. (a)
	• Name and write fractions represented by a set model showing halves, fourths, eighths, thirds, and sixths. (a, b)
	• Name and write fractions represented by a region/area model showing halves, fourths, eighths, thirds, and sixths. (a, b)
	• Name and write fractions represented by a length model showing halves, fourths, eighths, thirds, and sixths. (a, b)
	• Represent, with models and with symbols, fractional parts of a whole for halves, fourths, eighths, thirds, and sixths, using:
	  ○ region/area models (e.g., pie pieces, pattern blocks, geoboards);
	  ○ sets (e.g., chips, counters, cubes); and
	  ○ length/measurement models (e.g., fraction strips or bars, rods, connecting cube trains). (b)

counters each and each subset represents one-half of the whole set. ● In the primary grades, students may benefit from experiences with sets that are comprised of congruent figures (e.g., 12 eggs in a carton) before working with sets that have noncongruent parts. ● In a length model, each length represents an equal part of the whole. For example, given a strip of paper, students could fold the strip into four equal parts, each part representing one-fourth. Students will notice that there are four one-fourths in the entire length of the strip of paper that has been divided into fourths. ● Students need opportunities to use models (region/area or length/measurement) to count fractional parts that go beyond one whole. For instance, if students are counting five pie pieces and building the pie as they count, where each piece is equivalent to one-fourth of a pie, they might say "one-fourth, two-fourths, three-fourths, four-fourths, five-fourths." As a result of building the whole while they are counting, they begin to realize that four-fourths make one whole and the fifth-fourth starts another whole. They will begin to generalize that when the numerator and the denominator are the same, they have one whole. They also will begin to see a fraction as the sum of unit fractions (e.g., three-fourths contains three one-fourths or four-fourths contains four one-fourths which is equal to one whole). This provides students with a visual for when one whole is reached and develops a greater understanding of numerator and denominator. ● Students will learn to write names for fractions greater than one and for mixed numbers in grade three.	● Compare unit fractions for halves, fourths, eighths, thirds, and sixths), using words (greater than, less than or equal to) and symbols (>, <, =), with models. (c) ● Using same-size fraction pieces, from region/area models or length/measurement models, count the pieces (e.g., one-fourth, two-fourths, three-fourths, etc.) and compare those pieces to one whole (e.g., four-fourths will make one whole; one-fourth is less than a whole). (c)

● Creating models that have a fractional value greater than one whole and describing those models as having a whole and leftover equal-sized pieces are the foundation for understanding mixed numbers in grade three. ● When given a fractional part of a whole and its value (e.g., one-third), students should explore how many one-thirds it will take to build one whole, to build two wholes, etc. ○ If this  is $\frac{1}{3}$, then this is the whole . ○ If this is the whole  ,then this  is $\frac{1}{3}$. ● Students should have experiences dividing a whole into additional parts. As the whole is divided into more parts, students understand that each part becomes smaller (e.g., folding a paper in half one time, creates two halves; folding it in half again, creates four fourths, which is smaller; folding it in half again, creates eight eighths, which is even smaller). The same concept can be applied to thirds and sixths. ● The value of a fraction is dependent on both the number of equivalent parts in a whole (denominator) and the number of those parts being considered (numerator). ● Students should have opportunities to make connections among fraction representations by connecting concrete or pictorial representations with spoken or symbolic representations. ● Informal, integrated experiences with fractions at this level will help students develop a foundation for deeper learning at later grades. Understanding the language of fractions will further this development (e.g., thirds means "three equal parts of a whole" or $\frac{1}{3}$ represents one of three equal-size parts when a pizza is shared among three students). ● A unit fraction is when there is a one as the numerator.	

• Using models when comparing unit fractions builds a mental image of fractions and the understanding that as the number of pieces of a whole increases, the size of one single piece decreases (i.e., the larger the denominator the smaller the piece; therefore, $\frac{1}{3} > \frac{1}{4}$).	
Vocabulary	**Instructional Activities Organized by Learning Objective**
fraction, whole, equal parts, numerator, denominator, part, one-half, one-third, one-fourth, one-sixth, one-eighth, region, set, shade, half, halves, thirds, fourths, sixths, eighths, unit fraction, model, greater than (>), less than (<), equal to (=), compare, top, bottom	**Textbook-** **enVision Math** **2.4a, b** • Lesson 12-1 Wholes and Equal Parts (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) • Lesson 12-3 Non-Unit Fractions and Regions (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) • Lesson 12-5 Fractions of a set (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) • Virginia Handbook pg. VA2 – VA3 (a,b,c) **2.4c** • Lesson 12-2 Unit Fractions and Regions (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (c) • Virginia Handbook pg. VA2 – VA3 (a,b,c)
Assessment	
Powerschool – Exam identifier	

	Eureka Math: 2.4a ● GRADE 2 MODULE 8: Time, Shapes, and Fractions as Equal Parts of Shapes. ● GRADE 3 MODULE 5: Fractions as Numbers on the Number Line 2.4b ● GRADE 2 MODULE 8: Halves, Thirds, and Fourths of Circles and Rectangles ● GRADE 3 MODULE 5: Fractions as Numbers on the Number Line 2.4c ● GRADE 2 MODULE 8: Time, Shapes, and Fractions as Equal Parts of Shapes. ● GRADE 3 MODULE 5: Fractions as Numbers on the Number Lines **Notes** ● Interactive Notebooks MATH Grade 1 (2015) ○ Partitioning Shapes Halves, Thirds, & Fourths (74-75) ● Interactive Notebooks MATH Grade 2 (2015) ○ Partitioning Shapes as it relates to fractions (75-78) You don't need to have the quadrilateral discussion with students. ● Interactive Notebooks MATH Grade 3 (2015) ○ Understanding Fractions (p 36-37) ○ Building Fractions (p 38-39)

	Resources ● **Print** o Teaching Student-Centered Mathematics (K-3 2006) ▪ Activity 9.2: Finding Fair Shares p. 257 (a) ▪ Activity 9.8: Ordering Unit Fractions p. 264 (c) ▪ Activity 9.9: Choose, Explain, Test p. 266 (c) o FACEing Math: Primary Number Sense (2010) ▪ Lesson 17: Fractions (a) o Printable Instructional Activities and Resources ▪ Brownie Problems ▪ Comparing Unit Fractions ▪ Fractions of a Set with Counters ▪ Using Fraction Spinners to Color Fractions ▪ Exploring Fractions with Pattern Blocks ▪ Pattern Block Fraction Game ● **Technology-based** o Gizmo: Fraction Garden (Comparing Fractions) (c) o Fractions interactive skill practice *Java required* (a) o Study Jams Fractions video lesson (a) **Station Activities/Manipulatives** ● Square tiles: Given square tiles in sets of 2, 4, or 8, students will show the fractions ½, ¼, or ⅛ . (b) ● Insect, fruit and pet counters: Using insect, fruit, or pet counters the student will identify different fractions that have thirds and sixths. (a) ● Fraction circles: Given fraction circles divided in 2, 3, 4, 6, or 8, students will show the unit fractions ½, ⅓, ¼, ⅙ or ⅛ and use the fraction circles to compare several given fraction pairs. (c)

	• Fraction tiles: Given fraction tiles divided in 2, 3, 4, 6, or 8, students will show the unit fractions ½, ⅓, ¼, ⅙ or ⅛ and use the fraction tiles to compare several given fraction pairs. (c) • Fraction number lines: Using several fraction number lines, the student will identify the number of parts a line should be divided into to identify halves, thirds, fourths, sixths, and eighths. (a)
Cross-Curricular Connections	**Differentiation**

Literature Connections
• **A Fraction's Goal: Parts of a Whole** by Brian Cleary
  ○ Students will create objects such as a pizza, a cookie, etc and divide the object into equal parts, while naming the parts in words and numbers.
• **Apple Fractions** by Jerry Pallotta
• **Give Me Half** by Stuart J. Murphy
• **Fraction Fun** by David A. Adler
• **Fraction Action** by Loreen Leedy
• **Working with Fractions** by David A. Adler
  ○ Encourage students to go on a fraction hunt and look for fractions around school, the playground, cafeteria, etc. Students will draw or write to explain how fractions are used.
• **Full House, an Invitation to Fractions** by Dayle Ann Dodds
  ○ Activity Students can keep track of each room filled by shading the fraction to show.
• **Eating Fractions** by Bruce MacMillan
  ○ Students can draw examples of food that they have split into fractions.	

Richmond Public Schools

Curriculum Framework

2nd Grade

<table>
<tr><th colspan="2">Strand: Computation and Estimation</th></tr>
<tr><td colspan="2">2.5 The student will
a) recognize and use the relationships between addition and subtraction to solve single-step practical problems, with whole numbers to 20; and
b) demonstrate fluency with addition and subtraction within 20.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">2nd Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

1.6 The student will create and solve single-step story and picture problems using addition and subtraction within 20.

1.7 The student will
a. recognize and describe with fluency part-whole relationships for numbers up to 10; and
b. demonstrate fluency with addition and subtraction within 10.</td><td><u>Grade 3 Related Standards</u>

3.3 The student will
a. estimate and determine the sum or difference of two whole numbers; and
b. create and solve single-step and multistep practical problems involving sums or differences of two whole numbers, each 9,999 or less.</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>● How are addition and subtraction related?
● How can we use models to demonstrate related facts?
● How can you use strategies to solve basic addition and subtraction facts?
● How do related facts help us identify missing numbers in number sentences?</td><td>● Students may confuse how to rewrite a missing-part problem using addition and subtraction, e.g. 4 + _ = 7 as 7- 4= __.</td></tr>
</table>

• How can we use models to represent an addition or subtraction situation? • How can the relationship between addition and subtraction be used to complete number sentences and solve problems?	
Understanding the Standard	**Essential Knowledge and Skills**
• Computational fluency is the ability to think flexibly in order to choose appropriate strategies to solve problems accurately and efficiently. • Addition and subtraction should be taught concurrently in order to develop understanding of the inverse relationship. • Concrete models should be used initially to develop an understanding of addition and subtraction facts. • Recognizing and using patterns and learning to represent situations mathematically are important aspects of primary mathematics. • An equation (number sentence) is a mathematical statement representing two expressions that are equivalent. It consists of two expressions, one on each side of an 'equal' symbol (e.g., 5 + 3 = 8, 8 = 5 + 3 and 4 + 3 = 9 - 2). • Equations may be written with sums and differences at the beginning of the equation (e.g., 8 = 5 + 3). • An equation can be represented using balance scales, with equal amounts on each side (e.g., 3 + 5 = 6 + 2). • An expression is a representation of a quantity. It contains numbers, variables, and/or computational operation symbols. It does not have an equal sign (e.g., 5, 4 + 3, 8 - 2). It is not necessary for students at this level to use the term 'expression.'	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Recognize and use the relationship between addition and subtraction to solve single-step practical problems, with whole numbers to 20. (a) • Determine the missing number in an equation (number sentence) (e.g., 3 + ☐ = 5 or ☐ + 2 = 5; 5 – ☐ = 3 or 5 – 2 = ☐). (a) • Write the related facts for a given addition or subtraction fact (e.g., given 3 + 4 = 7, write 7 – 4 = 3 and 7 – 3 = 4). (a) • Demonstrate fluency with addition and subtraction within 20. (b)

● The patterns formed by related facts facilitate the solution of problems involving a missing addend in an addition sentence or a missing part in a subtraction sentence. ● Provide practice in the use and selection of strategies. Encourage students to develop efficient strategies. Examples of strategies for developing the addition and subtraction facts include: ○ counting on; ○ counting back; ○ "one more than," "two more than"; ○ "one less than," "two less than"; ○ "doubles" (e.g., 2 + 2 = ☐ ; 3 + 3 = ☐); ○ "near doubles" (e.g., 3 + 4 = (3 + 3) + 1 = ☐); ○ "make 10" facts (7 + 4 can be thought of as 7 + 3 + 1 in order to make a 10); ○ "think addition for subtraction," (e.g., for 9 – 5 = ☐, think "5 and what number makes 9?"); ○ use of the commutative property (e.g., 4 + 3 is the same as 3 + 4); ○ use of related facts (e.g., 4 + 3 = 7 , 3 + 4 = 7, 7 – 4 = 3, and 7 – 3 = 4); ○ use of the additive identity property (e.g., 4 + 0 = 4); and ○ use patterns to make sums (e.g., 0 + 5 = 5, 1 + 4 = 5, 2 + 3 = 5, etc.) ● Grade two students should begin to explore the properties of addition as strategies for solving addition and subtraction problems using a variety of representations. ● The properties of the operations are "rules" about how numbers work and how they relate to one another. Students at this level do not need to use the formal terms for these	

<table>
<tr><td>properties but should utilize these properties to further develop flexibility and fluency in solving problems. The following properties are most appropriate for exploration at this level:
○ The commutative property of addition states that changing the order of the addends does not affect the sum (e.g., 4 + 3 = 3 + 4).
○ The identity property of addition states that if zero is added to a given number, the sum is the same as the given number (e.g., 0 + 2 = 2).
○ The associative property of addition states that the sum stays the same when the grouping of addends is changed (e.g., 4 + (6 + 7) = (4 + 6) + 7).
● Addition and subtraction problems should be presented in both horizontal and vertical written format.
● Models such as 10 or 20 frames and part-part-whole diagrams help develop an understanding of relationships between equations and operations.</td><td></td></tr>
<tr><td>Vocabulary</td><td>Instructional Activities Organized by Learning Objective</td></tr>
<tr><td>add, subtract, addition, subtraction, plus, minus, sum, difference, solve, strategy, equation, number sentence, related facts, counting on, counting back, one more than, one less than, doubles, near doubles, make ten, think addition, ten frame</td><td></td></tr>
<tr><td>Assessment

Powerschool – Exam identifier</td><td>Textbook-
enVision Math
2.5a,b
● Lesson 2-1 Adding 0, 1, 2 (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, The Language of Math) (a,b)</td></tr>
</table>

	• Lesson 2-2 Doubles (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, The Language of Math) (a,b) • Lesson 2-3 Near Doubles (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, The Language of Math) (a,b) • Lesson 2-6 Making 10 to Add 9 (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, The Language of Math) (a,b) • Lesson 3-1 Subtracting 0, 1, 2 (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, The Language of Math) (a,b) • Lesson 3-2 Thinking Addition to Subtract Doubles (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, The Language of Math) (a,b) • Topic 2 Interactive Math Story: The Math Machine (a,b) • Topic 3 Interactive Math Story: Flying Subtraction (a,b) • Lesson 3-3 Thinking Addition to 10 to Subtract (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, The Language of Math) (a,b) • Lesson 3-4 Thinking Addition to 18 to Subtract (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, The Language of Math) (a,b) • Lesson 3-5 Finding the Missing Part (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, The Language of Math) (a,b)

	Eureka Math: 2.5a ● GRADE 1 MODULE 1: Sums and Differences to 10 ● GRADE 1 MODULE 2: Introduction to Place Value Through Addition and Subtraction within 20 ● GRADE 1 MODULE 4 Lesson 29: Add a pait of two-digit numbers with varied sums in the ones. ● GRADE 1 MODULE 6 Topic A: Comparison Word Problems 2.5b ● GRADE 1 MODULE 1: Sums and Differences to 10 ● GRADE 1 MODULE 2: Introduction to Place Value Through Addition and Subtraction within 20 ● GRADE 1 MODULE 4 Lesson 29: Add a pair of two-digit numbers with varied sums in the ones. ● GRADE 1 MODULE 6 Topic A: Comparison Word Problems **Notes** ● Interactive Notebooks MATH Grade 2 (2015) ○ Solving Word Problems pg 12-13 (a) ○ Adding and Subtraction Fluency (30-31)(b) ○ The relationship between Addition and Subtraction (32-33)(a)

	Resources ● **Print** o Teaching Student-Centered Mathematics (K-3 2006) ▪ Activity 2.19: Missing-Part Cards p. 50 (a) ▪ Activity 2.22: Double War p. 53 (b) ▪ Activity 2.24: Difference War p.53 (b) ▪ Activity 2.25: Number Sandwiches p.53 (a) ▪ Activity 2.26: Ten and Some More p. 55 (b) ▪ Activity 3.2: Missing-Part Subtraction p.75 (a) ▪ Activity 4.1: One-/Two-More-Than Dice p. 100 (b) ▪ Activity 4.2: One-/Two-More-Than Match p. 100 (b) ▪ Activity 4.3: Lotto for +1/+2 p. 100 (b) ▪ Activity 4.4: What's Alike? Zero Facts p. 100 (b) ▪ Activity 4.5: Double Images p.101 (b) ▪ Activity 4.7: Double Dice Plus One p. 102 (b) ▪ Activity 4.8: Make 10 on the Ten-Frame p.103 (b) ▪ Activity 4.9: If You Didn't Know p.104 (b) ▪ Activity 4.12: Build Up Through the Ten-Fram p. 109 (b) ▪ Activity 4.13: Back Down Through the Ten-Frame p. 109 (b) ▪ Activity 4.14: Missing-Number Cards p. 110 (a) ▪ Activity 4.15: Missing-Number Worksheets p. 110 (a) ▪ Activity 4.16: Find a Plus Facts to Help p. 111

	o FACEing Math: Primary Number Sense (2010) ▪ Lesson 8: Addition & Subtraction to 20 (b) o FACEing Math: Primary Problem Solving (2011) ▪ Lesson 1: Addition Relationships (a) ▪ Lesson 2: Subtraction Relationships (a) ▪ Lesson 3: Fact families & inverse relationships (a) ▪ Lesson 4: Inverse operations (a) o Printable Instructional Activities and Resources ▪ Problem-Solving Organizer(a) ▪ Problem-solving types(a) ▪ Multi-Step Word Problems(a) ▪ Games for Sums of Ten(b) ▪ Addition and Subtraction Structures(b) ▪ Finding Missing Number Template(b) ● **Technology-based** o Inverse Operations - Addition and Subtraction (a) o AAA Math - Inverse Operations - Addition and Subtraction Interactive (a) **Station Activities/Manipulatives** ● When given a set of assorted addition and subtraction facts, the student will sort the facts to find each fact's 3 other related facts.
Cross-Curricular Connections	**Differentiation**

Literature Connections

- **Chrysanthemum** by Kevin Henkes
  - Students add/subtract the number of letters in their names.
- **How Many Snails?** by Paul Giganti
  - Students can use the pictures to determine part-whole relationships
- **Math Fables** by Greg Tang
  - Relate 5 + 1 otters to 6 - 1 otters.
- **Imogene's Antlers** by David Small
  - Model the donuts on the antlers with pipe cleaners and Cheerios.
- **The Action of Subtraction** by Brian P. Cleary
- **Math for All Seasons: Mind-Stretching Math Riddles** by Greg Tang
- **Math Curse** by John Scieszka
- **Domino Addition** by Lynette Long
  - Students use dominoes to model a variety of addition facts.
- **Addition Annie** by David Gisler
- **The Mission of Addition** by Brian Cleary
- **Math on the Playground** by Ellen Weiss

- Technology
  - Illuminations – Ten Frame *(only goes to 10th place)*
  - Illuminations – How Many Under the Shell *(only goes to 10th place)*
  - Math facts interactive practice
  - Addition facts interactive practice
  - Subtraction facts interactive practice

<table>
<tr><th colspan="2">Strand: Computation and Estimation</th></tr>
<tr><td colspan="2">2.6 The student will
a) estimate sums and differences;
b) determine sums and differences, using various methods; and
c) create and solve single-step and two-step practical problems involving addition and subtraction.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">3rd Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

1.6 The student will create and solve single-step story and picture problems using addition and subtraction within 20.

1.7 The student will
a. recognize and describe with fluency part-whole relationships for numbers up to 10; and
b. demonstrate fluency with addition and subtraction within 10.</td><td><u>Grade 3 Related Standards</u>

3.3 The student will
a. estimate and determine the sum or difference of two whole numbers; and
b. create and solve single-step and multistep practical problems involving sums or differences of two whole numbers, each 9,999 or less.</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>● Why is it important to estimate first, before calculating?
● When is an estimate more useful than an exact sum? What are some strategies to estimate sums?
● When is an estimate more useful than an exact difference?
● What are some strategies to estimate differences?
● How can we use models to represent an addition or subtraction situation?</td><td>● Students may use the wrong operation to solve problems if they do not understand the context of the problem.
● Students may not understand the purpose of estimation and reasonableness and apply it to problem-solving.
● Students lack the concept that 10 in any position (place) makes one (group) in the next position and vice versa.</td></tr>
</table>

• What are different strategies to compute sums? How do we decide which to use? • What strategies help us compute sums mentally? • What are different strategies to compute differences? How do we decide which to use? • How can the relationship between addition and subtraction be used to complete number sentences and solve problems? • How do we know when solving a problem will require more than one step? • How can the Understand, Plan, Solve, Look Back model help to solve problems? • How can we create a story problem from a basic fact or numerical sentence?	• When subtracting, students overgeneralize from previous learning and "subtract the smaller number from the larger one" digit by digit. • When adding or subtracting, students misapply the procedure for regrouping.
Understanding the Standard	**Essential Knowledge and Skills**
• Addition and subtraction should be taught concurrently in order to develop understanding of the inverse relationship. • Grade two students should begin to explore the properties of addition as strategies for solving addition and subtraction problems using a variety of representations, including manipulatives and diagrams. • The properties of the operations are "rules" about how numbers work and how they relate to one another. Students at this level do not need to use the formal terms for these properties but should utilize these properties to further develop flexibility and fluency in solving problems. The following properties are most appropriate for exploration at this level: ○ The commutative property of addition states that changing the order of the addends does not affect the sum (e.g., 4 + 3 = 3 + 4).	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Estimate the sum of two whole numbers whose sum is 99 or less and recognize whether the estimation is reasonable (e.g., 27 + 41 is about 70, because 27 is about 30 and 41 is about 40, and 30 + 40 is 70). (a) Estimate the difference between two whole numbers each 99 or less and recognize whether the estimate is reasonable. (a) • Determine the sum of two whole numbers whose sum is 99 or less, using various methods. (b) • Determine the difference of two whole numbers each 99 or less, using various methods. (b) • Create and solve single-step practical problems involving addition or subtraction. (c) • Create and solve two-step practical problems involving addition, subtraction, or both addition and subtraction. (c)

○ The identity property of addition states that if zero is added to a given number, the sum is the same as the given number. ○ The associative property of addition states that the sum stays the same when the grouping of addends is changed (e.g., 4 + (6 + 7) = (4 + 6) + 7). ● An equation (number sentence) is a mathematical statement representing two expressions that are equivalent. It consists of two expressions, one on each side of an 'equal' symbol (e.g., 5 + 3 = 8, 8 = 5 + 3, and 4 + 3 = 9 - 2). An equation can be represented using a balance scale, with equal amounts on each side (e.g., 3 + 5 = 6 + 2). ● Rounding is one strategy used to estimate. ● Estimation skills are valuable, time-saving tools particularly in practical situations when exact answers are not required or needed. ● Estimation can be used to check the reasonableness of the sum or difference when an exact answer is required. ● Problem solving means engaging in a task for which a solution or a method of solution is not known in advance. Solving problems using data and graphs offers one way to connect mathematics to practical situations. ● The problem-solving process is enhanced when students: ○ create their own story problems; and ○ model word problems, using manipulatives, drawings, or acting out the problem. ● The least number of steps necessary to solve a single-step problem is one. ● Using concrete materials (e.g., base-10 blocks, connecting cubes, beans and cups, etc.) to explore, model and stimulate discussion about a variety of problem situations helps students understand regrouping and enables them to move	

from the concrete to the abstract. Regrouping is used in addition and subtraction algorithms. ● Conceptual understanding begins with concrete and contextual experiences. Next, students must make connections that serve as a bridge to the symbolic. Student-created representations, such as drawings, diagrams, tally marks, graphs, or written comments are strategies that help students make these connections. ● In problem solving, emphasis should be placed on thinking and reasoning rather than on key words. Focusing on key words such as in all, altogether, difference, etc., encourages students to perform a particular operation rather than make sense of the context of the problem. A key-word focus prepares students to solve a limited set of problems and often leads to incorrect solutions as well as challenges in upcoming grades and courses. ● Extensive research has been undertaken over the last several decades regarding different problem types. Many of these studies have been published in professional mathematics education publications using different labels and terminology to describe the varied problem types. ● Students should experience a variety of problem types related to addition and subtraction. Problem type examples are included in the following chart:	

GRADE 2: COMMON ADDITION AND SUBTRACTION PROBLEM TYPES		
Join (Result Unknown)	Join (Change Unknown)	Join (Start Unknown)
Sue had 28 pencils. Alex gave her 14 more pencils. How many pencils does Sue have all together?	Sue had 28 pencils. Alex gave her some more pencils. Now Sue has 42 pencils. How many did Alex give her?	Sue had some pencils. Alex gave her 14 more. Now Sue has 42 pencils. How many pencils did Sue have to start with?
Separate (Result Unknown)	Separate (Change Unknown)	Separate (Start Unknown)
Brooke had 35 marbles. She gave 19 marbles to Joe. How many marbles does Brooke have now?	Brooke had 35 marbles. She gave some to Joe. She has 16 marbles left. How many marbles did Brooke give to Joe?	Brooke had some marbles. She gave 19 to Joe. Now she has 16 marbles left. How many marbles did Brooke start with?
Part-Part-Whole (Whole Unknown)	Part-Part-Whole (One Part Unknown)	Part-Part-Whole (Both Parts Unknown)
The teacher has 20 red markers and 25 blue markers. How many markers does he have?	The teacher has 45 markers. Twenty of the markers are red, and the rest are blue. How many blue markers does he have?	The teacher has a tub of red and blue markers. She has 45 markers in all. How many markers could be red? How many could be blue?
Compare (Difference Unknown)	Compare (Bigger Unknown)	Compare (Smaller Unknown)
Ryan has 20 books and Chris has 9 books. How many more books does Ryan have than Chris? Ryan has 20 books. Chris has 9 books. How many fewer books does Chris have than Ryan?	Chris has 9 books. Ryan has 11 more books than Chris. How many books does Ryan have? Chris has 11 fewer books than Ryan. Chris has 9 books. How many books does Ryan have?	Ryan has 11 more books than Chris. Ryan has 20 books. How many books does Chris have? Chris has 11 fewer books than Ryan. Ryan has 20 books. How many books does Chris have?

- Strategies for adding and subtracting two-digit numbers can include, but are not limited to, using concrete objects, a hundred chart, number line, and invented strategies.
- Mental computation helps build number sense in students. Strategies for mentally adding or subtracting two-digit numbers should be student-invented strategies. Some of these strategies may include:

Partial Sums

$87 - 25 = \_\_$
$20 + 60 = 80$
$5 + 2 = 7$
$60 + 2 = 62$

Counting On

$87 - 25 = \_\_$
$25 + 60 = 85$
$85 + 2 = 87$
$60 + 2 = 62$

$87 - 25 = \_\_$
$25 + 2 = 27$
$27 + 60 = 87$
$2 + 60 = 62$

56 + 41 = __ 36 + 62 = __ 50 + 40 = 90 36 + 60 = 96 6 + 1 = 7 96 + 2 = 98 90 + 7 = 97 ● The terms used in addition are 23 → addend + 46 → addend 69 → sum ● The terms often used in subtraction are 98 → minuend – 41 → subtrahend 57 → difference ● At this level, students do not need to use the terms addend, minuend, or subtrahend for addition and subtraction as shown above.	
Vocabulary	**Instructional Activities Organized by Learning Objective**
addend, two-digit, hundreds, tens, ones, regroup, whole number, sum, plus, difference, subtract, minuend, subtrahend, minus	**Textbook-** **enVision Math** **2.6 a,b** ● Interactive Math Story Topic 6: Count On by Enrichment Masters) (a,b) ● Lesson 6-3 Adding Tens and Ones (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Differentiated Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) ● Lesson 6-4 Adding On a Hundred Chart (Problem of the Day, Problem Based Interactive Learning, Develop the Concept,
Assessment	
Powerschool – Exam identifier	

	Center Activity, Reteaching Practice, and Enrichment Masters)the Seasons (a,b) ● Lesson 6-1 Adding Tens (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Differentiated Center Activity, Reteaching, Practice, and Enrichment Masters) (a,b) ● Lesson 6-2 Adding Ones (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Differentiated Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) ● Lesson 6-3 Adding Tens and Ones (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Differentiated Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) ● Lesson 6-4 Adding On a Hundred Chart (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) ● Lesson 8-1 Regrouping 10 Ones for 1 Ten (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) ● Lesson 8-2 Models to Add Two- and One-Digit Numbers (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) ● Lesson 8-3 Adding Two- and One-Digit Numbers (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) ● Lesson 8-4 Models to Add Two- Digit Numbers (Problem of the Day, Problem Based Interactive Learning, Develop the

	Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) ● Lesson 8-5 Adding Two-Digit Numbers (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (a,b) **2.6c** ● Lesson 1-7 Problem Solving: Use Objects (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (c) ● Lesson 2-8 Problem Solving: Draw a Picture and Write a Number Sentence (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (c) ● Lesson 3-6 Problem Solving: Two-Questions Problems (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) (c) ● Lesson 8-7 Problem Solving: Draw a Picture and Write a Number Sentence (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters) (c) **Eureka Math:** 2.6a ● GRADE 2 MODULE 1 Topic B: Initiating fluency with Addition and Subtraction Within 100 ● GRADE 2 MODULE 2 Topic D: Relate Addition and Subtraction to Length

	• GRADE 2 MODULE 4: Addition and Subtraction Within 200 with Word Problems to 100 • GRADE 2 MODULE 5: Addition and Subtraction Within 1,000 with Word Problems to 100 • GRADE 2 MODULE 6 Foundations of Multiplication and Division • GRADE 2 MODULE 7 Topic B Problem Solving with Coins and Bills • GRADE 2 MODULE 7 Topic E Problem Solving with Customary and Metric Units 2.6b • GRADE 2 MODULE 1: Sums and Differences to 100 • GRADE 2 MODULE 4 Topic A: Sums and Differences within 100 • GRADE 2 MODULE 7 Topic B Problem Solving with Coins and Bills 2.6c • GRADE 2 MODULE 1: Sums and Differences to 100 • GRADE 2 MODULE 4 Lesson 5: Solve one- and two-step word problems within 100 using strategies based on place value.

	● GRADE 2 MODULE 4 Lesson 16: Solve one- and two-step word problems within 100 using strategies based on place value. **Notes** ● Interactive Notebooks MATH Grade 2 (2015) ○ Solving Word Problems (p12-13) (c) ○ Mental Math (p14-15) (a) ○ Addition without Regrouping (p38-39) (b) ○ Addition with Regrouping (p40-41) (b) ○ Subtraction without regrouping (p42-43) (b) ○ Subtraction with regrouping (p44-45) (b) **Resources** ● **Print** **o** Teaching Student-Centered Mathematics (K-3 2006) ▪ Activity 5.21: Numbers, Squares, Sticks, and Dots p.145 (b) ▪ Activity 5.26: Little Ten-Frame Addition and Subtraction p. 149 (b) ▪ Activity 5.27: Mystery Mats p. 149 (b) ▪ Activity 5.30: How Much More? p. 153 (b) ▪ Activity 6.1: Ten-Frame Adding and Subtracting p.165 (b) o FACEing Math: Primary Number Sense (2010) ▪ Lesson 10: Addition/Subtraction 2-digit by 1-digit (b) ▪ Lesson 11: Sums to 100 (b) ▪ Lesson 12: Differences from 100 (b) ▪ Lesson 15: Sums & Differences 1-100 (b) o FACEing Math: Primary Problem Solving (2011) ▪ Lesson 6: Problem solving sums to 100 (c)

	▪ Lesson 8: Problem solving subtraction 1-100 (c) ○ **Technology-based** o Gizmos: Number Line Frog Hop (Addition and Subtraction) (b) o Base-Ten Blocks Addition *requires Java* (b) o Base-Ten Blocks Subtraction *requires Java* (b) **Station Activities/Manipulatives** ● Base 10 magnetic kits: Using base 10 magnetic kits, students will demonstrate the numbers being added to combine and find the sum when regrouping 10 or more ones (b) ● Foam Base 10s: Using the base 10 magnetic kits and given amount, the student will create a number and demonstrate the process of subtraction with and without regrouping. (b) ● Foam cubes (1-6): Given foam cubes, students will roll and create two 2-digit numbers and practice adding and subtracting them. (b) ● Hundreds Board (b): Using a hundreds board, the student can illustrate an addition and/or subtraction problem and practice the methods of counting on/counting back to find the answer.
Cross-Curricular Connections	**Differentiation**
Literature Connections ● **100th Day Worries** by Margery Cuyler ○ Create addition problems using objects in book. ● **One Hundred Ways to Get to 100** by Jerry Pallotta ○ Create subtraction problems using objects in book. ● **Cats Add Up** by Dianne Ochiltree, Marilyn Burns, and Marcy Dunn	● FACEing Math: Primary Problem Solving (2011) ○ Lesson 5: Problem solving sums to 20 (c) *sums only to 20* ○ Lesson 7: Problem solving subtraction 1-18 (c) *numbers only to 18* ● Printable Instructional Activities and Resources ○ Subtraction Estimation (a) ○ 2-Digit Computation strategies (b) ○ Strategies for addition and subtraction (b)

○ Create addition and subtraction problems using number of cats, kittens, paws, etc. ● **How Many Seeds in a Pumpkin?** by Margaret McNamara ○ Collect one small, one medium, and one large pumpkin and ask students to estimate how many seeds will be in each pumpkin. Then, count the seeds using knowledge of place value and compare the pumpkins. ○ Question to ask: Did the larger pumpkin have the most seeds? ● **If You Hopped Like a Frog** by David Schwartz ○ Use sentence strips and other resources (the teacher can even take the lesson outside on the playground) to encourage students to figure out how long specific lengths are in real life. ● **Ocean Counting: Odd Numbers** by Jerry Pallotta ○ Create subtraction problems using creatures in the book.	○ Making 10 or making 50 (b) ○ Close to Zero (b subtraction) ○ Structures for Addition and Subtraction Problem-Solving (c) ○ Think-Write-Share-Solve Problems (c)

<table>
<tr><th colspan="2">Strand: Measurement and Geometry</th></tr>
<tr><td colspan="2">2.7 The student will
a) count and compare a collection of pennies, nickels, dimes, and quarters whose total value is $2.00 or less; and
b) use the cent symbol, dollar symbol, and decimal point to write a value of money.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">2nd Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

1.8 The student will determine the value of a collection of like coins (pennies, nickels, or dimes) whose total value is 100 cents or less.</td><td><u>Grade 3 Related Standards</u>

3.6 The student will
a. determine the value of a collection of bills and coins whose total value is $5.00 or less;
b. compare the value of two sets of coins or two sets of coins and bills; and
c. make change from $5.00 or less.</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>● What strategies help us count a collection of coins?
● How can values of coins and one-dollar bills be compared?
● What are different ways to write the value of a set of coins or dollars and coins?
● When do we count or compare collections of coins and one-dollar bills in real-life situations?</td><td>● Students may confuse the images of the coins and their worths.
● Students may struggle adding up coins over one dollar and how to use the decimal point to separate dollars and cents</td></tr>
<tr><th>Understanding the Standard</th><th>Essential Knowledge and Skills</th></tr>
</table>

<table>
<tr><td>

- The money system used in the United States consists of coins and bills based on relationships involving ones, fives, and tens. The dollar is the basic unit.
- The value of a collection of coins and bills can be determined by counting on, beginning with the highest value, and/or by grouping the coins and bills into groups that are easier to count.
- Simulate everyday opportunities to count and compare a collection of coins and one-dollar bills whose total value is $2.00 or less.
- Emphasis is placed on the verbal expression of the symbols for cents and dollars (e.g., $0.35 and 35¢ are both read as “thirty-five cents”; $2.00 is read as “two dollars”).

</td><td>

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Determine the value of a collection of coins and one-dollar bills whose total value is $2.00 or less. (a)
- Count by ones, fives, tens, and twenty-fives to determine the value of a collection of coins whose total value is $2.00 or less. (a)
- Compare the values of two sets of coins and one-dollar bills (each set having a total value of $2.00 or less), using the terms greater than, less than, or equal to. (a)
- Use the cent (¢) and dollar ($) symbols and decimal point (.) to write a value of money which is $2.00 or less. (b)

</td></tr>
<tr><td>Vocabulary</td><td>Instructional Activities Organized by Learning Objective</td></tr>
<tr><td>cent, dime, nickel, dollar, sign, cent, symbol, penny, quarter, decimal point, one dollar bill, value, greater than, less than, equal, compare</td><td rowspan="3">Textbook-
enVision Math
2.7a,b
• Topic 5: Interactive Math Story: Farm Cents
• Lesson 5-1: Dime, Nickel, and Penny (Daily Spiral Review, Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, Practice Master, The Language of Math)
• Lesson 5-2: Quarter and Half Dollar Teacher will need to edit materials to only include quarters (Daily Spiral Review, Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity**, Reteaching Master (edited), Practice Master (edited), The Language of Math)
• Lesson 5-3: Counting Collections of Coins (Daily Spiral Review, Problem of the Day, Problem Based Interactive</td></tr>
<tr><td>Assessment</td></tr>
<tr><td>Powerschool – Exam identifier</td></tr>
</table>

	Learning, Develop the Concept, Center Activity, Practice Master (edited), The Language of Math) ● Lesson 5-4: Ways to Show the Same Amount (Daily Spiral Review, Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master (edited), Practice Master (edited), The Language of Math) ● Lesson 5-5: Ways to Show the Same Amount (Daily Spiral Review, Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity) ● Lesson 5-6: Problem Solving: Make and Organized List (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Master, Practice Master, The Language of Math) **Eureka Math** 2.7a ● GRADE 2 MODULE 7- TOPIC B: Problem Solving with Coins and Bills 2.7b ● GRADE 2 MODULE 7- TOPIC B: Problem Solving with Coins and Bills *These lessons need to be extended to incorporate the decimal point.* **Notes** ● Interactive Notebooks MATH Grade 2 (2015) ○ Pennies, Nickels, and Dimes p.58-59 (a,b) ○ Quarters, Half-dollars and Dollars p.60-61 (a,b) *do not use half-dollars* **Resources** ● **Print** ● Teaching Student-Centered Mathematics (K-3 2006) o Activity 5.28: Money Counts p.151 (a) o Activity 5.29: Coin-Number Addition p.52 (a)

	o Activity 5.31: How Much More with Coin Numbers? p. 154 (a) ● FACEing Math: Primary Number Sense (2010) o Lesson 18: Money (a,b) ● Printable Instructional Activities and Resources o M&M Money Task (a) o Piggy Bank Task (a) o Collect $2 Game (a) o Who Buys? Game (a) o Heads and Tails Game (a) o Money Hundreds Chart & Coin Count on Hundreds Chart (a) o Pocket Full of Coins (a) o Coin Collectors (a) ● **Technology-based** ○ Illuminations: Coin Box interactive math activity (a) ○ Count and write money interactive activity (a.b) *Level 1 & 2 only* ○ Counting groups of coins up to $1 interactive practice ○ (a) *Level 1* ○ I Know It - Counting Coins ○ Counting Money Problems (Video) ○ Turtle Diary - Calculating Total Value of all Coins **Station Activities/Manipulatives** ● Classroom money kit: Using the classroom money kit, students will build given money amounts $2.00 or less and compare their money amount to another student's money amount. (a)
Cross-Curricular Connections	**Differentiation**

Literature Connections ● **The Penny Pot** by Stuart Murphy ○ The student will use play money to make the money amounts of each child and practice counting ● **The Coin Counting Book** by Rozanne Lanczak Williams ● **Bunny Money** by Rosemary Wells ● **Arthur's Funny Money** by Lillian Hoban ● **Pigs Will Be Pigs** by Amy Axelrod ● **Alexander Who Used to Be Rich Last Sunday** by Judith Vorst ○ Tape 100 pennies between two pieces of clear tape. As you read through this story, cut off the pennies that Alexander spends. Could you write each expense using a number sentence? Extension: Use nickels, dimes, etc and develop a system of counting the spent money using larger coins. ● **Follow the Money** by Loreen Leedy ● **Once Upon a Dime** by Nancy Kelly Allen ● **Sluggers' Car Wash** by Stuart J. Murphy ○ **Activity**	

Strand: Measurement and Geometry	
2.8 The student will estimate and measure a) length to the nearest inch; and b) weight to the nearest pound.	
Suggested Pacing	
4th Nine Weeks	
Related Spiraling Standards	
Grade 1 Related Standards 1.10 The student will use nonstandard units to measure and compare length, weight, and volume.	**Grade 3 Related Standards** 3.7 The student will estimate and use U.S. Customary and metric units to measure a. length to the nearest $\frac{1}{2}$ inch, inch, foot, yard, centimeter, and meter. 3.8 The student will estimate and a. measure the distance around a polygon in order to determine its perimeter using U.S. Customary and metric units.
Essential Questions	**Common Misconceptions**
● What types of attributes can be measured? ● What units and tools are used to measure the attribute of length? ● How can we estimate and measure the length of various objects? ● What units and tools are used to measure the attribute of weight?	● Students may align the ruler using the edge of the ruler and not the starting line at 0. ● Students believe that the size of a picture determines the size of the object in real life.

• How can we estimate and measure the weight of various objects?	
Understanding the Standard	**Essential Knowledge and Skills**
• The process of measurement involves selecting a unit of measure, comparing the unit to the object to be measured, counting the number of times the unit is used to measure the object, and arriving at an approximate total number of units. • Measurement involves comparing an attribute of an object to the same attribute of the unit of measurement (e.g., the length of a cube measures the length of a book; the weight of the cube measures the weight of the book). • A clear concept of the size of one unit is necessary before one can measure to the nearest unit. • The experience of making a ruler out of individual units of length can lead to greater understanding of using one. A ruler takes those units of length and numbers them. Measurement of length is counting the number of units. A "broken ruler" is a useful tool for students to use in order to develop an understanding of counting the number of units. • Students benefit from experiences that allow them to explore the relationship between the size of the unit of measurement and the number of units needed to measure the length of an object. • Benchmarks of common objects need to be established for one pound. Practical experience measuring the weight of familiar objects helps to establish benchmarks.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Identify a ruler as an instrument to measure length. (a) • Estimate and then measure the length of various line segments and objects to the nearest inch using a ruler. (a) • Identify different types of scales as instruments to measure weight. (b) • Estimate and then measure the weight of objects to the nearest pound using a scale. (b)
Vocabulary	**Instructional Activities Organized by Learning Objective**
measure, length, ruler, inch, weight, scale, pound, balance scale	**Textbook-** **enVision Math**
Assessment	

Powerschool – Exam identifier	**2.8a** ● Lesson 13-4: Inches, Feet, and Yards (Problem Based Interactive Learning, Develop the Concept, Reteaching (#1 &5) and Practice (#3 & 6) Masters) *Edit to only use inches*. (a) **2.8b** ● 2.8b: Lesson 14-5 Exploring Weight (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters) *Edit to only use pounds* (b) ● 2.8b: Lesson 14-6 Ounces and Pounds (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters) *Edit to only use pounds* (b) **Eureka Math** **2.8a** ● GRADE 2 MODULE 2- TOPIC B: Measure and Estimate Length Using Different Measurement Tools ● GRADE 2 MODULE 7- TOPIC D: Measuring and Estimating Length Using Customary and Metric Units **Notes** ● Interactive Notebooks MATH Grade 2 (2015) ○ Measuring Length p. 50-51 (a) **Resources** ● **Print** o Teaching Student-Centered Mathematics (K-3 2006) ▪ Activity 8.1: Longer, Shorts, Same p. 228 (a) ▪ Activity 8.2: Length (or Unit) Hunt p. 229 (a) ▪ Activity 8.4: How Long is the Teacher? p. 230 (a)

	▪ Activity 8.5: Guess and Measure p. 231 (a) ▪ Activity 8.17: About One Unit p. 246 (a,b) o FACEing Math: Primary Problem Solving (2011) ▪ Lesson 9: Measure to the nearest inch (a) *front page only of lesson* o Printable Instructional Activities and Resources ▪ Action Figure Length Lesson *inches only* (a) ▪ Scavenger Hunt & Scavenger Hunt (a) ● **Technology-based** o Using a ruler (a) o Ruler practice (a) o Estimating weight (b) o Splash Math - Measure To Nearest Inch (a) **Station Activities/Manipulatives** ● School pan balance: Given several objects (loaf of bread, pound of butter, a baseball, 5 CDs, can of beans, pack of pencils) and a 1lb weight, students will determine which objects weigh about 1 pound. (b) ● School rocker scales: Using the school rocker scale and several given objects, students will identify the weight of the objects to the nearest pound. (b) ● Customary weight set: Given several objects that can be found in the classroom and using the customary weight set, students will determine the weight of the objects to the nearest pound. (b) ● Rulers: Given a ruler, students will identify an inch and then use the ruler to measure several different given line segments to the nearest inch. (a) ● Yardsticks: Using a yardstick, students measure several different objects in the classroom to the nearest inch. (a)

Cross-Curricular Connections	Differentiation
Literature Connections ● How Big Is a Foot? Rolf Myller ● Inch by Inch by Leo Leoni ● **Shoes, Shoes, Shoes** by Ann Morris ○ Students measure the length of their shoes and make a chart. ● **Measuring** by Peter Patilla ● **On the Scale: A Weighty Scale** by Brian Cleary ● **A Second is a Hiccup: A Child's Book of Time** by HJ Hutchins ● **Mighty Maddie** by Stuart Murphy ○ **Activity** ● **Actual Size** by Steve Jenkins ● **Salt in His Shoes** by Deloris Jordan ○ The students will measure their heights in inches using a ruler and make a chart. ● **Marvin Weighs In** by Dave Browning ○ The students will explore using scales by weighing objects in the classroom to the nearest pound.	● FACEing Math: Primary Problem Solving (2011) ○ Lesson 9: Measure to the nearest inch (a) *back page extends to ½ inch*

<table>
<tr><th colspan="2">Strand: Measurement and Geometry</th></tr>
<tr><td colspan="2">2.9 The student will tell time and write time to the nearest five minutes, using analog and digital clocks.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">4th Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

1.9 The student will investigate the passage of time and
a. tell time to the hour and half-hour, using analog and digital clocks.</td><td><u>Grade 3 Related Standards</u>

3.9 The student will
a. tell time to the nearest minute, using analog and digital clocks;
b. solve practical problems related to elapsed time in one-hour increments within a 12- hour period; and
c. identify equivalent periods of time and solve practical problems related to equivalent periods of time.</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>● What units of time are represented on clocks?
● How is reading time on an analog clock different from reading time on a digital clock? How is it similar?
● How does counting by fives help us read time on an analog clock?
● How can we represent specific times on an analog clock face? ...on a digital clock display?</td><td>● Students may confuse the hour when the hour hand is not directly on a number and instead is in-between two hours.
● Students may confuse the counting of the minutes on an analog clock, e.g. think that when the minute hand is pointing to the 4 that the minutes are :04 instead of :30.
● Students may also confuse how to write minutes under 10, eg. 5 minutes is :05, not :5 or :50.</td></tr>
<tr><th>Understanding the Standard</th><th>Essential Knowledge and Skills</th></tr>
<tr><td>● Telling time requires reading a clock. The position of the two hands on an analog clock is read to tell the time. A digital</td><td>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</td></tr>
</table>

<table>
<tr><td>clock shows the time by displaying the time in numbers which are read as the hour and minutes.
● Counting by fives is beneficial when telling time to the nearest five minutes.
● Students should develop an understanding that there are 60 minutes in an hour.
● The use of a demonstration clock with gears ensures that the positions of the hour hand and the minute hand are precise at all times.</td><td>● Show, tell, and write time to the nearest five minutes, using an analog and digital clock.
● Match a written time (e.g., 4:20, 10:05, 1:50) to a time shown on a clock face to the nearest five minutes.
● Match the time (to the nearest five minutes) shown on a clock face to a written time.</td></tr>
<tr><td>Vocabulary</td><td rowspan="3">Instructional Activities Organized by Learning Objective</td></tr>
<tr><td>time, clock face, minute, hour, minute hand, hour hand, analog clock, digital clock</td></tr>
<tr><td>Assessment</td></tr>
<tr><td>Powerschool – Exam identifier</td><td>Textbook:
enVision Math
● Lesson 15-1 Telling Time to Five Minutes (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching Practice, and Enrichment Masters)
Eureka Math
● GRADE 2 MODULE 8- TOPIC D: Application of Fractions to Tell Time
Notes
● Interactive Notebooks MATH Grade 2 (2015)
○ Time p.56-57

Resources
● Print
o Printable Instructional Activities and Resources
▪ What time could it be?
▪ Time Bump Game
▪ Time Cards
▪ Time Barrier Game</td></tr>
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Time Matching Game
Clock Match Game

Technology-based

Clock interactive tool
Clock interactive tool
I Know It - Tell Time - 5 Minute Intervals
SMART EXCHANGE - Telling Time - 5 minute Intervals

Station Activities/Manipulatives

Judy clocks: Given Judy clocks and several digital times, students will demonstrate the given time on the Judy clock and then draw the time on blank paper clocks.
Write-on, wipe-off clocks: Using the write-on, wipe-off clocks, students tell time and write the given time in analog and digital form.

</td></tr>
<tr><td>Cross-Curricular Connections</td><td>Differentiation</td></tr>
<tr><td>
Literature Connections

The Clock Struck One by Trudy Harris
Telling Time : How to Tell Time on Digital and Analog Clocks! by Jules Older
Bunny Day: Telling Time from Breakfast to Bedtime by Rick Walton
I.Q. It’s Time by Mary Ann Fraser
Diary of a Fly by Doreen Cronin

The students will complete a diary entry for a typical day using times of day and specific durations.

Cluck O’Clock by Kes Gray
Tuesday by David Wiesner
Game Time by Stuart Murphy

</td><td>

Interactive Notebooks MATH Grade 1 (2015)

Time to the House p. 60-61
Time to the Half-hour p. 62-63

</td></tr>
</table>

○ **Activity**	

Strand: Measurement and Geometry	
2.10 The student will a) determine past and future days of the week; and b) identify specific days and dates on a given calendar.	
Suggested Pacing	
1st Nine Weeks	
Related Spiraling Standards	
Grade 1 Related Standards 1.9 The student will investigate the passage of time and b. read and interpret a calendar.	**Grade 3 Related Standards** 3.9 The student will c. identify equivalent periods of time and solve practical problems related to equivalent periods of time.
Essential Questions	**Common Misconceptions**
● What units of time are represented on calendars? ● How is a calendar organized? ● How can we find specific dates? ● How can we use the calendar to find and describe past and future dates?	● Students may have trouble finding a specific day of the month when the month doesn't begin on Sunday, e.g. finding the 3rd Wednesday of the month when the month begins on Friday, because the first week doesn't have a Wednesday.
Understanding the Standard	**Essential Knowledge and Skills**
● The calendar is a way to represent units of time (e.g., days, weeks, months, and years).	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

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- Using a calendar develops the concept of day as a 24-hour period rather than a period of time from sunrise to sunset.
- Practical situations are appropriate to develop a sense of the interval of time between events (e.g., club meetings occur every week on Monday: there is a week between meetings).

</td><td>

- Determine the day that is a specific number of days or weeks in the past or in the future from a given date, using a calendar. (a)
- Identify specific days and dates (e.g., What is the third Monday in a given month? What day of the week is May 11?). (b)

</td></tr>
<tr><th>Vocabulary</th><th>Instructional Activities Organized by Learning Objective</th></tr>
<tr><td>calendar, days of the week (Monday, Tuesday, …), months of the year (January, February, …), date, between, first, second, third, fourth, fifth, future, past, before, after</td><td rowspan="3">

Textbook-
enVision Math

- Lesson 15-4 Using a Calendar (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity**, Reteaching Practice, and Enrichment Masters)

Notes

Resources

- **Print**
  - Printable Instructional Activities and Resources
    - Calendar Task (a,b)
- **Technology-based**
  - Using a Calendar Study Jam interactive lesson (b)
  - Questions about calendars (a,b)
  - Make a Calendar interactive book (b)

Station Activities/Manipulatives

- Given a sample copy of a calendar month, the student will practice identifying specific days of the week and dates on a calendar. They can then use the calendar to determine past and future days of the week. (a,b)

</td></tr>
<tr><th>Assessment</th></tr>
<tr><td>**Powerschool** – Exam identifier</td></tr>
</table>

Cross-Curricular Connections	Differentiation
Literature Connections ● Diary of a Fly by Doreen Cronin ● Calendar by Myra Cohn Livingston ● A House For Hermit Crab by Eric Carle ○ The students will make a calendar and record important events. ● **A Flock of Shoes** by Sarah Tsiang ● **Parade Day: Marching Through the Calendar Year** by Bob Barner ● **Game Time** by Stuart Murphy ○ **Activity** ● **Pepper's Journal: a Kitten's First Year** by Stuart Murphy ○ **Activity** ● **A Second, a Minute, a Week With Days in it: a Book About Time** by Brian Cleary	

Richmond Public Schools

Curriculum Framework

2nd Grade

<table>
<tr><th colspan="2">Strand: Measurement and Geometry</th></tr>
<tr><td colspan="2">2.11 The student will read temperature to the nearest 10 degrees.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">4th Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

N/A</td><td><u>Grade 3 Related Standards</u>

3.10 The student will read temperature to the nearest degree</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>What units and tools are used to measure temperature?
How do we read temperature on a Fahrenheit thermometer?</td><td>Students may have trouble understanding the increments of a thermometer and what the lines represent.</td></tr>
<tr><th>Understanding the Standard</th><th>Essential Knowledge and Skills</th></tr>
<tr><td>The symbols for degrees in Fahrenheit (° F) should be used to write temperatures.
Fahrenheit temperatures should be related to everyday occurrences by measuring the temperature of things found in the student’s environment (e.g., temperature of the classroom; temperature on the playground; temperature of warm and cold liquids; body temperature).
Estimating and measuring temperatures in the environment requires the use of real thermometers.
A variety of physical models (e.g., circular, linear) should be used to represent the temperature determined by a real thermometer.</td><td>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
Identify different types of thermometers as instruments used to measure temperature.
Read temperature in Fahrenheit to the nearest ten degrees on thermometers (real world, physical model, and pictorial representations).</td></tr>
</table>

• A physical or pictorial model can be used to represent the temperature measured using a real thermometer. • Reading temperature in degrees Celsius will begin in grade three.	
Vocabulary	**Instructional Activities Organized by Learning Objective**
thermometer, temperature, degrees, Fahrenheit (F)	**Textbook-** **enVision Math** • Lesson 15-5 Temperature: Fahrenheit and Celsius (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity,) *This lesson has students reading a thermometer to the nearest degree- need to adapt to read to only the nearest 10 degrees* **Notes** **Resources** • **Print** o Printable Instructional Activities and Resources ▪ Thermometer Matching Game ▪ Thermometer Matching Game #2 ▪ Thermometer Matching Game #3 ▪ Student Model Thermometers • **Technology-based** o Interactive Thermometer *requires free account setup* **Station Activities/Manipulatives** • Student thermometers: Using student thermometers and containers/drinks that are hot, cold, and warm, students
Assessment	
Powerschool – Exam identifier	

	will identify the temperature of each in degrees Fahrenheit to the nearest 10.
Cross-Curricular Connections	**Differentiation**
Literature Connections ● **<u>On the Same Day in March</u>** by Marilyn Singer ● **<u>The Tiny Seed</u>** by Eric Carle ○ Using a model thermometer, have students read temperatures as the seasons change in the story. ● **<u>Temperature: Heating Up and Cooling Down</u>** by Darlene R. Stille	

Richmond Public Schools

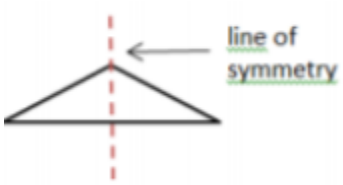
Curriculum Framework

2nd Grade

<table>
<tr><th colspan="2">Strand: Measurement and Geometry</th></tr>
<tr><td colspan="2">2.12 The student will
a) draw a line of symmetry in a figure; and
b) identify and create figures with at least one line of symmetry.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">2nd Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

N/A</td><td><u>Grade 3 Related Standards</u>

3.12 The student will
c. combine and subdivide polygons with three or four sides and name the resulting polygon(s).</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>● What is a line of symmetry?
● Do all figures have a line of symmetry?
● Can some figures have more than one line of symmetry?
● What strategies can we use to determine whether a figure has a line of symmetry?
● How can we create a figure with a line of symmetry?</td><td>● Students may struggle finding lines of symmetry that are not vertical, especially if the figure is a more complex shape.</td></tr>
<tr><th>Understanding the Standard</th><th>Essential Knowledge and Skills</th></tr>
<tr><td>● A line of symmetry divides a figure into two congruent parts each of which is the mirror image of the other. An example is shown below:</td><td>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
● Draw a line of symmetry in a figure. (a)</td></tr>
</table>



- Lines of symmetry are not limited to horizontal and vertical lines.
- Children learn about symmetry through hands-on experiences with geometric figures and the creation of geometric pictures and patterns.
- Guided explorations of the study of symmetry using mirrors, paper folding, and pattern blocks will enhance students' understanding of the attributes of symmetrical figures.
- Congruent figures have exactly the same size and shape. Noncongruent figures do not have exactly the same size and shape. Congruent figures remain congruent even if they are in different spatial orientations.
- While investigating symmetry, children move figures, such as pattern blocks, intuitively, thereby exploring transformations of those figures. A transformation is the movement of a figure — either a translation, rotation, or reflection. A translation is the result of sliding a figure in any direction; rotation is the result of turning a figure around a point or a vertex; and reflection is the result of flipping a figure over a line. Children at this level do not need to know the terms related to transformations of figures.

- Identify figures with at least one line of symmetry, using various concrete materials (e.g., mirrors, paper folding, pattern blocks). (b)
- Determine a line of symmetry that results in two figures that have the same size and shape and explain reasoning. (a, b)
- Create figures with at least one line of symmetry using various concrete materials. (b)

Vocabulary	**Instructional Activities Organized by Learning Objective**
line of symmetry, symmetric, congruent, noncongruent, size, shape, turn, flip, slide, rotation	**Textbook-** **enVision Math**

Assessment	
Powerschool – Exam identifier	● Lesson 11-7 Symmetry (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters) **Eureka Math** ● GRADE 4 MODULE 4- TOPIC D: Two-Dimensional Figures and Symmetry **Notes** ● Interactive Notebooks MATH Grade 2 (2015) ○ Symmetry p. 76-77 (a,b) **Resources** ● **Print** **o** Teaching Student-Centered Mathematics (K-3 2006) ▪ Activity 7.9: Patterns Block Mirror Symmetry p.211 (b) ▪ Activity 7.10: Plane Symmetry Buildings p. 212 (b) ▪ Activity 7.11: Pattern Block Rotational Symmetry p. 212 (b) o Printable Instructional Activities and Resources ▪ Line of Symmetry Sort (b) ▪ Folding Symmetry (a) ▪ Symmetry Lesson (a,b) ▪ Alphabet Symmetry (b) ▪ Symmetry Exit Ticket/Journal (b) ▪ I Spy Symmetry (a) ▪ Symmetry Activity (a) ● **Technology-based** o Virtual Geoboard interactive skill practice (a,b) o Lines of Symmetry Study Jam interactive lesson (a) *use lesson, but not assessment* o All About Symmetry For Kids video (a)

<table>
<tr><td></td><td>o Symmetrical or non-symmetrical (b)
Station Activities/Manipulatives
● Pattern blocks: Using pattern blocks, students will determine how the block can be divided equally(congruent) with a line of symmetry. (a)</td></tr>
<tr><td>Cross-Curricular Connections</td><td>Differentiation</td></tr>
<tr><td>Literature Connections
● Round as a Mooncake by Roseanne Thong
○ The students will find circles, squares and rectangles in the room and record observations.
● Seeing Symmetry by Loreen Leedy
○ Take photos of each student and cut the photos in half down the middle. Then, the students will complete the photo by drawing a symmetrical image of their face.
● Let's Fly a Kite by Stuart Murphy
○ Activity
● Martha Speaks by Susan Meddaugh
○ The students will find the line of symmetry in the alphabet letters.</td><td></td></tr>
</table>

Richmond Public Schools

Curriculum Framework

2nd Grade

<table>
<tr><th colspan="2">Strand: Measurement and Geometry</th></tr>
<tr><td colspan="2">2.13 The student will identify, describe, compare, and contrast plane and solid figures (circles/spheres, squares/cubes, and rectangles/rectangular prisms).</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">4th Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

1.11 The student will
a. identify, trace, describe, and sort plane figures (triangles, squares, rectangles, and circles) according to number of sides, vertices, and angles; and
b. identify and describe representations of circles, squares, rectangles, and triangles in different environments, regardless of orientation, and explain reasoning.</td><td><u>Grade 3 Related Standards</u>

3.12 The student will
a. define polygon;
b. identify and name polygons with 10 or fewer sides;
c. c) combine and subdivide polygons with three or four sides and name the resulting polygon(s).

3.13 The student will identify and describe congruent and noncongruent figures.</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>● How are plane geometric figures different from solid geometric figures? Can they be similar in any ways?
● What are the attributes that determine or identify a solid geometric figure? (faces—sides and bases, edges, vertices, and angles)
● How does a circle compare to a sphere? ...a square to a cube? ...a rectangle to a rectangular prism?
● How can we find related plane figures by tracing models of solids?</td><td>● Students often struggle with the concept that a square is a rectangle, but a rectangle is not a square. Careful attention to the definition of each of these polygons is vital, especially when preparing the student for the next grade level.
● Students sometimes have trouble visualizing pictures of solid figures, e.g. realizing that the soccer ball in the picture is a sphere, even though the picture itself on the paper looks like a circle.</td></tr>
</table>

Understanding the Standard	Essential Knowledge and Skills
• A plane figure is any closed, two-dimensional shape. • A vertex is a point at which two or more lines, line segments, or rays meet to form an angle. In solid figures a vertex is the point at which three or more edges meet. • An angle is formed by two rays that share a common endpoint called the vertex. Angles are found wherever lines or line segments intersect. • A solid figure is a three-dimensional figure, having length, width, and height. • A circle is the set of points in a plane that are the same distance from a point called the center. • A sphere is a solid figure with all of its points the same distance from its center. • A rectangle is a quadrilateral with four right angles. A square is a special type of rectangle. • A square is a quadrilateral with four congruent (equal length) sides and four right angles. • A right angle measures exactly 90 degrees. • A rectangular prism is a solid figure in which all six faces are rectangles. A rectangular prism has eight vertices and 12 edges. • A cube is a solid figure with six congruent, square faces. All edges are the same length. A cube has eight vertices and 12 edges. It is a type of rectangular prism. • The edge is the line segment where two faces of a solid figure intersect. • A face is any flat side of a solid figure (e.g., a square is a face of a cube). • Tracing faces of cubes and rectangular prisms and decomposing cubes and rectangular prisms along their edges	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Determine similarities and differences between related plane and solid figures (circles/spheres, squares/cubes, rectangles/rectangular prisms), using models and cutouts. • Trace faces of solid figures (cubes and rectangular prisms) to create the set of plane figures related to the solid figure. • Identify and describe plane figures (circles, squares, and rectangles), according to their characteristics (number of sides, vertices, and angles). Squares and rectangles have four right angles. • Identify and describe solid figures (spheres, cubes, and rectangular prisms), according to the shape of their faces, number of edges, and number of vertices, using models. • Compare and contrast plane and solid figures (circles/spheres, squares/cubes, and rectangles/rectangular prisms) according to their characteristics (number and shape of their faces, edges, vertices, and angles).

helps students understand the set of plane figures related to the solid figure.

- The relationship between plane and solid figures, such as the square and the cube or the rectangle and the rectangular prism helps build the foundation for future geometric study of faces, edges, angles, and vertices. The following chart defines the characteristics of solid figures included at this grade level:

Solid Figure	# of Faces	Shape of Faces	# of Edges	# of Vertices
Cube	6	Squares	12	8
Rectangular Prism	6	Rectangles	12	8
Sphere	0	N/A	0	0

Vocabulary

identify, describe, compare, contrast, plane figures, solid figures, circle, square, rectangle, sphere, cube, rectangular prism, faces, angles, edges, vertex/vertices, two- and three-dimensional

Assessment

Powerschool – Exam identifier

Instructional Activities Organized by Learning Objective

Textbook-
enVision Math

- Lesson 11-1 Flat Surfaces, Vertices, and Edges (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, *This lesson includes cone, cylinder, and pyramid which are NOT part of this SOL*.
- Lesson 11-2 Relating Plane Shapes to Solid Figures (Problem of the Day, Problem Based Interactive Learning, Develop the Concept) *This lesson includes cone, cylinder, and pyramid which are NOT part of this SOL.*
- Virginia Handbook pg. VA 9

Eureka Math

- GRADE K MODULE 2- TOPIC C: Two-Dimensional Figures and Symmetry
- GRADE 2 MODULE 8- TOPIC A: Attributes of Geometric Shapes
- GRADE 2 MODULE 8- Lesson 6: Combine shapes to create a composite shape; create a new shape from composite shapes

	Notes **Resources** ● **Print** o Teaching Student-Centered Mathematics (K-3 2006) ▪ Activity 7.1: Shape Sorts p. 194 ▪ Activity 7.2: What's My Shape? p.195 ▪ Activity 7.17: Face Matching p. 217 ▪ Activity 7.18: Shape Hunts p. 217 o Printable Instructional Activities and Resources ▪ Mystery Shape Riddles ▪ Solids Graphic Organizer ▪ Solid Graphic Organizer- Faces ▪ Building Design ▪ Build with Marshmallows ▪ Face Cards ▪ Rectangular Prism Nets & Cube Nets ● **Technology-based** o Choosing Cube Nets **Station Activities/Manipulatives** ● Printable nets: Using printable nets, the students can create 3D shapes to practice counting faces, edges, and vertices and make comparisons to 2D shapes. *Use only nets for cube and rectangular prism*
Cross-Curricular Connections	**Differentiation**

Literature Connections ● **Perfect Square** by Michael Hall ● **Flat Stanley** by Jeff Brown ○ Talk about other related two-dimensional and three-dimensional shapes such as circle to a sphere. ● **Mummy Math: an Adventure in Geometry** by Cindy Neuschwander	

Richmond Public Schools

Curriculum Framework

2nd Grade

<table>
<tr><th colspan="2">Strand: Probability and Statistics</th></tr>
<tr><td colspan="2">2.14 The student will use data from probability experiments to predict outcomes when the experiment is repeated.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">4th Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

1.12 The student will
a. collect, organize, and represent various forms of data using tables, picture graphs, and object graphs; and
b. read and interpret data displayed in tables, picture graphs, and object graphs, using the vocabulary more, less, fewer, greater than, less than, and equal to.</td><td><u>Grade 3 Related Standards</u>

3.14 The student will investigate and describe the concept of probability as a measurement of chance and list possible outcomes for a single event.</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>● How do we record and interpret data from a probability experiment?
● Why is it important to collect data from many tries?
● How can we predict what is likely to happen if the experiment is repeated?</td><td>● Students may struggle with the idea that a random number cube, the equally-divided spinner, and a two-colored counter produce equally-likely outcomes if they only conduct few trials and get skewed results.</td></tr>
<tr><th>Understanding the Standard</th><th>Essential Knowledge and Skills</th></tr>
<tr><td>● A spirit of investigation and experimentation should permeate probability instruction, where students are actively engaged in investigations and have opportunities to use manipulatives.</td><td>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
● Conduct probability experiments using multi-colored spinners, colored tiles, or number cubes and use the data from the experiments to predict outcomes if the experiment is repeated.</td></tr>
</table>

<table>
<tr><td>

- Investigation of experimental probability is continued through informal activities, such as dropping a two-colored counter (usually a chip that has a different color on each side), using a multi-colored spinner (a circular spinner that is divided equally into two, three, four, six or eight parts where each part is filled with a different color), using spinners with numbers, or rolling random number cubes.
- Probability is the chance of an event occurring.
- An event is a possible outcome in probability. Simple events include the possible outcomes when tossing a coin (heads or tails), when rolling a random number cube or when spinning a spinner.

</td><td>

- Record the results of probability experiments, using tables, charts, and tally marks.
- Interpret the results of probability experiments.
- Predict which of two events is more or less likely to occur if an experiment is repeated.

</td></tr>
<tr><td>Vocabulary</td><td rowspan="3">Instructional Activities Organized by Learning Objective</td></tr>
<tr><td>two-colored counter, multi-colored spinner, probability, events, possible outcomes, colored tiles, number cubes, more likely, less likely, experiment, chance</td></tr>
<tr><td>Assessment</td></tr>
<tr><td>Powerschool – Exam identifier</td><td>Textbook-
enVision Math
• Lesson 16-5: Likely and Unlikely (Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters)
• Lesson 16-6: Certain, Probable, and Impossible (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters)
Eureka Math
• GRADE 2 MODULE 7- TOPIC A: Problem Solving with Categorical Data
• GRADE 2 MODULE 7- TOPIC F: Displaying Measurement Data
Notes

Resources</td></tr>
</table>

	• **Print** o Teaching Student-Centered Mathematics (K-3 2006) ▪ Activity 12.1: Is It Likely? p. 332 ▪ Activity 12.2: Race to the Top p. 333 ▪ Activity 12.3: Spinner Hockey p. 334 ▪ Activity 12.4: Add Then Tally p. 334 ▪ Activity 12.5: Design a Bag p. 336 ▪ Activity 12.6: Testing Bag Designs p.336 ▪ Activity 12.7: Six Chips p. 338 ▪ Activity 12.8: Create a Game p. 339 ▪ Activity 12.9: Twelve Chips p. 341 ▪ Activity 12.10: Match p. 341 o Printable Instructional Activities and Resources ▪ Probability Rolling Sums and Spinning Colors • **Technology-based** o Bright Balloons Activity **Station Activities/Manipulatives** • Probability resource kit: When given a spinner, the students will spin the spinner multiple times and create a tally chart of the results. • Foam 2-color counters: Students will use foam 2-color counters to practice flipping the counters and create a chart of the results. • Insect, fruit and pet counters: Students will look at a given assortment of insect, fruit and pet counters and make predictions about probability outcomes. • Square tiles: Students will be given a specific outcome (i.e. it is more likely to choose a red tile), and students will practice creating an appropriate model of the probability outcome.
Cross-Curricular Connections	**Differentiation**

Literature Connections ● **It's Probably Penny** by Loreen Leedy ● **Pigs, Cows, and Probability** by Marcie Aboff ● **Probably Pistachio** by Stuart Murphy ○ Read the story together and ask your students to predict what they think will happen and why. Ask questions such as: "Do you think Emma will have pastrami for lunch? Why do you think that?" As their understanding of probability grows, ask questions such as: "Why didn't Jack's predictions come true? What question could Jack have asked Emma so that he might have made a better prediction? ○ "Ask your child (or students) to decide if certain events are likely, possible or unlikely. Suggest events such as: "You will go to bed at 8:30 tonight." "We will all go swimming on Saturday." "No one in your class will be absent tomorrow." ● **Pigs at Odds** by Amy Axelrod ○ The students will explore different spinner faces or spin the wheel game.	

Richmond Public Schools

Curriculum Framework

2nd Grade

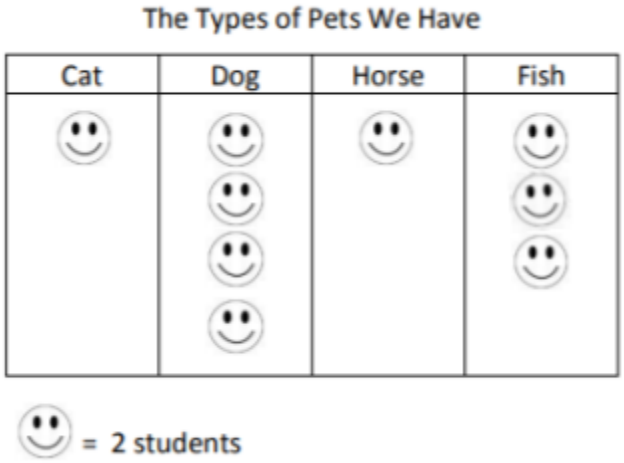
<table>
<tr><th colspan="2">Strand: Probability and Statistics</th></tr>
<tr><td colspan="2">2.15 The student will
a) collect, organize, and represent data in pictographs and bar graphs; and
b) read and interpret data represented in pictographs and bar graphs.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">3rd Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

1.12 The student will
a. collect, organize, and represent various forms of data using tables, picture graphs, and object graphs; and
b. read and interpret data displayed in tables, picture graphs, and object graphs, using the vocabulary more, less, fewer, greater than, less than, and equal to.</td><td><u>Grade 3 Related Standards</u>

3.15 The student will
a. collect, organize, and represent data in pictographs or bar graphs; and
b. read and interpret data represented in pictographs and bar graphs.</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>● Why are pictographs and bar graphs useful?
● What are the characteristics of pictographs and bar graphs?
● Why do we organize data from experiments into lists, tables, tallies, pictures, symbols, and/or charts before we create a graph?
● How do we construct a pictograph?
● How do we construct a bar graph?
● What special features of a graph help us read and interpret it?</td><td>● Students commonly forget to look at the legend of a pictograph to see the worth of each image, and understand that if the image represents more than one, then they have to skip-count by that number.</td></tr>
</table>

• How can we interpret the information in a graph to answer questions, make comparisons, draw conclusions, and make predictions?	
Understanding the Standard	**Essential Knowledge and Skills**

• Data can be collected and organized in pictographs and bar graphs.
• The purpose of a graph is to represent data gathered to answer a question.
• At this level, the number of categories on a pictograph should be limited to four when a student is creating a graph, and six when a student is interpreting and analyzing a graph.
• A pictograph uses pictures or symbols to represent one or more objects (data points).
• A key is provided in a graph to assist in the analysis of the displayed data.
• The key should be provided for the symbol in a pictograph graph when the symbol represents more than one piece of data (e.g.,  represents five people in a graph). At this level, each symbol should represent 1, 2, 5, or 10 pieces of data.
• An example of a pictograph is:
	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:
	• Collect and organize data using various forms of data collection (e.g., lists, tables, objects, pictures, symbols, tally marks, charts). Data points, collected by students, should be limited to 16 or fewer for no more than four categories. (a)
	• Represent data in pictographs and bar graphs (limited to 16 or fewer data points for no more than four categories). (a)
	• Read and interpret data represented in pictographs and bar graphs with up to 25 data points for no more than six categories (represented horizontally or vertically). State orally and in writing (at least one statement) that includes one or more of the following:
	  ○ Describes the categories of data and the data as a whole (e.g., adding together all data points will equal the total number of responses);
	  ○ Identifies parts of the data that have special characteristics; including categories with the greatest, the least, or the same;
	  ○ Uses the data to make comparisons; and
	  ○ Makes predictions and generalizations. (b)



- In prior grades, students worked with simple pictographs with a scale of one (i.e., each picture represented only one item) making a key unnecessary.
- Students' prior knowledge and work with skip counting helps them to identify the number of pictures or symbols to be used in a pictograph.
- Definitions for the terms picture graph and pictographs vary. Pictographs are most often defined as a pictorial representation of numerical data. The focus of instruction should be placed on reading and using the key in analyzing the graph. There is no need for students to distinguish between a picture graph and a pictograph.
- Bar graphs are used to compare counts of different categories (categorical data). Using grid paper may ensure more accurate graphs.
    - A bar graph uses horizontal or vertical parallel bars to represent counts for several categories. One bar is

<table>
<tr><td>used for each category, with the length of the bar representing the count for that category.
○ There is space before, between, and after each of the bars.
○ The axis displaying the scale that represents the count for the categories should begin at zero and extend one increment above the greatest recorded piece of data. In grade two, students should collect data that are recorded in increments of whole numbers limited to multiples of 1, 2, or 5.
○ At this level, the number of categories on a bar graph should be limited to four. A key should be included where appropriate.
○ Each axis should be labeled, and the graph should be given a title.
● Statements that represent an analysis and interpretation of the data in the graph should be discussed with students and written (e.g., similarities and differences, least and greatest, the categories, total number of responses, etc.).
● Data gathered and displayed by students should be limited to 16 or fewer data points for no more than four categories. However, students at this level should be able to interpret graphs that contain data points that represent their entire class (e.g., approximately 25 data points).</td><td></td></tr>
<tr><td>Vocabulary</td><td>Instructional Activities Organized by Learning Objective</td></tr>
<tr><td>data, graph, vertical, horizontal, grid, survey, bar graph, pictograph, key, interpret, more, less, fewer, greater than, less than, equal to, category, axis</td><td rowspan="2">Textbook-
enVision Math
2.15a
● Lesson 16-1: Organizing Data (Problem of the Day, Problem Based Interactive Learning, Develop the Concept,</td></tr>
<tr><td>Assessment</td></tr>
</table>

Powerschool – Exam identifier	Center Activity, Reteaching, Practice, and Enrichment Masters) (a) ● 2.15a: Lesson 16-2 Pictographs (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters) (a,b) ● Lesson 16-3 Bar Graphs (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters) (a,b) **2.15b** ● Lesson 16-2 Pictographs (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters) (a,b) ● Lesson 16-3 Bar Graphs (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters) (a,b) ● Lesson 16-7 Problem Solving: Use a Graph (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters) (b) **Eureka Math** **2.15a,b** ● GRADE 2 MODULE 7- TOPIC A: Problem Solving with Categorical Data ● GRADE 2 MODULE 7- TOPIC F: Displaying Measurement Data **Notes** ● Interactive Notebooks MATH (2015) ○ Grade 2 Version

	■ Picture Graphs p. 62-63 (a) ■ Bar Graphs p.64-65 (a) ○ Grade 1 Version ■ Graphs and Data p.64-65 (a,b) **Resources** ● **Print** o FACEing Math: Primary Problem Solving (2011) ▪ Lesson 12: Using Data in graphs, charts (a,b) o Printable Instructional Activities and Resources ▪ Construct Graph (a) ▪ Roll and Graph (a,b) ▪ Pictograph Sort (b) ▪ Bar Graph Sort (b) ▪ Tooth Graphing (a,b) ▪ Transportation Pictograph (b) ▪ Selecting True Statements (b) ▪ Creating a pictograph (a) ▪ Cars Pictograph (b) ● **Technology-based** o Gizmos: Mascot Election (Pictographs and Bar Graphs) (b) **o** Create-a-graph online tool (a) o Fuzz Bugs Graphing educational review game (a) **Station Activities/Manipulatives** ● Square tiles: The student will create a chart based on a given assortment of colored square tiles. (a) ● Graphing mats: The student, when given a chart with specific data, will practice creating a pictograph or bar graph of the data on the graphing mat. (a)

Cross-Curricular Connections	Differentiation
Literature Connections ● **So You Want to Be President?** by Judith St. George ○ The students will sort previous occupations of presidents into categories. ● **Bein' with You This Way** by W. Nikola-Lisa ○ The students will create graphs for features presented in the book. ● **Lemonade for Sale** by Stuart J. Murphy ○ **Activity** ● **What Pet to Get?** by Emma Dodd ○ Collect and graph data for the weight/height of potential pets. ● **The Best Vacation Ever** by Stuart Murphy ○ **Activity** ● **Talley O'Malley** by Stuart Murphy ○ **Activity**	

Richmond Public Schools

Curriculum Framework

2nd Grade

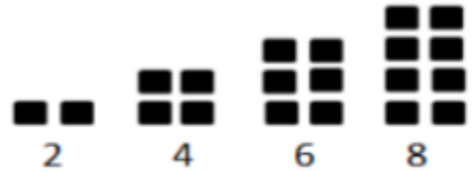
<table>
<tr><th colspan="2">Strand: Patterns, Functions and Algebra</th></tr>
<tr><td colspan="2">2.16 The student will identify, describe, create, extend, and transfer patterns found in objects, pictures, and numbers.</td></tr>
<tr><th colspan="2">Suggested Pacing</th></tr>
<tr><td colspan="2">4th Nine Weeks</td></tr>
<tr><th colspan="2">Related Spiraling Standards</th></tr>
<tr><td><u>Grade 1 Related Standards</u>

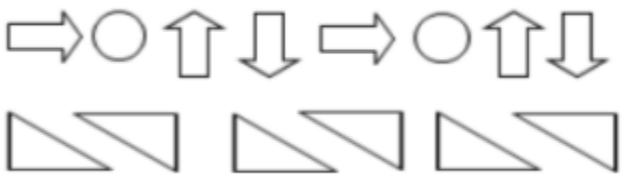
1.13 The student will sort and classify concrete objects according to one or two attributes.

1.14 The student will identify, describe, extend, create, and transfer growing and repeating patterns.</td><td><u>Grade 3 Related Standards</u>

3.16 The student will identify, describe, create, and extend patterns found in objects, pictures, numbers and tables.</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>What is a pattern?
How can we recognize and identify repeating patterns?
How can we recognize and identify growing patterns?
How are repeating and growing patterns created?
How can we extend a pattern to predict what comes next?
How can we recognize a pattern, to create the same pattern in a different form?</td><td>With growing patterns, students often struggle to find the rule when the pattern begins in the middle, e.g. when counting by 2s, but the pattern begins at 34.
Students may also struggle transferring a growing numerical pattern to other numbers, especially when the numbers move from each to odd, or vice-versa, e.g. given the pattern 4,6,8,10,12 and knowing the same pattern applies to 35,37,39,41.</td></tr>
<tr><th>Understanding the Standard</th><th>Essential Knowledge and Skills</th></tr>
<tr><td>Patterning is a fundamental cornerstone of mathematics, particularly algebra. The process of generalization leads to the foundation of algebraic reasoning.</td><td>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to
Identify a pattern as growing or repeating.</td></tr>
</table>

● Opportunities to create, identify, describe, extend, and transfer patterns are essential to the primary school experience and lay the foundation for thinking algebraically. ● The part of the pattern that repeats is called the core. ● Growing patterns involve a progression from step to step which make them more difficult for students than repeating patterns. Students must determine what comes next and also begin the process of generalization, which leads to the foundation of algebraic reasoning. Students need experiences identifying what changes and what stays the same in a growing pattern. Growing patterns may be represented in various ways, including dot patterns, staircases, pictures, etc. ● In numeric patterns, students must determine the difference, called the common difference, between each succeeding number in order to determine what is added to each previous number to obtain the next number. Students do not need to use the term common difference at this level. ● Sample numeric patterns include: ○ 6, 9, 12, 15, 18, (growing pattern); ○ 2, 4, 6, 8, 10, (growing pattern); and ○ 1, 3, 5, 1, 3, 5, 1, 3, 5… (repeating pattern). In grade two, growing numeric patterns will only include increasing values. ● In patterns using objects or figures, students must often recognize transformations of a figure, particularly rotation or reflection. Rotation is the result of turning a figure, and reflection is the result of flipping a figure over a line. ● Examples of patterns using objects or figures include:	● Describe the core (the part of the sequence that repeats) of a given repeating pattern. ● Describe how a given growing pattern is changing. ● Create a growing or repeating pattern, using objects, pictures, or numbers. ● Extend a given pattern, using objects, pictures, or numbers. ● Transfer a given growing or repeating pattern from one form to another using objects, pictures, or numbers.





- Transferring a pattern is creating the pattern in a different form or representation.
- Examples of pattern transfers include:
  - 10, 20, 30, 40 has the same structure as 14, 24, 34, 44;
  -  has the same structure as ; and
  - 1, 3, 5, 1, 3, 5, 1, 3, 5 has the same structure as ABCABC

Vocabulary	**Instructional Activities Organized by Learning Objective**
pattern, identify, describe, create, extend, transfer, repeat, growing, increase, core, base, object, figure	**Textbook- enVision Math** ● Lesson 6-5: Problem Solving: Look for a Pattern (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters) ● Lesson 17-5 Patterns with Numbers on Hundreds Charts (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters)
Assessment	
Powerschool – Exam identifier	

	● Lesson 17-9 Problem Solving: Use a Graph (Problem of the Day, Problem Based Interactive Learning, Develop the Concept, Center Activity, Reteaching, Practice, and Enrichment Masters) **Notes** ● Interactive Notebooks MATH Grade 2 (2015) ○ Patterns p. 20-21 **Resources** ● **Print** o Teaching Student-Centered Mathematics (K-3 2006) ▪ Activity 2.29: Patterns on the Hundreds Chart p. 57 ▪ Activity 2.30: Missing Numbers p. 58 ▪ Activity 10.1: Pattern Strips p. 276 ▪ Activity 10.2: Pattern Match p. 277 o FACEing Math: Primary Problem Solving (2011) ▪ Lesson 18: Determining patterns o Printable Instructional Activities and Resources ▪ Patterns with removal ▪ Repeating patterns ▪ Pattern Sorting Strips ▪ Detective Patterns ● **Technology-based** o Gizmos: Pattern Flip (Patterns) o Extending Patterns Activity **Station Activities/Manipulatives** ● Insect, fruit and pet counters: Using insect, fruit, or pet counters, students will create a repeating pattern and describe the pattern to another student to record.

	● Square tiles: Given square tiles, one student will create a growing pattern and another student will record, describe, and extend the pattern created.
Cross-Curricular Connections	**Differentiation**
Literature Connections ● Pattern Fish by Trudy Harris ● **Pete the Cat and His Four Groovy Buttons** by Eric Litwin ● **Food Patterns** by Nathan Olson ● **The Quilt Story** by Tony Johnston ○ The students will create patterns using shapes.	

Richmond Public Schools

Curriculum Framework

2nd Grade

Strand: Patterns, Functions, and Algebra	
2.17 The student will demonstrate an understanding of equality through the use of the equal symbol and the use of the not equal symbol.	
Suggested Pacing	
4th Nine Weeks	
Related Spiraling Standards	
Grade 1 Related Standards 1.15 The student will demonstrate an understanding of equality through the use of the equal symbol.	**Grade 3 Related Standards** 3.17 The student will create equations to represent equivalent mathematical relationships.
Essential Questions	**Common Misconceptions**
• What does the equal sign tell about a number sentence (equation)? • When is the symbol ≠ used in number sentences? • How can we test the truth of a number sentence using models?	• Students may struggle with understanding that the equal symbol can be used to show equality between 2 expressions, and not just an expression and 1 number. Explicit instruction may be necessary to show students how to solve each side of the equality to get each side down to one number to determine equal or not equal.
Understanding the Standard	**Essential Knowledge and Skills**
• The equal symbol (=) means that the values on either side are equivalent (balanced). • The not equal (≠) symbol means that the values on either side are not equivalent (not balanced). • In order for students to develop the concept of equality, students need to see the = symbol used in various appropriate locations (e.g., 3 + 4 = 7 and 5 = 2 + 3).	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to • Identify the equal symbol (=) as the symbol used to indicate that the values on either side are equal. • Identify the not equal symbol (≠) as the symbol used to indicate that two values on either side are not equal. • Identify values and expressions that are equal (e.g., 8 = 8, 8 = 4 + 4).

<table>
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- An equation (number sentence) is a mathematical statement representing two expressions that are equivalent. It consists of two expressions, one on each side of an 'equal' symbol (e.g., 5 + 3 = 8, 8 = 5 + 3 and 4 + 3 = 9 - 2). An equation can be represented using a number balance scale, with equal amounts on each side (e.g., 3 + 5 = 6 + 2).
- An expression represents a quantity. It contains numbers, variables, and/or computational operation symbols. It does not have an equal symbol (e.g., 5, 4 + 3, 8-2). Students at this level are not expected to use the terms expression or variable.
- Manipulatives such as connecting cubes, counters, and number scales can be used to model equations.

</td><td>

- Identify values and expressions that are not equal (e.g., $8 \neq 9$, $4 + 3 \neq 8$).
- Identify and use the appropriate symbol to distinguish between equal and not equal quantities (e.g., 9 + 24 = 10 + 23; 45 – 9 = 46 – 10; 15 + 16 ≠ 31 + 15).
- Use a model to represent the relationship of two expressions of equal value and two expressions that are not equivalent.

</td></tr>
<tr><td>Vocabulary</td><td rowspan="3">Instructional Activities Organized by Learning Objective</td></tr>
<tr><td>equal, not equal, unequal, equality, inequality, balance, equation, expression</td></tr>
<tr><td>Assessment</td></tr>
<tr><td>Powerschool – Exam identifier</td><td>

Textbook-
enVision Math

- Lesson 1-1: Writing Addition Number Sentences (Problem Based Interactive Learning, Develop the Concept, Differentiated Center Activity, Reteaching, Practice, and Enrichment Masters)
- Lesson 1-2: Stories About Joining (Problem Based Interactive Learning, Develop the Concept, Differentiated Center Activity, Reteaching, Practice, and Enrichment Masters)
- Lesson 1-3: Writing Subtraction Number Sentences (Problem Based Interactive Learning, Develop the Concept, Differentiated Center Activity, Reteaching, Practice, and Enrichment Masters)
- Lesson 1-4: Stories About Separating (Problem Based Interactive Learning, Develop the Concept, Differentiated Center Activity, Reteaching, Practice, and Enrichment Masters)

</td></tr>
</table>

- Lesson 1-5: Stories About Comparing (Problem Based Interactive Learning, Develop the Concept, Differentiated Center Activity, Reteaching, Practice, and Enrichment Masters)
- Virginia Handbook pg. VA 4

Eureka Math

- GRADE 1 MODULE 1: TOPIC E: The Commutative Property of Addition and the Equal Sign
- GRADE 1 MODULE 2- LESSON 25: Strategize and apply understanding of the equal sign to solve equivalent expressions. *Supplemental material is necessary to address ≠ to indicate nonequivalent quantities.*

Notes

- Interactive Notebooks MATH Grade 1 (2015)
  - True Number Sentences p. 52-53 *add in the not equal symbol*

Resources

- **Print**
  - Instructional Activities and Resources
    - Balancing Act
    - Equal or Not Equal
    - Rolling Equalities
    - Keep Me Balanced
    - Math Equality Sort
    - Student-made Math Number Balances
- **Technology-based**
  - Pan Balance – Numbers online instructional tool
  - Poddle Weigh-in online activity *uses unequal & equal symbol*

Station Activities/Manipulatives

	Square tiles: Using square tiles and the =, ≠ symbols, students will create a correct model of an equality and inequality.
Cross-Curricular Connections	**Differentiation**
Literature Connections ● **12 Ways to Get 11** by Eve Merriam ○ The students will explore different combinations for the same number. ● **Equal, Shmequal** by Virginia Kroll TumbleBooks ● **Balancing bears** by Megan Atwood ● **The Wing Wing Brothers Math Spectacular!** by Ethan Long ● **How Many Snails?** by Paul Giganti ○ For each page find two expressions that describe the same picture. EX: 3 big clouds + 5 little clouds = 4 white clouds + 4 gray clouds	