

North East School District PA Core Curriculum Map

Math

Second Grade



North East School District has adopted Pennsylvania Department of Education's Standards for Mathematical Practice that highlight the effective use of understanding, knowledge, and skills in order to prepare students to be college and or career ready.

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

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Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

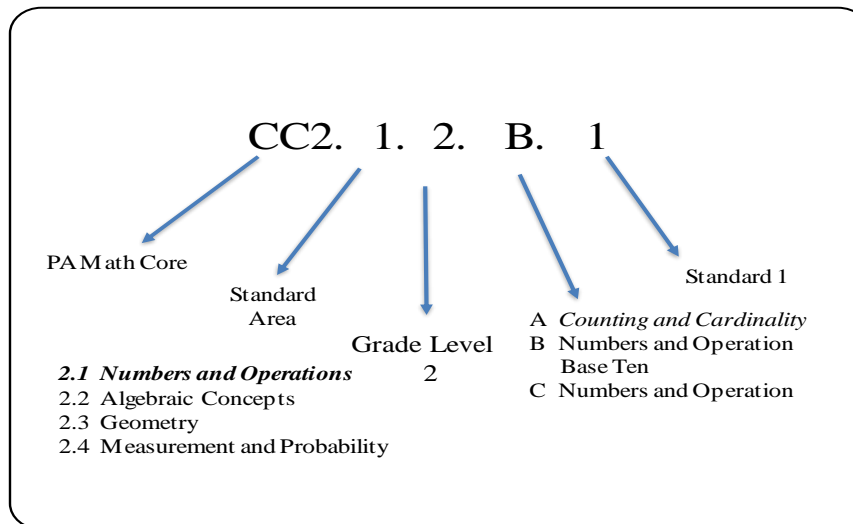
Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades (CCSS, 2013).

Adapted from: PDE SAS, 2019; CCSS, 2013

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| Mathematical Standards: Development and Progression | | | | | | | | | | | |
|---|---------------------------------------|---------------------------------------|---|---------------------------------------|---|-----------------------|---|---|---------------|-------------------------|----|
| | Pre K | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | HS |
| 2.1 Numbers and Operations | (A) Counting & Cardinality | | | | | | | | | | |
| | | (B) Number and Operations in Base Ten | | | | | (D) Ratios and Proportional Relationships | | | (F) Number and Quantity | |
| | | | | (C) Number and Operations - Fractions | | (E) The Number System | | | | | |
| 2.2 Algebraic Concepts | (A) Operations and Algebraic Thinking | | | | | | (B) Expressions and Equations | | | (D) Algebra | |
| | | | | | | | | | (C) Functions | | |
| 2.3 Geometry | (A) Geometry | | | | | | | | | | |
| 2.4 Measurement, Data and | (A) Measurement and Data | | | | | | (B) Statistics and Probability | | | | |



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Standards for Mathematical Practice in Second Grade

Below are a few examples of how the Standards for Mathematical Practices may be integrated into tasks that students complete:

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| 1. Make Sense and Persevere in Solving Problems. | Mathematically proficient students in Second Grade examine problems and tasks, can make sense of the meaning of the task and find an entry point or a way to start the task. Second Grade students also develop a foundation for problem solving strategies and become independently proficient on using those strategies to solve new tasks. In Second Grade, students' work continues to use concrete manipulatives and pictorial representations as well as mental mathematics. Second Grade students also are expected to persevere while solving tasks; that is, if students reach a point in which they are stuck, they can reexamine the task in a different way and continue to solve the task. Lastly, mathematically proficient students complete a task by asking themselves the question, "Does my answer make sense?" |
| 2. Reason abstractly and quantitatively. | Mathematically proficient students in Second Grade make sense of quantities and relationships while solving tasks. This involves two processes- decontextualizing and contextualizing. In Second Grade, students represent situations by decontextualizing tasks into numbers and symbols. For example, in the task, "There are 25 children in the cafeteria and they are joined by 17 more children. How many students are in the cafeteria?" Second Grade students translate that situation into an equation, such as: $25 + 17 = _$ and then solve the problem. Students also contextualize situations during the problem solving process. For example, while solving the task above, students can refer to the context of the task to determine that they need to subtract 19 since 19 children leave. The processes of reasoning also other areas of mathematics such as determining the length of quantities when measuring with standard units. |
| 3. Construct viable arguments and critique the reasoning of others. | Mathematically proficient students in Second Grade accurately use definitions and previously established solutions to construct viable arguments about mathematics. During discussions about problem solving strategies, students constructively critique the strategies and reasoning of their classmates. For example, while solving $74 - 18$, students may use a variety of strategies, and after working on the task, can discuss and critique each others' reasoning and strategies, citing similarities and differences between strategies. |
| 4. Model with mathematics. | Mathematically proficient students in Second Grade model real-life mathematical situations with a number sentence or an equation, and check to make sure that their equation accurately matches the problem context. Second Grade students use concrete manipulatives and pictorial representations to provide further explanation of the equation. Likewise, Second Grade students are able to create an appropriate problem situation from an equation. For example, students are expected to create a story problem for the equation $43 + 17 = _$ such as "There were 43 gumballs in the machine. Tom poured in 17 more gumballs. How many gumballs are now in the |

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| | machine?" |
| 5. Use appropriate tools strategically. | Mathematically proficient students in Second Grade have access to and use tools appropriately. These tools may include snap cubes, place value (base ten) blocks, hundreds number boards, number lines, rulers, and concrete geometric shapes (e.g., pattern blocks, 3-d solids). Students also have experiences with educational technologies, such as calculators and virtual manipulatives, which support conceptual understanding and higher-order thinking skills. During classroom instruction, students have access to various mathematical tools as well as paper, and determine which tools are the most appropriate to use. For example, while measuring the length of the hallway, students can explain why a yardstick is more appropriate to use than a ruler. |
| 6. Attend to precision. | Mathematically proficient students in Second Grade are precise in their communication, calculations, and measurements. In all mathematical tasks, students in Second Grade communicate clearly, using grade-level appropriate vocabulary accurately as well as giving precise explanations and reasoning regarding their process of finding solutions. For example, while measuring an object, care is taken to line up the tool correctly in order to get an accurate measurement. During tasks involving number sense, students consider if their answer is reasonable and check their work to ensure the accuracy of solutions. |
| 7. Look for and make use of structure. | Mathematically proficient students in Second Grade carefully look for patterns and structures in the number system and other areas of mathematics. For example, students notice number patterns within the tens place as they connect skip count by 10s off the decade to the corresponding numbers on a 100s chart. While working in the Numbers in Base Ten domain, students work with the idea that 10 ones equals a ten, and 10 tens equals 1 hundred. In addition, Second Grade students also make use of structure when they work with subtraction as missing addend problems, such as $50 - 33 = _$ can be written as $33 + _ = 50$ and can be thought of as, "How much more do I need to add to 33 to get to 50?" |
| 8. Look for and express regularity in repeated reasoning. | Mathematically proficient students in Second Grade begin to look for regularity in problem structures when solving mathematical tasks. For example, after solving two digit addition problems by decomposing numbers ($33 + 25 = 30 + 20 + 3 + 5$), students may begin to generalize and frequently apply that strategy independently on future tasks. Further, students begin to look for strategies to be more efficient in computations, including doubles strategies and making a ten. Lastly, while solving all tasks, Second Grade students accurately check for the reasonableness of their solutions during and after completing the task. |

Math



UNIT 1

Single Digit Addition and Subtraction

GRADE 2

| UNIT #/TIME PERIOD | CONCEPTS/COMPETENCIES | STANDARDS/ ELIGIBLE CONTENT | ASSESSMENTS | RESOURCES |
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| <p>Topic 2: Addition Strategies (2 weeks)</p> <p>Topic 3: Subtraction Strategies (1.5 weeks)</p> <p>Topic 1: Understanding Addition and Subtraction (2 weeks)</p> | <p>Concepts: Properties of operations</p> <p>Competencies: Fluently add and subtraction within 20 using mental strategies. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20. Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8. Add and subtract within 20. Use</p> | <p>CC.2.2.2.A.1 Represent and solve problems involving addition and subtraction within 100.</p> <p>CC.2.2.2.A.2 Use mental strategies to add and subtract within 20</p> | <p>Topic Assessments:</p> <ul style="list-style-type: none">- Topic 2 Test: Addition Strategies- Topic 3 Test: Subtraction Strategies- Topic 1 Test: Understanding Addition and Subtraction <p>Fact Fluency Formative:</p> <ul style="list-style-type: none">- Rocket Math <p>Fact Fluency Summative:</p> <ul style="list-style-type: none">- Assessment 1: Mixed facts 0-10- Assessment 2: Mixed Facts 0-10 | <p>Manipulatives: counters, beads, connecting cubes, double ten frame mat, paper bag, number cubes labeled 2-7, three part models, cotton balls, number cards, subtraction facts to 10, subtraction cards 1-18, small paper bags, part part whole mat, number cards, and 0-11, 12-20.</p> <p>Technology:</p> <ul style="list-style-type: none">- Study Island- Mathseeds |

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| | <p>strategies such as counting on; making ten; decomposing a Fluently add and subtract within 20 using mental strategies. Apply properties of operations as strategies to add and subtract (commutative property of addition; associative property of addition).</p> <p>Vocabulary: sum, difference, doubles, near doubles, addend, number sentence, part, whole, add, sum, addition sentence, plus, equals, join, subtract, subtraction sentence, minus, separate, more, fewer, related, fact family.</p> | | | <p>Acadience Math</p> |
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Math



UNIT 2 - Place Value

GRADE 2

| UNIT #/TIME PERIOD | CONCEPTS/COMPETENCIES | STANDARDS/ ELIGIBLE CONTENT | ASSESSMENTS | RESOURCES |
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| <p>Topic 5: Place Value to 100 (2 weeks)</p> <p>Topic 10: Place Value to 1000 (2 weeks)</p> | <p>Concepts: Place Value</p> <p>Represent and solve problems using addition and subtraction</p> <p>Competencies: Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons. Count within 1000; skip-count by 5s, 10s, and 100s. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.</p> | <p>CC.2.1.2.B.1 Use place value concepts to represent amounts of tens and ones and to compare three digit numbers.</p> <p>CC.2.1.2.B.2 Use place value concepts to read, write, and skip count to 1000.</p> <p>CC.2.1.2.B.3 Use place value understanding and properties of operations to add and subtract within 1000.</p> | <p>Topic Assessments:</p> <ul style="list-style-type: none">- Topic 5 Test: Place Value to 100- Topic 10 Test: Place Value to 1,000 <p>Fact Fluency Formative:</p> <ul style="list-style-type: none">- Rocket Math <p>Fact Fluency Summative:</p> <ul style="list-style-type: none">- Assessment 3: Mixed Facts 0-10- Assessment 4: Mixed Facts 0-10 | <p>Manipulatives: connecting cubes, number word chart, number cards, place value mat, hundred chart, blank hundred charts, place value blocks, tape or stapler, index cards, number cube</p> <p>Technology:</p> <ul style="list-style-type: none">- Study Island- Mathseeds <p>Acadience Math</p> |

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| | Vocabulary: digits, number word, greater than (>), less than (<), equal to (=), before, after, even, odd, hundreds, thousand, expanded form, standard form, number word, compare | | | |
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UNIT 3

Mental Addition and Subtraction and Adding and Subtraction Two Digit Numbers

GRADE 2

| UNIT #/TIME PERIOD | CONCEPTS/COMPETENCIES | STANDARDS/ ELIGIBLE CONTENT | ASSESSMENTS | RESOURCES |
|---|---|---|---|---|
| <p>Topic 6: Mental Addition (2 weeks)</p> <p>Topic 8: Adding Two Digit Numbers (2 weeks)</p> <p>Topic 7: Mental Subtraction (1.5 weeks)</p> <p>Topic 9: Subtracting 2 Digit Numbers (2 weeks)</p> | <p>Concepts: Addition and Subtraction</p> <p>Use place value and properties of operations to add and subtract.</p> <p>Competencies: Add up to four two-digit numbers using strategies based on place value and properties of operations</p> <p>Vocabulary: mental math, ten digits, next ten, regroup, number line</p> | <p>CC.2.2.2.A.1 Represent and solve problems involving addition and subtraction within 100.</p> | <p>Topic Assessments:</p> <ul style="list-style-type: none">- Topic 6 Test: Mental Addition- Topic 8 Test: Adding Two Digit Numbers- Topic 7 Test: Mental Subtraction- Topic 9 Test: Subtracting Two Digit Numbers- Combined Topic Test: Two Digit addition and subtraction with and without regrouping <p>Fact Fluency Formative:</p> | <p>Manipulatives: place value blocks, single frame mat, number cards 0-20, 2 color counters, little ten frames, index cards, bag, hundred chart, crayons, connecting cubes, place value mat A, number cards 0-11, connecting cubes, red colored pencils, index cards, little ten frames, crayons, place value blocks, connecting cubes, place value mat A,</p> |

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| | | | <ul style="list-style-type: none"> - Rocket Math <p>Fact Fluency Summative:</p> <ul style="list-style-type: none"> - Assessment 5: Mixed Facts 0-12 - Assessment 6: Mixed Facts 0-12 - Assessment 7: Mixed Facts 0-15 | <p>connecting cubes, number cube, number cards 0-11, colored pencils, number cards</p> <p>Technology:</p> <ul style="list-style-type: none"> - Study Island - Mathseeds <p>Acadience Math</p> |
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Math



UNIT 4

Three Digit Addition and Subtraction

GRADE 2

| UNIT #/TIME PERIOD | CONCEPTS/COMPETENCIES | STANDARDS/ ELIGIBLE CONTENT | ASSESSMENTS | RESOURCES |
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| <p>Topic 11: Three-Digit Addition and Subtraction (2 weeks)</p> | <p>Concepts: Place Value Addition and Subtraction</p> <p>Competencies: Add and subtract within 1000. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. Explain why addition and subtraction strategies work, using place value and the properties of operations. Use addition and subtraction within 100 to</p> | <p>CC.2.1.2.B.3 Use place value understanding and properties of operations to add and subtract within 1000.</p> | <p>Topic Assessments:</p> <ul style="list-style-type: none">- Topic 11 Test: Three-Digit Addition and Subtraction <p>Fact Fluency Formative:</p> <ul style="list-style-type: none">- Rocket Math <p>Fact Fluency Summative:</p> <ul style="list-style-type: none">- Assessment 8: Mixed Facts 0-16 | <p>Manipulatives: place value blocks, teacher made number cards, place value mat</p> <p>Technology:</p> <ul style="list-style-type: none">- Study Island- Mathseeds <p>Acadience Math</p> |

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| | <p>solve one- and two-step word problems by using drawings and equations with a symbol for the unknown number to represent the problem</p> <p>Vocabulary: no new vocabulary introduced</p> | | | |
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UNIT 5 Money

GRADE 2

| UNIT #/TIME PERIOD | CONCEPTS/COMPETENCIES | STANDARDS/ ELIGIBLE CONTENT | ASSESSMENTS | RESOURCES |
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| Topics 13 & 14: Counting Money and Money (3 weeks) | <p>Concepts: Money</p> <p>Competencies: Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.</p> <p>Vocabulary: Half-dollar, quarter, dime, nickel, penny, coins, cents, greatest value, least value, dollar bill, dollar coin, dollar sign, decimal point, and tally mark.</p> | CC.2.4.2.A.3 Solve problems and make change using coins and paper currency with appropriate symbols. | <p>Topic Assessments:</p> <ul style="list-style-type: none">- Topic 13 Test: Counting Money- Topic 14 Test: Money <p>Fact Fluency Formative:</p> <ul style="list-style-type: none">- Rocket Math <p>Fact Fluency Summative:</p> <ul style="list-style-type: none">- Assessment 9: Mixed Facts 0-18 | <p>Manipulatives: coins, paper bag, number cube, connecting cubes.</p> <p>Technology:</p> <ul style="list-style-type: none">- Study Island- Mathseeds <p>Acadience Math</p> |

Math



UNIT 6 Time, Graphs, and Data

GRADE 2

| UNIT #/TIME PERIOD | CONCEPTS/COMPETENCIES | STANDARDS/ ELIGIBLE CONTENT | ASSESSMENTS | RESOURCES |
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| <p>Topic 16: Time, Graphs, and Data (3 weeks)</p> | <p>Concepts: Time Represent and interpret data</p> <p>Competencies: Tell and write time from analog and digital clocks to the nearest five minutes. Make a line plot to show measurement data of the lengths of several objects to the nearest whole-number unit. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in</p> | <p>CC.2.4.2.A.2 Tell and write time to the nearest five minutes using both analog and digital clocks.</p> <p>CC.2.4.2.A.2 Tell and write time to the nearest five minutes using both analog and digital clocks.</p> | <p>Topic Assessments:</p> <ul style="list-style-type: none">- Topic 16 Test: Time- Topic 16 Test: Graphs and Data <p>Fact Fluency Formative:</p> <ul style="list-style-type: none">- Rocket Math <p>Fact Fluency Summative:</p> <ul style="list-style-type: none">- Assessment 10: Mixed Facts 0-18- Assessment 11 Mixed Facts 0-18 | <p>Manipulatives: clock face, demo clock, scissors, inch ruler, classroom objects, cup, connecting cubes, unit cubes, 2 color counters.</p> <p>Technology:</p> <ul style="list-style-type: none">- Study Island- Mathseeds <p>Acadience Math</p> |

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| | <p>the graph.</p> <p>Vocabulary: minute hand, minute, hour hand, hour, half hour, second, second hand, A.M., P.M., quarter past, half past, quarter to, clockwise, counterclockwise, bar graph, data, line plot, symbol, and pictograph.</p> | | | |
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UNIT 7 Measuring Length

GRADE 2

| UNIT #/TIME PERIOD | CONCEPTS/COMPETENCIES | STANDARDS/ ELIGIBLE CONTENT | ASSESSMENTS | RESOURCES |
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| <p>Topic 15: Measuring Length (2.5 weeks)</p> | <p>Concepts: Measure and estimate lengths in standard units</p> <p>Relate addition and subtraction to length</p> <p>Competencies: Measure the length of an object. by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. Measure the same length with different-sized units then discuss the measurement made with the smaller unit is more than the measurement made with the larger unit and vice versa. Estimate lengths using units of inches, feet,</p> | <p>CC.2.4.2.A.1 Measure and estimate lengths in standard units using appropriate tools.</p> <p>CC.2.4.2.A.6 Extend the concepts of addition and subtraction to problems involving length.</p> | <p>Topic Assessments:</p> <ul style="list-style-type: none">- Topic 15 Test: Measuring Length <p>Fact Fluency Formative:</p> <ul style="list-style-type: none">- Rocket Math <p>Fact Fluency Summative:</p> <ul style="list-style-type: none">- Assessment 12: Mixed Facts 0-18 | <p>Manipulatives: classroom objects, connecting cubes, pencils, index cards, small paper clips, crayons, erasers, inch ruler, centimeter ruler, yardsticks, meter sticks, string.</p> <p>Technology:</p> <ul style="list-style-type: none">- Study Island- Mathseeds <p>Acadience Math</p> |

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| | <p>centimeters, and meters. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units by using drawings and equations with a symbol for the unknown number to represent the problem. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, and represent whole-number sums and differences within 100 on a number line diagram.</p> <p>Vocabulary: unit, length, inch (in.), width, height, nearest inch, centimeter (cm.), nearest centimeter, foot (ft.), yard (yd.), meter (m),</p> | | | |
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Unit 8 Geometry

GRADE 2

| UNIT #/TIME PERIOD | CONCEPTS/COMPETENCIES | STANDARDS/ ELIGIBLE CONTENT | ASSESSMENTS | RESOURCES |
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| Topic 12: Geometry (4 weeks) | <p>Concepts:</p> <p>Reason with shapes and their attributes</p> <p>Fractions</p> <p>Competencies:</p> <p>Recognize and draw shapes having specified attributes. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. Partition circles and rectangles into two, three, or four equal shares, recognize that equal shares of identical whole need not have the same shape.</p> <p>Vocabulary:</p> <p>sphere, pyramid, cylinder, cone, cube, rectangular,</p> | <p>CC.2.3.2.A.1 Analyze and draw two- and three-dimensional shapes having specified attributes.</p> <p>CC.2.3.2.A.2 Use the understanding of fractions to partition shapes into halves, quarters, and thirds.</p> | <p>Topic Assessments:</p> <ul style="list-style-type: none">- Topic 12 Test: Geometry <p>Fact Fluency Formative:</p> <ul style="list-style-type: none">- Rocket Math | <p>Manipulatives:</p> <p>geometric solids, straws, pipe cleaners, marker, construction paper, 3 inch square pieces of paper, crayons, rulers.</p> <p>Technology:</p> <ul style="list-style-type: none">- Study Island- Mathseeds <p>Acadience Math</p> |

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| | prism, solid figure, flat surface, face, edge, vertex (vertices), plane shapes, circle, square, triangle, rectangle, polygon, angle, side, quadrilateral, pentagon, hexagon, equal, unequal, halves, thirds, fourths, rows, columns, | | | |
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Math



Unit 9

Working with Equal Groups

GRADE 2

| UNIT #/TIME PERIOD | CONCEPTS/COMPETENCIES | STANDARDS/ ELIGIBLE CONTENT | ASSESSMENTS | RESOURCES |
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| Topic 4: Working with Equal Groups (4 weeks) | <p>Concepts: Equal groups of objects</p> <p>Competencies: Determine whether a group of objects (up to 20) has an odd or even number of members and write an equation to express an even number as a sum of two equal addends. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.</p> <p>Vocabulary: array</p> | CC.2.2.2.A.3 Work with equal groups of objects to gain foundations for multiplication. | <p>Topic Assessments:</p> <ul style="list-style-type: none">- Topic 4 Test: Working with Equal Groups <p>Fact Fluency Formative:</p> <ul style="list-style-type: none">- Rocket Math | <p>Manipulatives: 2 color counters</p> <p>Technology:</p> <ul style="list-style-type: none">- Study Island- Mathseeds <p>Acadience Math</p> |