

Elementary Math Courses



Grades K – 5

Adopted January 21, 2014

Kindergarten

<p>Instructional Focus: In Kindergarten, instructional time should focus on two critical areas:</p> <ul style="list-style-type: none"> • Representing, relating and operating on whole numbers, initially with sets of objects. • Describing shapes and space. 	<p>Readiness Standards:</p> <ul style="list-style-type: none"> • Must be 5 years old by September 1. (School Board Policy: 1021.2)
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Kindergarten Mathematical Content Standards

Strand	Standard	Examples and Resources
Domain: Counting and Cardinality		
Know number names and the count sequence	<ul style="list-style-type: none"> • (K.CC.1) Count to 100 by ones and by tens. • (K.CC.2) Count forward beginning from a given number within the known sequence. • (K.CC.3) Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-2- (with 0 representing a count of no objects). 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • counters • number line • 100's chart • manipulatives • songs • rhymes <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>12 Ways to 11</i> by Eve Merriam • <i>3 Little Firefighters</i> by Stuart J. Murphy • <i>Animals on Board</i> by Stuart J. Murphy
Count to tell the number of objects.	<ul style="list-style-type: none"> • (K.CC.4) Understand the relationship between numbers and quantities; connect counting to cardinality. <ol style="list-style-type: none"> When counting objects, say the number names in standard order, pairing each object with one and only one number name and each number name with one and only one object. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. Understand that each successive number name refers to a quantity that is one larger. • (K.CC.5) Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array or a circle, or 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • counters • number line • 100's chart • manipulatives • songs • rhymes <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Anno's Counting Book</i> by Mitsumasa Anno • <i>Anno's Counting House</i> by Mitsumasa Anno • <i>Caps For Sale</i> by Esphyr Slobodkina

Strand	Standard	Examples and Resources
Count to tell the number of objects (cont.)	as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.	<ul style="list-style-type: none"> • <i>Changes, Changes</i> by Pat Hutchins
Compare Numbers	<ul style="list-style-type: none"> • (K.CC.6) Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group (e.g., by using matching counting, or estimating strategies). • (K.CC.7) Compare and order two numbers between 1 and 10 presented as written numerals. 	<u>Literature Connections:</u> <ul style="list-style-type: none"> • <i>Mouse Count</i> by Ellen Stoll Walsh
Domain: Operations and Algebraic Thinking		
Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from	<ul style="list-style-type: none"> • (K.OA.1) Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. • (K.OA.2) Add or subtract whole numbers to 10 (e.g., by using objects or drawings to solve word problems). • (K.OA.3) Decompose numbers less than or equal to 10 into pairs in more than one way (e.g., by using objects or drawings, and record each decomposition by a drawing or equation). • (K.OA.4) For any number from 1-4, find the number that makes 5 when added to the given number and, for any number from 1-9, find the number that makes 10 when added to the given number (e.g., by using objects, drawings or 10 frames) and record the answer with a drawing or equation. • (K.OA.5) Fluently add and subtract numbers up to 5. 	<u>Examples:</u> <ul style="list-style-type: none"> • (K.OA.3) $5 = 2 + 3$ and $5 = 4 + 1$
Identify and continue patterns.	<ul style="list-style-type: none"> • (K.OA.6) Recognize, identify and continue simple patterns of color, shape, and size. 	<u>Literature Connections:</u> <ul style="list-style-type: none"> • <i>The Grouchy Ladybug</i> by Eric Carle
Domain: Number and Operations in Base Ten		
Work with numbers 11-19 to gain foundations for place value	<ul style="list-style-type: none"> • (K.NBT.1) Compose and decompose numbers from 11 to 19 into ten ones and some further ones (e.g., by using objects or drawings) and record each composition and decomposition by a drawing or equation (e.g., $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight or nine ones. 	<u>Use:</u> <ul style="list-style-type: none"> • counters • unifix cubes • snap cubes • drawing <u>Literature Connections:</u> <ul style="list-style-type: none"> • <i>The Button Box</i> by Margarette Reid • <i>The April Rabbits</i> by David Cleveland

Strand	Standard	Examples and Resources
Domain: Measurement and Data		
Describe and compare measurable attributes	<ul style="list-style-type: none"> • (K.MD.1) Describe measurable attributes of objects (e.g., length or weight). Match measuring tools to attribute (e.g., ruler to length). Describe several measurable attributes of a single object. • (K.MD.2) Make comparisons between two objects with a measurable attribute in common to see which object has “more or”/”less of” the attribute, and describe the difference. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (K.MD.2) Directly compare the heights of two children and describe one child as taller/shorter. <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>More, Fewer, Less</i> by Tana Hoban • <i>Mighty Maddie</i> by Stuart Murphy
Classify objects and count the number of objects in each category	<ul style="list-style-type: none"> • (K.MD.3) Classify objects into given categories (attributes). Count the number of objects in each category (limit category counts to be less than or equal to 10). 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • manipulatives • pictures • counters <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>I Spy</i> books by Jean Marzollo & Walter Wick
Work with time and money	<ul style="list-style-type: none"> • (K.MD.4) Name in sequence the days of the week. • (K.MD.5) Tell time to the hour using both analog and digital clocks. • (K.MD.6) Identify coins by name. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • real and fake coins • clocks • games • calendars <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Jesse Bear, What Will You Wear?</i> by Nancy White Carlstrom • <i>Rosie’s Walk</i> by Pat Hutchins • <i>Gingerbread Boy</i> by various authors • <i>My Grandmother’s Clock</i> by Geraldine McCaughrean
Domain: Geometry		
Identify and describe shapes	<ul style="list-style-type: none"> • (K.G.1) Describe objects in the environment using names of shapes and describe their relative positions (e.g., above, below, beside, in front of, behind, next to). • (K.G.2) Name shapes regardless of their orientation or overall size. • (K.G.3) Identify shapes as two-dimensional (flat) or three-dimensional (solid). 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • Shapes include squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres. <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>I Spy</i> books by Jean Marzollo & Walter Wick • <i>Splash!</i> by Ann Jonas

Strand	Standard	Examples and Resources
<p>Analyze, compare, create, and compose shapes</p>	<ul style="list-style-type: none"> • (K.G.4) Analyze and compare two-and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices), and other attributes (e.g., having sides of equal lengths). • (K.G.5) Build shapes (e.g., using sticks and clay) and draw shapes. • (K.G.6) Put together two-dimensional shapes to form larger shapes (e.g., join two triangles with full sides touching to make a rectangle). 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • geo solids • shape manipulatives • geo boards • blocks • straws • K'NEX™ • popsicle sticks • clay/playdough

First Grade

Instructional Focus:

In Grade 1, instructional time should focus on four critical areas:

- Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20.
- Developing understanding of whole number relationships and place value, including grouping in tens and ones.
- Developing understanding of linear measurement and measuring lengths as iterating length units.
- Reasoning about attributes of, and composing and decomposing geometric shapes.

Readiness Standards:

- Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 - 2 = 5$.
- Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary.

(See Kindergarten Instructional Focus in Appendix)

Grade 1 Mathematical Content Standards

Strand	Standard	Examples and Resources
Domain: Counting and Cardinality		
Know ordinal names and counting flexibility	<ul style="list-style-type: none"> • (1.CC.1) Skip count by 2s and 5s. • (1.CC.2) Use ordinal numbers correctly when identifying object position (e.g., first, second, third). • (1.CC.3) Order numbers from 1-100. Demonstrate ability in counting forward and backward. 	<u>Literature Connections:</u> <ul style="list-style-type: none"> • <i>26 Letters and 99 Cents</i> by Tana Hoban • <i>Anno's Counting Book</i> by Mitsumasa Anno • <i>Anno's Counting House</i> by Mitsumasa Anno
Count to tell the number of objects	<ul style="list-style-type: none"> • (1.CC.4) Count a large quantity of objects by grouping into 10s and counting by 10s and 1s to find the quantity. 	<u>Use:</u> <ul style="list-style-type: none"> • counters • number grids <u>Literature Connections:</u> <ul style="list-style-type: none"> • <i>One Hundred Hungry Ants</i> by Elinor Pinczes
Compare numbers	<ul style="list-style-type: none"> • (1.CC.5) Use the symbols for greater than, less than or equal to when comparing two numbers or groups of objects. • (1.CC.6) Estimate how many and how much in a given set to 20 and then verify estimate by counting. 	<u>Literature Connections:</u> <ul style="list-style-type: none"> • <i>More or Less</i> by Stuart Murphy • <i>Alfie the Alligator</i> by Sandy Turley • <i>Greater-Than Gator and Less-Than Lovebird</i> by Rachel Warren-Stauffer

Strand	Standard	Examples and Resources
Domain: Operations and Algebraic Thinking		
Represent and solve problems involving addition and subtraction	<ul style="list-style-type: none"> • (1.OA.1) Use addition and subtraction strategies to solve word problems (using numbers up to 20), involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions, using a number line (e.g., by using objects, drawings and equations). Record and explain using equation symbols and a symbol for the unknown number to represent the problem. • (1.OA.2) Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20 (e.g., by using objects, drawings and equations). Record and explain using equation symbols and a symbol for the unknown number to represent the problem. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • counters • unifix cubes • connecting cubes <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>City By Numbers</i> by Stephen Johnson • <i>The Great Pet Sale</i> by Mick Inkpen
Understand and apply properties of operations and the relationship between addition and subtraction	<ul style="list-style-type: none"> • (1.OA.3) Apply properties of operations as strategies to add and subtract (students need not know the name of the property). • (1.OA.4) Understand subtraction as an unknown-addend problem. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (1.OA.3) If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known (commutative property of addition). To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$ (associative property of addition). Demonstrate that when adding zero to any number, the quantity does not change (identity property of addition). • (1.OA.4) Subtract $10 - 8$ by finding the number that makes 10 when added to 8.
Add and subtract using numbers up to 20	<ul style="list-style-type: none"> • (1.OA.5) Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). • (1.OA.6) Add and subtract using numbers up to 20, demonstrating fluency for addition and subtraction up to 10. Use strategies such as: <ul style="list-style-type: none"> ✓ counting on ✓ making ten ($8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$) ✓ decomposing a number leading to a ten ($13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$) ✓ using the relationship between addition and subtraction, such as fact families, ($8 + 4 = 12$ and $12 - 8 = 4$) ✓ creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$). 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>20 is Too Many</i> By Kate Duke • <i>Pigs on a Blanket</i> by Amy Axelford

Strand	Standard	Examples and Resources
Work with addition and subtraction equations	<ul style="list-style-type: none"> (1.OA.7) Understand the meaning of the equal sign (e.g., read equal sign as “same as”) and determine if equations involving addition and subtraction are true or false. (1.OA.8) Determine the unknown whole number in an addition or subtraction equation. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> (1.OA.7) Which of the following equations are true and which are false? ($6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$). (1.OA.8) Determine the unknown number that makes the equation true in each of the equations ($8 + ? = 11$, $6 + 6 = ?$, $5 = ? - 3$).
Identify and continue patterns	<ul style="list-style-type: none"> (1.OA.9) Identify, continue and label patterns (e.g., aabb, abab). Create patterns using number, shape, size, rhythm or color. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> pattern blocks manipulatives quilt patterns <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> <i>Pattern Bugs</i> by Trudy Harris <i>A-B-A-B-A A Book of Pattern Play</i> by Brian Cleary <i>Mr. Noisy’s Book of Patterns</i> by Rozanne Lanczak
Domain: Number and Operations in Base Ten		
Extend the counting sequence	<ul style="list-style-type: none"> (1.NBT.1) Count to 120. In this range, read, write and order numerals and represent a number of objects with a written numeral. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> <i>Let’s Count</i> by Tana Hoban
Understand place value	<ul style="list-style-type: none"> (1.NBT.2) Model and identify place value positions of two digit numbers. Include: <ul style="list-style-type: none"> a) 10 can be thought of as a bundle of ten ones, called a “ten.” b) The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight or nine ones. c) The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90, refer to one, two, three, four, five, six, seven, eight or nine tens (and 0 ones). (1.NBT.3) Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, $<$. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> bundled straws place value cards place value flip charts <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> <i>The Father Who Had Ten Children</i> by Bendicte Guettier <i>The Warlord’s Beads</i> by Virginia Pilegard

Strand	Standard	Examples and Resources
<p>Use place value understanding and properties of operations to add and subtract</p>	<ul style="list-style-type: none"> • (1.NBT.4) Add using numbers up to 100 including adding a two-digit number and a one-digit number and adding a two-digit number and a multiple of 10. Use: <ul style="list-style-type: none"> ✓ concrete models or drawings and strategies based on place value. ✓ properties of operations. ✓ and/or relationship between addition and subtraction. Relate the strategy to a written method and explain the reasoning used. Demonstrate in adding two-digit numbers, ten and tens are added, ones and ones are added and sometimes it is necessary too compose a ten from ten ones. • (1.NBT.5) Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. • (1.NBT.6) Subtract multiples of 10 up to 100. Use: <ul style="list-style-type: none"> ✓ concrete models or drawings and strategies based on place value. ✓ properties of operations. ✓ and/or relationship between addition and subtraction. Relate the strategy to a written method and explain the reasoning used. 	
<p>Domain: Measurement and Data</p>		
<p>Measure lengths indirectly and by iterating length units</p>	<ul style="list-style-type: none"> • (1.MD.1) Measure and compare three objects using standard or non-standard units. • (1.MD.2) Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>How Big Is a Foot?</i> by Rolf Myller • <i>How Many Feet in the Bed?</i> by Diane Johnston Hamm • <i>Jim and the Beanstalk</i> by Raymond Briggs
<p>Work with time and money</p>	<ul style="list-style-type: none"> • (1.MD.3) Tell and write time in half hours using both analog and digital clocks. • (1.MD.4) Read a calendar distinguishing yesterday, today and tomorrow. Read and write a date. • (1.MD.5) Recognize and read money symbols including \$ and ¢. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • real coins • daily calendar activities • daily activity time charts • sorting maps • Double Bubble Thinking Maps

Strand	Standard	Examples and Resources
Work with time and money (cont.)	<ul style="list-style-type: none"> (1.MD.6) Identify values of coins (e.g., nickel = 5 cents, quarter = 25 cents). Identify equivalent values of coins up to \$1 (e.g., 5 pennies = 1 nickel, 5 nickels = 1 quarter). 	<u>Literature Connections:</u> <ul style="list-style-type: none"> <i>Follow the Money!</i> by Loreen Leedy <i>It's About Time, Max!</i> by Kitty Richards <i>Just Enough Carrots</i> by Stuart Murphy
Represent and interpret data	<ul style="list-style-type: none"> (1.MD.7) Organize, represent and interpret data with up to three categories. Ask and answer comparison and quantity questions about the data. 	
Domain: Geometry		
Reason with shapes and their attributes.	<ul style="list-style-type: none"> (1.G.1) Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes. Identify shapes that have non-defining attributes (e.g., color, orientation, overall size). Build and draw shapes given specified attributes. (1.G.2) Compose (put together) two-dimensional or three-dimensional shapes to create a larger, composite shape, and compose new shapes from the composite shape. (1.G.3) Partition circles and rectangles into two and four equal shares. Describe the shares using the words, <i>halves</i>, <i>fourths</i>, and <i>quarters</i> and phrases <i>half of</i>, <i>fourth of</i> and <i>quarter of</i>. Describe the whole as two of or four of the shares. Understand for these examples that decomposing (break apart) into more equal shares create smaller shares. 	<u>Use:</u> <ul style="list-style-type: none"> pattern blocks tangrams <u>Literature Connections:</u> <ul style="list-style-type: none"> <i>Three Pigs, One Wolf & Seven Magic Shapes</i> by Grace Maccarone <i>Each Orange had 8 Slices</i> by Paul Giganti Jr. <i>Cubes, Cones, Cylinders & Spheres</i> by Tana Hoban <i>Eating Fractions</i> by Brice McMillan <i>Ed Emberley's Picture</i> by Ed Emberley <i>Round is a Mooncake: A Book of Shapes</i> by Roseanne Thong

Second Grade

Instructional Focus:

In Grade 2, instructional time should focus on four critical areas:

- Extending understanding of base-ten notation.
- Building fluency with addition and subtraction.
- Using standard units of measure.
- Describing and analyzing shapes.

Readiness Standards:

- Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers.
- Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10.
- Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.
- Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes.

(See First Grade Instructional Focus in Appendix)

Grade 2 Mathematical Content Standards

Strand	Standard	Examples and Resources
Domain: Operations and Algebraic Thinking		
Represent and solve problems involving addition and subtraction	<ul style="list-style-type: none"> • (2.OA.1) Use addition and subtraction strategies to estimate, then solve one- and two-step word problems (using numbers up to 100) involving situation of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions (e.g., by using objects, drawings and equations). Record and explain using equation symbols and a symbol for the unknown number to represent the problem. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Only One</i> by Marc Harshman
Add and subtract using numbers up to 20	<ul style="list-style-type: none"> • (2.OA.2) Fluently add and subtract using numbers up to 20 using mental strategies. Know from memory all sums of two one-digit numbers. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Hershey's Kisses Subtraction Book</i> by Jerry Pallotta • <i>The Big Buck Adventure</i> by Shelley Gill

Strand	Standard	Examples and Resources
Work with equal groups of objects to gain foundations for multiplication	<ul style="list-style-type: none"> • (2.OA.3) Determine whether a group of objects (up to 20) is odd or even (e.g., by pairing objects and comparing, counting by 2s). Model an even number as two equal groups of objects and then write an equation as a sum of two equal addends. • (2.OA.4) Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns. Write an equation to express the total as repeated addition (e.g., array of 4 by 5 would be $5 + 5 + 5 + 5 = 20$). 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • graph paper • counters • manipulatives
Identify and continue patterns	<ul style="list-style-type: none"> • (2.OA.5) Identify, continue and label number patterns (e.g., aabb, abab). Describe a rule that determines and continues a sequence or pattern. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • pattern blocks • 100's chart
Domain: Number and Operations in Base Ten		
Understand place value	<ul style="list-style-type: none"> • (2.NBT.1) Model and identify place value positions of three digit numbers. Include: <ul style="list-style-type: none"> a. 100 can be thought of as a bundle of ten tens – called a “hundred.” b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or none hundreds (and 0 tens and 0 ones). • (2.NBT.2) Count up to 1000, skip-count by 5s, 10s and 100s. • (2.NBT.3) Read, write, order up to 1000 using base-ten numerals, number names and expanded form. • (2.NBT.4) Compare two three-digit numbers based on the meanings of the hundreds, tens and ones digits, using $>$, $=$, $<$ symbols to record the results. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • counters • hundreds chart • number lines • unifix cubes <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>One Hundred Hungry Ants</i> by Elinor Pinczes • <i>Pigs will be Pigs</i> by Amy Axelrod • <i>The Grapes of Math</i> by Greg Tang
Use place value understanding and properties of operations to add and subtract	<ul style="list-style-type: none"> • (2.NBT.5) Fluently add and subtract using numbers up to 100. Use: <ul style="list-style-type: none"> ✓ strategies based on place value, ✓ properties of operations, ✓ and/or the relationship between addition and subtraction. • (2.NBT.6) Add up to four two-digit numbers using strategies based on place value and properties of operations. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>A Place for Zero: A Math Adventure</i> by Angeline Sparagna Lopresti • <i>A Remainder of One</i> by Elinor J. Pinczes • <i>Hershey's Kisses Subtraction Book</i> by Jerry Pallotta

Strand	Standard	Examples and Resources
<p>Use place value understanding and properties of operations to add and subtract (cont.)</p>	<ul style="list-style-type: none"> • (2.NBT.7) Add and subtract using numbers up to 1000. Use: <ul style="list-style-type: none"> ✓ concrete models or drawings and strategies based on place value, ✓ properties of operations, ✓ and/or relationship between addition and subtraction. <p>Relate the strategy to a written method and explain the reasoning used. Demonstrate in adding or subtracting three-digit numbers, hundreds and hundreds are added or subtracted, tens and tens are added or subtracted, ones and ones are added or subtracted and sometimes it is necessary to compose a ten from ten ones or a hundred from ten tens.</p> • (2.NBT.8) Mentally add 10 or 100 to a given number 100-900 and mentally subtract 10 or 100 from a given number. • (2.NBT.9) Explain or illustrate the processes of addition or subtraction and their relationship using place value and the properties of operations. 	
<p>Domain: Measurement and Data</p>		
<p>Measure and estimate lengths in standard units</p>	<ul style="list-style-type: none"> • (2.MD.1) Measure the length of an object by selecting and using standard tools such as rulers, yardsticks, meter sticks, and measuring tapes. • (2.MD.2) Measure the length of an object twice using different length units for the two measurements. Describe how the two measurements relate to the size of the units chosen. • (2.MD.3) Estimate, measure and draw lengths using whole units of inches, feet, yards, centimeters and meters. • (2.MD.4) Measure to compare lengths of two objects, expressing the difference in terms of a standard length unit. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • meter sticks • rulers • yard sticks • measuring tape <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Measuring Penny</i> by Loreen Leedy • <i>Millions to Measure</i> by David M. Schwartz
<p>Relate addition and subtraction to length</p>	<ul style="list-style-type: none"> • (2.MD.5) Solve addition and subtraction word problems using numbers up to 100 involving length that are given in the same units (e.g., by using drawings of rulers). Write an equation with a symbol for the unknown to represent the problem. • (2.MD.6) Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • number lines • 100's chart • graph paper • counters <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>On Beyond a Million: An Amazing Math Journey</i> by David M. Schwartz

Strand	Standard	Examples and Resources
Work with time and money	<ul style="list-style-type: none"> • (2.MD.7) Tell and write time to the nearest five minutes using a.m. and p.m. from analog and digital clocks. • (2.MD.8) Solve word problems involving dollar bills and coins using the \$ and ¢ symbols appropriately. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • clocks • real and fake money • store advertisements <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Alexander, Who Used to Be Rich Last Sunday</i> by Judith Viorst • <i>Pigs Go to Market: Fun with Math and Shopping</i> by Amy Axelrod • <i>Pigs in the Pantry: Fun with Math and Cooking</i> by Amy Axelrod • <i>Sold! A Mathematics Adventure</i> by Nathan Zimelman
Represent and interpret data	<ul style="list-style-type: none"> • (2.MD.9) Collect, record, interpret, represent, and describe data in a table, graph or line plot. • (2.MD.10) Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart and compare problems using information presented in a bar graph. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • graph paper • informational text • cubes • pattern blocks <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>One Grain of Rice: A Mathematical Folktale</i> by Demi • <i>Pattern: (Math Counts)</i> by Henry Pluckrose
Domain: Geometry		
Reason with shapes and their attributes	<ul style="list-style-type: none"> • (2.G.1) Identify and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces compared visually, not by measuring. Identify triangles, quadrilaterals, pentagons, hexagons and cubes. • (2.G.2) Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. • (2.G.3) Partition circles and rectangles into shares, describe the shares using the words <i>halves</i>, <i>thirds</i>, <i>half of</i>, <i>a third of</i>, 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. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • geo shapes • geo boards • geo solids • blocks • straws • popsicle sticks <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Shapes, Shapes, Shapes</i> by Tana Hoban • <i>The Art of Shapes: For Children and Adults</i> by Margaret Steele • <i>The Greedy Triangle</i> by Marilyn Burns • <i>Three Pigs, One Wolf, & Seven Magic Shapes</i> by Grace MacCrone

Third Grade

Instructional Focus:

In Grade 3, instructional time should focus on four critical areas:

- Developing understanding of multiplication and division and strategies for multiplication and division within 100.
- Developing understanding of fractions, especially unit fractions (fractions with numerator 1).
- Developing understanding of the structure of rectangular arrays and of area.
- Describing and analyzing two-dimensional shapes.

Readiness Standards:

- Students extend their understanding of 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 use their understanding of addition to develop fluency with addition and subtraction within 100.
- 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.
- 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.

(See Second Grade Instructional Focus in Appendix)

Grade 3 Mathematical Content Standards

Strand	Standard	Examples and Resources
Domain: Operations and Algebraic Thinking		
<p>Represent and solve problems involving multiplication and division</p>	<ul style="list-style-type: none"> • (3.OA.1) Interpret products of whole numbers (e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each). • (3.OA.2) Interpret whole-number quotients of whole numbers (e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each). • (3.OA.3) Use multiplication and division numbers up to 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem). • (3.OA.4) Determine the unknown whole number in a multiplication or division equation relating three whole numbers. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (3.OA.1) Show objects in rectangular arrays or describe a context in which a total number of objects can be expressed as 5×7. • (3.OA.2) Deconstruct rectangular arrays or describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$. • (3.OA.4) Determine the unknown number that makes the equation true in each of the equations ($8 \times ? = 48$, $5 = ? \div 3$, $6 \times 6 = ?$).

Strand	Standard	Examples and Resources
<p>Understand properties of multiplication and the relationship between multiplication and division</p>	<ul style="list-style-type: none"> • (3.OA.5) Make, test, support, draw conclusions, and justify conjectures about properties of operations as strategies to multiply and divide (students need not use formal terms for these properties). <ul style="list-style-type: none"> ✓ Commutative property of multiplication: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. ✓ Associative property of multiplication: $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. ✓ Distributive property: Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. ✓ Inverse property (relationship) of multiplication and division. • (3.OA.6) Understand division as an unknown-factor problem. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (3.OA.6) Find $32 \div 8$ by finding the number that makes 32 when multiplied by 8. <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>The I Hate Mathematics! Book</i> by Marilyn Burns • <i>The King's Chessboard</i> by David Birch
<p>Multiply and divide up to 100</p>	<ul style="list-style-type: none"> • (3.OA.7) Fluently multiply and divide numbers up to 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • counters • graph paper • arrays <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Hershey's Mik Chocolate Multiplication Book</i> by Jerry Pallotta • <i>M&M's Brand Chocolate Candies Math</i> by Barbara McGrath • <i>Movin' Through Multiplication</i> by Karen Allen
<p>Solve problems involving the four operations, and identify and explain patterns in arithmetic</p>	<ul style="list-style-type: none"> • (3.OA.8) Solve and create two-step word problems using any of the four operations. Represent these problems using equations with a symbol (box, circle, question mark) standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. • (3.OA.9) Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (3.OA.9) Observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends. <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Who Sank the Boat?</i> by Pamela Allen

Strand	Standard	Examples and Resources
Domain: Number and Operations in Base Ten		
Use place value understanding and properties of operations to perform multi-digit arithmetic	<ul style="list-style-type: none"> • (3.NBT.1) Use place value understanding to round whole numbers to the nearest 10 or 100. • (3.NBT.2) Use strategies and/or algorithms to fluently add and subtract with numbers up to 1000, demonstrating understanding of place value, properties of operations, and/or the relationship between addition and subtraction. • (3.NBT.3) Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9×80, 10×60) using strategies based on place value and properties of operations. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>The Best of Times</i> by Gregory Tang • <i>Anno's Mysterious Multiplying Jar</i> by Masaichiro & Mitsumasa Anno • <i>If You Made a Million</i> by David M. Schwartz
Domain: Numbers and Operations – Fractions (Limited in this grade to fractions with denominators 2, 3, 4, 6, and 8)		
Develop understanding of fractions as numbers	<ul style="list-style-type: none"> • (3.NF.1) Understand a fraction $1/b$ (e.g., $1/4$) as the quantity formed by 1 part when a whole is partitioned into b (e.g., 4) equal parts; understand a fraction a/b (e.g., $2/4$) as the quantity formed by a (e.g., 2) parts of size $1/b$ (e.g., $1/4$). • (3.NF.2) Understand a fraction as a number on the number line; represent fractions on a number line diagram. <ul style="list-style-type: none"> a. Represent a fraction $1/b$ (e.g., $1/4$) on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b (e.g., 4) equal parts. Recognize that each part has size $1/b$ (e.g., $1/4$) and that the endpoint of the part based at 0 locates the number $1/b$ (e.g., $1/4$) on the number line. b. Represent a fraction a/b (e.g., $2/8$) on a number line diagram or ruler by marking off a lengths $1/b$ (e.g., $1/8$) from 0. Recognize that the resulting interval has size a/b (e.g., $2/8$) and that its endpoint locates the number a/b (e.g., $2/8$) on the number line. • (3.NF.3) Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. <ul style="list-style-type: none"> a. Understand two fractions as equivalent if they are the same size (modeled) or the same point on a number line. b. Recognize and generate simple equivalent fractions (e.g., $1/2 = 2/4$, $4/6 = 2/3$). Explain why the fractions are equivalent (e.g., by using a visual fraction model). 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (3.NF.3c) Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram. <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Eating Fractions</i> by Bruce McMillan • <i>Lao Lao of Dragon Mountain</i> by Margaret Bateson Hill

Strand	Standard	Examples and Resources
Develop understanding of fractions as numbers (cont.)	<ul style="list-style-type: none"> c. Express and model whole numbers as fractions, and recognize and construct fractions that are equivalent to whole numbers. • Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions (e.g., by using a visual fraction model). 	
Domain: Measurement and Data		
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects	<ul style="list-style-type: none"> • (3.MD.1) Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes or hours (e.g., by representing the problem on a number line diagram or clock). • (3.MD.2) Estimate and measure liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). (Excludes compound units such as cm^3 and finding the geometric volume of a container.) Add, subtract, multiply, or divide to solve and create one-step word problems involving masses or volumes that are given in the same units (e.g., by using drawings, such as a beaker with a measurement scale, to represent the problem). (Excludes multiplicative comparison problems [problems involving notions of “times as much.”]). • (3.MD.3) Select an appropriate unit of English, metric, or non-standard measurement to estimate the length, time, weight, or temperature. 	
Represent and interpret data	<ul style="list-style-type: none"> • (3.MD.4) Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. • (3.MD.5) Measure and record lengths using rulers marked with halves and fourths of an inch. Make a line plot with the data, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. • (3.MD.6) Explain the classification of data from real-world problems shown in graphical representations. Use the terms minimum and maximum. 	<p>Examples:</p> <ul style="list-style-type: none"> • (3.MD.4) Draw a bar graph in which each square in the bar graph might represent 5 pets. <p>Literature Connections:</p> <ul style="list-style-type: none"> • <i>How Big Is a Foot?</i> by Rolf Myller • <i>Millions to Measure</i> by David M. Schwartz • <i>A Million Fish... More or Less</i> by Patricia C. McKissack • <i>Anno's Magic Seeds</i> by Mitsumasa Anno • <i>On Beyond a Million: An Amazing Math Journey</i> by David M. Schwartz

Strand	Standard	Examples and Resources
<p>Geometric measurement: understand concepts of area and relate area to multiplication and to addition</p>	<ul style="list-style-type: none"> • (3.MD.7) Recognize area as an attribute of plane figures and understand concepts of area measurement. <ol style="list-style-type: none"> a. A square with side length 1 unit is said to have “one square unit” and can be used to measure area. b. Demonstrate that a plane figure which can be covered without gaps or overlaps by n (e.g., 6) unit squares is said to have an area of n (e.g., 6) square units. • (3.MD.8) Measure areas by tiling with unit squares (square centimeters, square meters, square inches, square feet, and improvised units). • (3.MD.9) Relate area to the operations of multiplication and addition. <ol style="list-style-type: none"> a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. c. Use area models (rectangular arrays) to represent the distributive property in mathematical reasoning. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths A and $B + C$ is the sum of $A \times B$ and $A \times C$. d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (3.MD.9a) After tiling rectangles, develop a rule for finding the area of any rectangle. • (3.MD.9d) The area of a 7 by 8 rectangle can be determined by decomposing it into a 7 by 3 rectangle and a 7 by 5 rectangle. <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Ben Franklin and the Magic Squares</i> by Frank Murphy • <i>Math-terpieces: The Art of Problem-Solving</i> by Greg Tang • <i>Sir Cumference and the Great Knight of Angleland</i> by Cindy Neuschwander
<p>Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures</p>	<ul style="list-style-type: none"> • (3.MD.10) Solve real world and mathematical problems involving perimeters of polygons, including: <ul style="list-style-type: none"> ✓ finding the perimeter given the side lengths, ✓ finding an unknown side length, ✓ exhibiting rectangles with the same perimeter and different areas, and ✓ exhibiting rectangles with the same area and different perimeters. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • geo solids • geo boards • graph paper <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>The Art of Shapes: For Children and Adults</i> by Margaret Steele • <i>Cubes, Cones, Cylinders, & Spheres</i> by Tana Hoban

Strand	Standard	Examples and Resources
Domain: Geometry		
Reason with shapes and their attributes	<ul style="list-style-type: none"> • (3.G.1) Categorize shapes by different attribute classifications and recognize that shared attributes can define a larger category. Generalize to create examples or non-examples. • (3.G.2) Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (3.G.2) Partition a shape into 4 parts with equal area, and describe the area of each part as $\frac{1}{4}$ of the area of the shape.

Fourth Grade

Instructional Focus:

In grade 4, instructional time should focus on three critical areas:

- Developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends.
- Developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers.
- Understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

Readiness Standards:

- Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations.
- Students develop an understanding of fractions, beginning with unit fractions.
- Students recognize area as an attribute of two-dimensional regions.
- Students describe, analyze, and compare properties of two-dimensional shapes.

(See Third Grade Instructional Focus in Appendix)

Grade 4 Mathematical Content Standards

Strand	Standard	Examples and Resources
Domain: Operations and Algebraic Thinking		
<p>Use the four operations with whole numbers to solve problems</p>	<ul style="list-style-type: none"> • (4.OA.1) Interpret a multiplication equation as a comparison (e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 groups of 7 and 7 groups of 5). (Commutative property) Represent verbal statements of multiplicative comparisons as multiplication equations (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem or missing numbers in an array). • (4.OA.2) Multiply or divide to solve word problems involving multiplicative comparison. Distinguish multiplicative comparison from additive comparison. • (4.OA.3) Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>The I Hate Mathematics! Book</i> by Marilyn Burns • <i>The Everything Kids' Joke Book: Side-Splitting, Rib-Tickling Fun</i> by Michael Dahl

Strand	Standard	Examples and Resources
Gain familiarity with factors and multiples	<ul style="list-style-type: none"> • (4.OA.4) <ul style="list-style-type: none"> ✓ Find all factor pairs for a whole number in the range 1–100. ✓ Explain the correlation/differences between multiples and factors. ✓ Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. ✓ Determine whether a given whole number in the range 1–100 is prime or composite. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>The History of Counting</i> by Denise Schmandt-Besserat • <i>12 Ways to Get to 11</i> by Eve Merriam
Generate and analyze patterns	<ul style="list-style-type: none"> • (4.OA.5) Generate a number, shape pattern, table, t-chart, or input/output function that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. Be able to express the pattern in algebraic terms. • (4.OA.6) Extend patterns that use addition, subtraction, multiplication, division or symbols, up to 10 terms, represented by models (function machines), tables, sequences, or in problem situations. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (4.OA.5) Given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.
Domain: Number and Operations in Base Ten		
Generalize place value understanding for multi-digit whole numbers	<ul style="list-style-type: none"> • (4.NBT.1) Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. • (4.NBT.2) Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on the value of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. • (4.NBT.3) Use place value understanding to round multi-digit whole numbers to any place using a variety of estimation methods; be able to describe, compare, and contrast solutions. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (4.NBT.1) Recognize that $700 \div 70 = 10$ by applying concepts of place value and division. <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>A Remainder of One</i> by Elinor J. Pinczes
Use place value understanding and properties of operations to perform multi-digit arithmetic	<ul style="list-style-type: none"> • (4.NBT.4) Fluently add and subtract multi-digit whole numbers using any algorithm. Verify the reasonableness of the results. • (4.NBT.5) Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Count Your Way Through Africa</i> by Jim Haskins • <i>Count Your Way Through Brazil</i> by Jim Haskins & Kathleen Benson • <i>Count Your Way Through China</i> by Jim Haskins • <i>Count Your Way Through India</i> by Jim Haskins • <i>Count Your Way Through Israel</i> by Jim Haskins • <i>Count Your Way Through Japan</i> by Jim Haskins • <i>Count Your Way Through Mexico</i> by Jim Haskins

Strand	Standard	Examples and Resources
Use place value understanding and properties of operations to perform multi-digit arithmetic (cont.)	<ul style="list-style-type: none"> (4.NBT.6) Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 	<ul style="list-style-type: none"> <i>Count Your Way Through Russia</i> by Jim Haskins
Domain: Number and Operations – Fractions (Limited in this grade to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100)		
Extend understanding of fraction equivalence and ordering	<ul style="list-style-type: none"> (4.NF.1) Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. (4.NF.2) Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$). Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions (e.g., by using a visual fraction model). 	
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers	<ul style="list-style-type: none"> (4.NF.3) Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. <ol style="list-style-type: none"> Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions (e.g., by using a visual fraction model). Add and subtract mixed numbers with like denominators (e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction). Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators (e.g., by using visual fraction models and equations to represent the problem). 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> (4.NF.3b) $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$. (4.NF.4a) Use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$. (4.NF.4b) Use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.) (4.NF.4c) If each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> <i>Fannie in the Kitchen: The Whole Story from Soup to Nuts of How Fannie Farmer Invented Recipes with Precise Measurements</i> by Deborah Hopkinson

Strand	Standard	Examples and Resources
<p>Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers (cont.)</p>	<ul style="list-style-type: none"> • (4.NF.4) Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. <ol style="list-style-type: none"> a. Understand a fraction a/b as a multiple of $1/b$. b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. • Solve word problems involving multiplication of a fraction by a whole number (e.g., by using visual fraction models and equations to represent the problem). Check for the reasonableness of the answer. 	
<p>Understand decimal notation for fractions, and compare decimal fractions</p>	<ul style="list-style-type: none"> • (4.NF.5) Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. • (4.NF.6) Use decimal notation for fractions with denominators 10 or 100. • (4.NF.7) Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions (e.g., by using a visual model). 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (4.NF.5) Express $3/10$ as $30/100$, and add $3/10 + 4/100 = 34/100$. • (4.NF.6) Rewrite 0.62 as $62/100$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.
<p>Domain: Measurement and Data</p>		
<p>Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit, and involving time</p>	<ul style="list-style-type: none"> • (4.MD.1) Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb., oz.; l, ml; hr., min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. • (4.MD.2) Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. • (4.MD.3) Apply the area and perimeter formulas for rectangles in real world and mathematical problems. • (4.MD.4) Solve real-world problems involving elapsed time between U.S. time zones (including Alaska Standard time). 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (4.MD.1) Know that 1 ft. is 12 times as long as 1 in. Express the length of a 4 ft. snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36). • (4.MD.3) Find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Gregory and the Magic Line</i> by Dawn Piggot • <i>Inchworm and a Half</i> by Elinor J. Pinczes • <i>Is a Blue Whale the Biggest Thing There Is?</i> by Robert E. Wells • <i>Millions to Measure</i> by David M. Schwartz

Strand	Standard	Examples and Resources
<p>Represent and interpret data</p>	<ul style="list-style-type: none"> • (4.MD.5) Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. • (4.MD.6) Explain the classification of data from real-world problems shown in graphical representations including the use of terms range and mode with a given set of data. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (4.MD.5) From a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.
<p>Geometric measurement: understand concepts of angle and measure angles</p>	<ul style="list-style-type: none"> • (4.MD.7) Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand the following concepts of angle measurement: <ul style="list-style-type: none"> a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a “one-degree angle,” and can be used to measure angles. b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees. • (4.MD.8) Measure and draw angles in whole-number degrees using a protractor. Estimate and sketch angles of specified measure. • (4.MD.9) Recognize angle measure as additive. When an angle is divided into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems (e.g., by using an equation with a symbol for the unknown angle measure). 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>The Greedy Triangle</i> by Marilyn Burns • <i>Shape Up!</i> by David A. Adler • <i>Actual Size</i> by Steve Jenkins • <i>Mummy Math: An Adventure in Geometry</i> by Cindy Neuschwander • <i>Piece=Part=Portion: Fractions=Decimals=Percents</i> by Scott Gifford
<p>Domain: Geometry</p>		
<p>Draw and identify lines and angles, and classify shapes by properties of their lines and angles</p>	<ul style="list-style-type: none"> • (4.G.1) Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular, parallel, and intersecting line segments. Identify these in two-dimensional (plane) figures. • (4.G.2) Classify two-dimensional (plane) figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Reflections</i> by Ann Jonas • <i>Sea Squares</i> by Joy N. Hulme • <i>Shadows and Reflections</i> by Tana Hoban • <i>Mummy Math: An Adventure in Geometry</i> by Cindy Neuschwander • <i>My Full Moon Is Square</i> by Elinor J. Pinczes

Strand	Standard	Examples and Resources
<p>Draw and identify lines and angles, and classify shapes by properties of their lines and angles</p>	<ul style="list-style-type: none"> • (4.G.3) Recognize a line of symmetry for a two-dimensional (plane) figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. 	

Fifth Grade

<p>Instructional Focus: In grade 5, instructional time should focus on three critical areas:</p> <ul style="list-style-type: none"> • Developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions). • Extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations. • Developing understanding of volume. 	<p>Readiness Standards:</p> <ul style="list-style-type: none"> • Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. • Students develop understanding of fraction equivalence and operations with fractions. • Students describe, analyze, compare, and classify two-dimensional shapes. <p style="text-align: center;"><i>(See Fourth Grade Instructional Focus in Appendix)</i></p>
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Grade 5 Mathematical Content Standards

Strand	Standard	Examples and Resources
Domain: Operations and Algebraic Thinking		
Write and interpret numerical expressions.	<ul style="list-style-type: none"> • (5.OA.1) Use parentheses to construct numerical expressions, and evaluate numerical expressions with these symbols. • (5.OA.2) Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (5.OA.2) Express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognizing that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.
Analyze patterns and relationships	<ul style="list-style-type: none"> • (5.OA.3) Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (5.OA.3) Given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.
Domain: Number and Operations in Base Ten		
Understand the place value system	<ul style="list-style-type: none"> • (5.NBT.1) Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • multiplication charts • number lines • graph paper

Strand	Standard	Examples and Resources
<p>Understand the place value system (cont.)</p>	<ul style="list-style-type: none"> • (5.NBT.2) Explain and extend the patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain and extend the patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. • (5.NBT.3) Read, write, and compare decimals to thousandths. <ul style="list-style-type: none"> a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form [e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 (1/10) + 9 (1/100) + 2 (1/1000)$]. b. Compare two decimals to thousandths place based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. • (5.NBT.4) Use place values understanding to round decimals to any place. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>12 Ways to Get to 11</i> by Eve Merriam • <i>A Cloak for the Dreamer</i> by Aileen Friedman • <i>Math Talk: Mathematical Ideas in Poems for Two Voices</i> by Theoni Pappas • <i>Mr. Archimedes' Bath</i> by Pamela Allen • <i>One Hundred Hungry Ants</i> by Elinor J. Pinczes
<p>Perform operations with multi-digit whole numbers and with decimals to hundredths</p>	<ul style="list-style-type: none"> • (5.NBT.5) Fluently multiply multi-digit whole numbers using a standard algorithm. • (5.NBT.6) Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, number lines, real life situations, and/or area models. • (5.NBT.7) Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between the operations. Relate the strategy to a written method and explain their reasoning in getting their answers. 	
<p>Domain: Number and Operations - Fractions</p>		
<p>Use equivalent fractions as a strategy to add and subtract fractions</p>	<ul style="list-style-type: none"> • (5.NF.1) Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (5.NF.1) $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.) • (5.NF.2) Recognize an incorrect result $2/5 + 1/2 = 3/7$, by observing that $3/7 < 1/2$.

Strand	Standard	Examples and Resources
<p>Use equivalent fractions as a strategy to add and subtract fractions (cont.)</p>	<ul style="list-style-type: none"> • (5.NF.2) Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models or equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and check the reasonableness of answers. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Spaghetti and Meatballs for All!</i> by Marilyn Burns • <i>Speed Mathematics: Secret Skills for Quick Calculation</i> by Bill Handley
<p>Apply and extend previous understandings of multiplication and division to multiply and divide fractions</p>	<ul style="list-style-type: none"> • (5.NF.3) Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers (e.g., by using visual fraction models or equations to represent the problem). • (5.NF.4) Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. <ul style="list-style-type: none"> a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. • (5.NF.5) Interpret multiplication as scaling (resizing), by: <ul style="list-style-type: none"> a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1 (division of a fraction by a fraction is not a requirement at this grade). • (5.NF.6) Solve real world problems involving multiplication of fractions and mixed numbers (e.g., Use visual fraction models or equations to represent the problem). 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (5.NF.3) Interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie? • (5.NF.4a) Use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$). • (5.NF.7a) Create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$. • (5.NF.7b) Create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$. • (5.NF.7c) How much chocolate will each person get if 3 people share $1/2$ lb. of chocolate equally? How many $1/3$-cup servings are in 2 cups of raisins? <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Anno's Mysterious Multiplying Jar</i> by Masaichiro & Mitsumasa Anno • <i>Eating Fractions</i> by Bruce McMillan

Strand	Standard	Examples and Resources
<p>Apply and extend previous understandings of multiplication and division to multiply and divide fractions (cont.)</p>	<ul style="list-style-type: none"> • (5.NF.7) Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. <ol style="list-style-type: none"> a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. b. Interpret division of a whole number by a unit fraction, and compute such quotients. • Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions (e.g., by using visual fraction models and equations to represent the problem). 	
Domain: Measurement and Data		
<p>Convert like measurement units within a given measurement system and solve problems involving time</p>	<ul style="list-style-type: none"> • (5.MD.1) Identify, estimate measure, and convert equivalent measures within systems English length (inches, feet, yards, miles) weight (ounces, pounds, tons) volume (fluid ounces, cups, pints, quarts, gallons) temperature (Fahrenheit) Metric length (millimeters, centimeters, meters, kilometers) volume (milliliters, liters), temperature (Celsius), (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems using appropriate tools. • (5.MD.2) Solve real-world problems involving elapsed time between world time zones. 	<p><u>Examples:</u></p> <ul style="list-style-type: none"> • (5.MD.1) Given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally. • (5.MD.2) Yukon Quest and Iditarod Sled Dog Races. <p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Esio Trot</i> by Roald Dahl • <i>Gator Pie</i> by Louise Mathews
<p>Represent and interpret data</p>	<ul style="list-style-type: none"> • (5.MD.3) Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving information presented in line plots. • (5.MD.4) Explain the classification of data from real-world problems shown in graphical representations including the use of terms mean and median with a given set of data. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • graph paper • geo boards <p><u>Examples:</u></p> <ul style="list-style-type: none"> • (5.MD.3) Given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.
<p>Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition</p>	<ul style="list-style-type: none"> • (5.MD.5) Recognize volume as an attribute of solid figures and understand concepts of volume measurement. <ol style="list-style-type: none"> a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume. b. A solid figure, which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • cubes • counters • geo solids • geo boards • straws • popsicle sticks

Strand	Standard	Examples and Resources
<p>Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition (cont.)</p>	<ul style="list-style-type: none"> • (5.MD.6) Estimate and measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft., and non-standard units. • (5.MD.7) Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. <ul style="list-style-type: none"> d. Estimate and find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Demonstrate the associative property of multiplication by using the product of three whole numbers to find volumes (length x width x height). d. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems. • Recognize volume as additive. Find volumes of solid figures composed of two, non-overlapping, right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Jim and the Beanstalk</i> by Raymond Briggs • <i>Flatland</i> by Edwin Abbott • <i>Jumanji</i> by Chris Van Allsburg • <i>Sir Cumference and the Dragon of Pi</i> by Cindy Neuschwander • <i>Sir Cumference and the First Round Table</i> by Cindy Neuschwander
Domain: Geometry		
<p>Graph points on the coordinate plane to solve real-world and mathematical problems</p>	<ul style="list-style-type: none"> • (5.G.1) Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y coordinate). • (5.G.2) Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. 	<p><u>Literature Connections:</u></p> <ul style="list-style-type: none"> • <i>Grandfather Tang's Story</i> by Ann Tompert • <i>The King's Chessboard</i> by David Birch • <i>The Librarian Who Measured the Earth</i> by Kathryn Lasky • <i>The Boy Who Reversed Himself</i> by William Sleator • <i>Sea Clocks: The Story of Longitude</i> by Louise Borden

Strand	Standard	Examples and Resources
<p>Classify two-dimensional (plane) figures into categories based on their properties</p>	<ul style="list-style-type: none"> • (5.G.3) Understand that attributes belonging to a category of two-dimensional (plane) figures also belong to all subcategories of that category. • (5.G.4) Classify two-dimensional (plane) figures in a hierarchy based on attributes and properties. 	<p><u>Use:</u></p> <ul style="list-style-type: none"> • geo solids • geo boards • paper models <p><u>Examples:</u></p> <ul style="list-style-type: none"> • (5.G.3) All rectangles have four right angles and squares are rectangles, so all squares have four right angles.

