

Second Grade Mathematics Focus: Base Ten and Operational Fluency

Building an understanding of base-ten notation; fluency with addition and subtraction; describe and analyze shapes; use standard units of measurement

Number and Operations

Common Core State Standards

- 2.NBT.A.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
 - 2.NBT.A.1.A 100 can be thought of as a bundle of ten tens — called a "hundred."
 - 2.NBT.A.1.B The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
- 2.NBT.A.2 Count within 1000; skip-count by 5s, 10s, and 100s.
- 2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
- 2.NBT.A.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- 2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- 2.NBT.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.
- 2.NBT.B.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
- 2.NBT.B.8 Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.
- 2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.

<p>Unit Name:</p>	<p>Enduring Understanding</p> <ul style="list-style-type: none"> ● Use place value understanding and properties of operations to add and subtract. ● 3- digit numbers represent amounts of hundreds, tens and ones ● Place value determines which numbers are larger and smaller than others 	<p>Essential Questions</p> <ul style="list-style-type: none"> ● Is there place value in 3 digit numbers? ● How can I count to higher numbers? ● How do addition and subtraction strategies work? ● What is place value in three digit numbers? ● What kind of bundles does 100 represent? ● Why is it important to know how to read and write numbers to 1000?
<p>Knows:</p> <ul style="list-style-type: none"> ● Place value ● Properties of operations and the relationship between adding and subtracting 	<p>Understands:</p> <ul style="list-style-type: none"> ● Understand place value. ● One hundred (100) is a bundle of ten tens. 	<p>Does:</p> <ul style="list-style-type: none"> ● Use addition properties ● Add 2 or more single digit numbers by memory ● Mentally add 10 or 100 to a given number ● Mentally subtract 10 or 100 from a given number

<ul style="list-style-type: none"> Strategies for counting 		<ul style="list-style-type: none"> Utilize Number Lines – Place numbers on a number line proportionately Use place value to 1,000 Compare numbers to 1,000 Count on a Hundred Chart Skip count on a Hundred Chart Use even and odd Numbers – determine if a number is even or odd and explain why Compare two three digit numbers using greater than, less than or equal Skip count to and from by 5's, 10's and 100's (on and off decade starting at any number less than 1000) Rename a three digit number in multiple ways (eg. 729 is the same as 7 hundreds, 2 tens, 9 ones as well as 72 tens and 9 ones, etc...) Read and write numbers to 1000 using base-ten numerals, number names, and expanded form Solve word problems using money
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Operations and Algebraic Thinking

Common Core State Standards

- 2.OA.A.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- 2.OA.B.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- 2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
- 2.OA.C.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

<p>Unit Name:</p>	<p>Enduring Understanding</p> <ul style="list-style-type: none"> A two step word problems requires me to perform at least two operations to figure it out A mental strategy is the way I figure out arithmetic in my head I can analyze groups of numbers by comparing the totals 	<p>Essential Questions</p> <ul style="list-style-type: none"> What is a mental strategy? How can I analyze a group of numbers? How can I solve two step word problems? How can I recognize whether groups have an odd or even number? How can I add, using an array?
<p>Knows:</p> <ul style="list-style-type: none"> Strategies to add and subtract within 20 	<p>Understands:</p> <ul style="list-style-type: none"> Practice is essential to understanding Arrays represent equations 	<p>Does:</p> <ul style="list-style-type: none"> Work with equal groups of objects to gain foundations for multiplication Add and subtract within 20.

<ul style="list-style-type: none"> • Strategies to solve word problems • Strategies to solve two and three digit equations • Procedure to write number sentences 	<ul style="list-style-type: none"> • Even amounts differ from odd amounts 	<ul style="list-style-type: none"> • Represent and solve problems involving addition and subtraction • Addition and subtraction of 2 or more two-digit numbers – not using traditional algorithms (models, drawings, expanded form) • Addition and subtraction of 2 or more three-digit numbers – not using traditional algorithms (models, drawings, expanded form) • Regrouping tens into ones • Regrouping hundreds into tens • Write a number sentence (Examples: $3 + 5 = 7 + 1$ or $8 = 7 + 1$) • Create an array by making an orderly arrangement of the numbers I have identified. • recognize odd or even numbers in a group by counting and then comparing the totals • Problem solving strategies (models, equation, find a pattern, logical reasoning) • Solve one and two step word problems
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Geometry

Common Core State Standards

- 2.G.A.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
- 2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
- 2.G.A.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Unit Name: Geometry	Enduring Understanding <ul style="list-style-type: none"> • Attributes of shapes, including angles and equal faces, help us to understand objects and compose new shapes • Composites are formed by combining shapes • A shape can be decomposed by partitioning 	Essential Questions <ul style="list-style-type: none"> • What are the attributes of shapes? • What is a composite shape? • How are shapes decomposed? • What is the difference between defining and non defining attributes? • What are the names of shapes? • How can shapes be partitioned?
Knows: <ul style="list-style-type: none"> • What composite shapes are 	Understands: <ul style="list-style-type: none"> • A defining attribute involves shape, angles and sides • Shapes have names 	Does: <ul style="list-style-type: none"> • Identify 2D shapes (square, rectangle, circle, triangle, trapezoid, hexagon) • Identify 3D shapes (cube,

<ul style="list-style-type: none"> • Shapes by name (triangles, quadrilaterals, pentagons, hexagons and cubes) • Attributes of shapes 	<ul style="list-style-type: none"> • Circles and rectangles can be partitioned in halves, thirds, fourths and quarters, which create smaller shares of the whole. • Equal shares do not necessarily have the same shape 	<p>rectangular prism, triangular prism, hexagonal prism, square pyramid, triangle pyramid, cylinder, cone, sphere)</p> <ul style="list-style-type: none"> • Distinguish defining attributes of shapes (sides, corners, faces, edges, vertices) • Draw 2D and 3D shapes • Compose shapes to create a composite shape • Split 2D shapes into equal shares (halves, thirds, and quarters)
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Measurement and Data

Common Core State Standards

- 2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
- 2.MD.A.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
- 2.MD.A.3 Estimate lengths using units of inches, feet, centimeters, and meters.
- 2.MD.A.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
- 2.MD.B.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
- 2.MD.B.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.
- 2.MD.C.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- 2.MD.C.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?
- 2.MD.D.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
- 2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

<p>Unit Name: Measurement and Data</p>	<p>Enduring Understanding</p> <ul style="list-style-type: none"> • Data can help us understand situations • We organize our day by time • We use money to live • Addition and subtraction can be related to measurement 	<p>Essential Questions</p> <ul style="list-style-type: none"> • How do I measure objects? • Why would I use estimation? • What standard should I use to estimate measurement? • What does addition and subtraction have to do with measurement?
<p>Knows:</p> <ul style="list-style-type: none"> • Values of coins and dollars • Best tools to measure 	<p>Understands:</p> <ul style="list-style-type: none"> • An estimation is a close guess of the value, measurement or calculation of something. 	<p>Does:</p> <ul style="list-style-type: none"> • Measure using inches, feet, yards • Estimate measurement with inches, feet, meters and centimeters • Compare lengths of objects

<ul style="list-style-type: none">•	<ul style="list-style-type: none">• Measurement can be recorded on a number line.• Measurement can be categorized in four ways on a graph or in a picture.	<ul style="list-style-type: none">• Make and analyze a picture graph• Make and analyze a bar graph• Make and analyze Line Plots• Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies using \$ and ¢ appropriately
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