**CROSSWALK**

**Kindergarten**

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| **Code** | **Proposed Standards**  **(listed in order proposed)** | **Code** | **Current Missouri Learning Standards** |
| **NUMBER SENSE** | | **COUNTING AND CARDINALITY** | |
| K.NS.A.1 | Count verbally to 100 by ones and tens. | K.CC.A.1 | Count to 100 by ones and by tens. | |
| K.NS.A.2 | Count forward within 20 verbally beginning from a given number (instead of having to begin at 1). | K.CC.A.2 | Count forward beginning from a given number within the known sequence (instead of having to begin at 1). | |
| K.NS.A.3 | Count backward from a given number between 10 and 1. |  |  | |
| K.NS.A.4 | Read and write numbers from 0 to 20. Represent a number of objects with a written numeral 0 – 20 (with 0 representing a count of no objects.) | K.CC.A.3 | Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects). | |
| K.NS.B.3 | Demonstrate one-to-one correspondence when counting objects. Say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. | K.CC.B.4 | Understand the relationship between numbers and quantities; connect counting to cardinality.  a) When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.  b) 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.  c) Understand that each successive number name refers to a quantity that is one larger. | |
| K.NS.B.4 | Understand that the last number name said when counting 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. |  |  | |
| K.NS.B.5 | Understand that each successive number name refers to a quantity that is one larger than the previous number. |  |  | |
| K.NS.B.6 | Subitize quantity. Without counting, recognize quantity of groups up to five objects arranged in common patterns (e.g. dice, dominoes, five frames, playing cards, ten frames, dot cards, etc.) |  |  | |
| K.NS.B.7 | Recognize that a number can be used to represent “how many” are in a set. Given a number from 1 – 20, count out that many objects. | K.CC.B.5 | Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects. | |
| K.NS.C.8 | Compare two or more sets of objects (up to ten objects in each group) and identify which set is equal to, more than, or less than the other. | K.CC.C.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 and counting strategies.1 | |
| K.NS.C.9 | Compare two written numerals, each between 1 and 10, and determine which represents a quantity that is more than or less than the other. | K.CC.C.7 | Compare two numbers between 1 and 10 presented as written numerals. | |
| **NUMBER SENSE AND OPERATIONS IN BASE TEN** | | **NUMBER AND OPERATIONS IN BASE TEN** | |
| K.NBT.A.1 | Compose and decompose numbers from 11 to 19 into sets of tens with additional ones (separating ten ones from the remaining ones) by using objects or drawings. Understand that these numbers are composed of one group of ten and one, two, three, four, five, six, seven, eight or nine ones. | [K.NBT.A.1](http://www.corestandards.org/Math/Content/K/NBT/A/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 or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones. |
| **RELATIONSHIPS AND ALGEBRAIC THINKING** | | **OPERATIONS AND ALGEBRAIC THINKING** | |
| K.RA.A.1 | Use a variety of strategies to represent sums and differences within ten with emphasis on developing fluency within five (e.g. objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions, or equations.)1 | K.OA.A.1  [K.OA.A.5](http://www.corestandards.org/Math/Content/K/OA/A/5/) | Represent addition and subtraction with objects, fingers, mental images, drawings1, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. |
| K.RA.A.2 | Solve addition and subtraction problems in context, and add and subtract within 10, e.g., by using objects or drawings to represent the problem as needed. | [K.OA.A.2](http://www.corestandards.org/Math/Content/K/OA/A/2/) | Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem. |
| K.RA.A.3 | Compose and decompose numbers less than or equal to 10 in more than one way, e.g., by using objects or drawings, and record each result by a drawing or equation (e.g., 2 + 3 = 5 and 5 = 4 +1). | K.OA.A.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 (e.g., 5 = 2 + 3 and 5 = 4 + 1). |
| K.RA.A.4 | For any number from 1 to 9, find the number that makes 10 when added to the given number,( e.g., by using objects or drawings), and record the answer with a drawing or equation. | K.0A.A.4 | For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation. |
| **GEOMETRY AND MEASUREMENT** | | **GEOMETRY/MEASUREMENT AND DATA** | |
| K.GM.A.1 | Describe several measureable attributes of objects, using appropriate language (e.g. length, weight, height, capacity) | K.MD.A.1 | Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. |
| K.GM.A.2 | Compare the measurable attributes of two objects using appropriate language. (e.g., longer, taller, shorter, same length, heavier, lighter, same weight, holds more, holds less, holds the same amount, etc.) | K.MD.A.2 | Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter*. |
| K.GM.B.1 | Demonstrate an understanding of concepts of time (e.g., morning, afternoon, evening, today, yesterday, tomorrow, week, year) and tools that measure time (e.g., clock, calendar). |  |  |
| K.GM.B.2 | Name the days of the week. |  |  |
| K.GM.B.3 | Identify pennies, nickels, dimes, and quarters by name. |  |  |
| K.GM.C.1 | Identify 2-D and 3-D shapes and describe objects in the environment using names of shapes, recognizing the name stays the same regardless of orientation or size. | K.G.A.1  K.G.A.2 | Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.  Correctly name shapes regardless of their orientations or overall size. |
| K.GM.C.2 | Describe the relative positions of objects in space using terms such as *above, below, beside, in front of, behind* and *next to.* | K.G.A.1 | Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*. |
| K.GM.C.3 | Identify and describe the attributes of 2-D and 3-D shapes. Use the attributes to sort a collection of shapes. | K.G.B.3  K.G.A.4 | Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").  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/"corners") and other attributes (e.g., having sides of equal length). |
| K.GM.C.4 | Draw or model simple 2-D shapes. | K.G.B.5 | Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. |
| K.GM.C.5 | Using manipulatives, compose simple 2-D shapes to form larger 2-D shapes. *For example, “Can you join these two triangles with full sides touching to make a rectangle?”* | K.G.B.6 | Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle*?" |
| **DATA AND STATISTICS** | | **MEASUREMENT AND DATA** | |
| K.DS.A.1 | Sort and classify objects into given categories; count the number of objects in each category. | K.MD.B.3 | Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.1 |
| K.DS.A.2 | Compare category counts based on graphical representations using appropriate language (e.g. greater than, less than or equal to). |  |  |

**First Grade**

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| **Code** | **Proposed Standards**  **(listed in order proposed)** | **Code** | **Current Missouri Learning Standards** |
| **NUMBER SENSE AND OPERATIONS IN BASE TEN** | | **NUMBERS AND OPERATIONS IN BASE TEN** | |
| 1.NS.A.1 | Count to 120, starting at any number less than 120. | 1.NBT.A.1 | Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. |
| 1.NS.A.2 | Read and write numerals and represent a number of objects with a written numeral up to 120. |  |  |
| 1.NS.A.3 | Count backward from a given number between 20 and 1. |  |  |
| 1.NS.A.4 | Count by 5s to 120 starting at any multiple of five. |  |  |
| 1.NBT.A.1 | Understand that 10 can be thought of as a bundle of 10 ones – called a “ten”. | 1.NBT.B.2 | Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:  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.A.2 | Understand two-digit numbers are composed of ten(s) (10, 20, 30, 40, 50, 60, 70, 80, 90) and one(s) (zero, one, two, three, four, five, six, seven, eight, or nine). |  |  |
| 1.NBT.A.3 | Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparison with the symbols >, =, <. | 1.NBT.B.3 | Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. |
| 1.NBT.A.4 | Count by 10s to 120 starting at any number. (i.e. 43, 53, 63, 73, etc.) |  |  |
| 1.NBT.B.1 | Add within 100, (including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10). When appropriate, justify answers using concrete models, drawings, or symbols which convey strategies connected to place value understanding. Understand that in adding two-digit numbers, one adds tens to tens, ones to ones. | 1.NBT.C.4 | Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. |
| 1.NBT.B.2 | Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count. | 1.NBT.C.5 | Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. |
| **RELATIONSHIPS AND ALGEBRAIC THINKING** | | **OPERATIONS AND ALGEBRAIC THINKING** | |
| 1.NBT.B.3 | Subtract a multiple of 10 from another two-digit number. When appropriate, justify answers using concrete models, drawings or symbols which convey strategies connected to place value understanding. Understand that in subtracting two-digit numbers, one subtracts tens from tens, and ones from ones. | 1.NBT.C.6 | Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used. |
| 1.RA.A.1 | Use addition and subtraction using numbers less than or equal to 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions. | 1.OA.A.1 | Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.1 |
| 1.RA.A.2 | Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20. Use objects, drawings, and/or equations with a symbol for the unknown number to represent the problem. | 1.OA.A.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 with a symbol for the unknown number to represent the problem. |
| 1.RA.A.3 | Understand the meaning of the equal sign and determine if equations involving addition and subtraction are true or false. *For example, 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.D.7 | Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, 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.RA.A.4 | Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations*  *8 + = 11, = 5 - 3, 6 + 6 = , 9 = 10 - .* | 1.OA.D.8 | Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = \_ - 3, 6 + 6 = \_*. |
| 1.RA.B.1 | Use properties as strategies to add and subtract. *For example: 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 10. So 2 + 6 + 4 = 2 + 10 = 12 (associative property of addition)* (Students need not use formal terms for these properties). | 1.OA.B.3 | Apply properties of operations as strategies to add and subtract.2 *Examples: 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.)* |
| 1.RA.B.2 | Understand subtraction can be solved as an unknown-addend problem. *For example, subtract 10 – 7 by finding the number that makes 10 when added to 7.* | 1.OA.B.4 | Understand subtraction as an unknown-addend problem. *For example, subtract 10 - 8 by finding the number that makes 10 when added to 8.* |
|  | Not in proposed standards. | 1.OA.C.5 | Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).  \*\*\*Note: This is implied in new standard 1.RA.C.1. |
| 1.RA.C.1 | Add and subtract using a variety of strategies, results within 20. These strategies could include counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13)1 | 1.OA.C.6 | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 - 4 = 13 - 3 - 1 = 10 - 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 - 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). |
| 1.RA.C.2 | Demonstrate fluency with sums and differences within ten. *(Fluency refers to accuracy and efficiency and does not equate to memorization.* *See note on fluency in the introduction.)* |  |  |
| **GEOMETRY AND MEASUREMENT** | | **GEOMETRY/MEASUREMENT AND DATA** | |
| 1.GM.A.1 | Distinguish between defining attributes (e.g. triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. Describe the similarities and differences of two shapes. | 1.G.A.1 | Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. |
| 1.GM.A.2 | Compose and decompose two- (rectangles including squares, trapezoids, triangles, half-circles and quarter-circles) and three-dimensional (rectangular prisms, triangular prisms, cones, and cylinders) shapes to build an understanding of part-whole relationships, and the properties of the original and composite shapes. | 1.G.A.2 | Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.1 |
| 1.GM.A.3 | Recognize two- and three-dimensional shapes from different perspectives and orientations. |  |  |
| 1.GM.A.4 | Partition circles and rectangles into two and four equal shares. Describe the shares using the words *halves, fourths*, and *quarters* and use the phrases *half of, fourth of* and *quarter of.* Describe the whole as *two of*, or *four* of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. | 1.G.A.3 | Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. |
| 1.GM.B.1 | Order three or more objects by length. | 1.MD.A.1 | Order three objects by length; compare the lengths of two objects indirectly by using a third object. |
| 1.GM.B.2 | Compare the lengths of two objects indirectly by using a third object. (*For example, determine if a poster on one wall is wider than a chart on the opposite wall, a piece of string could be used to “measure” the poster and then this length of string could be compared to the chart’s width. To determine if the width of the door is greater than the width of the window, a student’s arm span could be used as the third object*.) |  |  |
| 1.GM.B.3 | Use non-standard units of measurement. 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. (*For example, express the length of a desk in the number of paper clips that can be laid end to end*.) | 1.MD.A.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. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps*. |
| 1.GM.C.1 | Tell and write time in hours and half-hours using analog and digital clocks. | 1.MD.B.3 | Tell and write time in hours and half-hours using analog and digital clocks. |
| 1.GM.C.2 | Know the value of the penny, nickel, dime, and quarter (*e.g. a quarter is 25 cents*). |  |  |
| **DATA AND STATISTICS** | | **MEASUREMENT AND DATA** | |
| 1.DS.A.1 | Collect, organize and represent data with up to three categories using object graphs, picture graphs, T-charts, and tallies. | 1.MD.C.4 | Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. |
| 1.DS.A.2 | Draw conclusions from given object graphs, picture graphs, T-charts, and tallies. (*For example, ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than another.)* |  |  |

**Second Grade**

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| **Code** | **Proposed Standards**  **(listed in order proposed)** | **Code** | **Current Missouri Learning Standards** |
| **NUMBER SENSE AND OPERATIONS IN BASE TEN** | | **NUMBER AND OPERATIONS IN BASE TEN** | |
| 2.NBT.A.1 | Understand three-digit numbers are composed of hundreds (100, 200, 300…), tens (10, 20, 30,…,) and ones (zero, one, two, three….). | 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:  a) 100 can be thought of as a bundle of ten tens — called a "hundred."  b) The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). |
| 2.NBT.A.2 | Understand that 100 can be thought of as 10 tens– called a “hundred”. |
| 2.NBT.A.3 | Count on within 1000 by 1s, 10s and 100s starting with any number. | 2.NBT.A.2 | Count within 1000; skip-count by 5s, 10s, and 100s. |
| 2.NBT.A.4 | Read and write numbers to 1000 using number names, base-ten numerals, and expanded form. | 2.NBT.A.3 | Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. |
| 2.NBT.A.5 | Compare two three-digit numbers based on meanings of hundreds, tens, and ones digits and recording the results of comparison using the symbols <, >, or =. | 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.1 | Fluently add and subtract with numbers and results within 100 using strategies based on place value (including composing and decomposing tens), properties of operations, and/or the relationship between addition and subtraction. (*Fluency refers to accuracy and efficiency and does not equate to memorization. See note on fluency in introduction.)* | 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.2 | Add up to four two-digit numbers using strategies based on place-value and properties of operations. | 2.NBT.B.6 | Add up to four two-digit numbers using strategies based on place value and properties of operations. |
| 2.NBT.B.3 | Add and subtract with numbers and results within 1000, (including situations requiring composing and decomposing hundreds and tens) and justify answers using concrete models, drawings, or symbols which convey strategies connected to place value understanding. *(Note: Concrete models and/or drawings should be used as appropriate for initial development of concepts.)* | 2.NBT.B.7  2.NBT.B.9 | 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.  Explain why addition and subtraction strategies work, using place value and the properties of operations.1 |
| 2.NBT.B.4 | Use the relationship between addition and subtraction to solve problems. *(For example, if Kur*t *had 47 video games and sold 29 of them, how many does he still own? This problem could be solved by adding up from 29 to 47*.) |
| 2.NBT.B.5 | Mentally add/subtract 10 or 100 to/from given number with the result within 1000. | 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.C.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. using drawings and/or equations with a symbol for the unknown number to represent the problem.) | 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.1 |
| **RELATIONSHIPS AND ALGEBRAIC THINKING** | |  | **OPERATIONS AND ALGEBRAIC THINKING** |
| 2.RA.A.1 | Demonstrate fluency with sums and differences using mental strategies. Sums should have results within 20. The starting point for subtraction problems should be within 20. (*Fluency refers to accuracy and efficiency and does not equate to memorization.* *See note on fluency in introduction.)* | 2.OA.B.2 | Fluently add and subtract within 20 using mental strategies.2 By end of Grade 2, know from memory all sums of two one-digit numbers. |
| 2.RA.A.2 | Know all sums of two one-digit numbers. While automaticity for basic facts is desired, quick use of mental strategies may suffice. |
| 2.RA.B.1 | Determine if a group of objects has an odd or even number of members.  For example:   * Count by 2s to 100 starting with any even number. * Express even numbers as pairings/groups of 2 and write an expression to represent the number using addends of 2. (For example, 8 can be represented as 2 + 2 + 2 + 2.) * Express even numbers as being composed of two equal groups and write an expression to represent the number with 2 equal addends. (For example, 8 can be represented as 4 + 4.) | 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.RA.B.2 | Use addition to find the total number of objects arranged in a rectangular array with up to 5 rows and 5 columns, and write an equation to represent the total as a sum of equal addends. (For example, a 3 x 4 array can be thought of as 4 groups of 3 and represented as 3 + 3 + 3 + 3 or as 3 groups of 4 and represented as 4 + 4 + 4.) | 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. |
| **GEOMETRY AND MEASUREMENT** | | **GEOMETRY/MEASUREMENT AND DATA** | |
| 2.GM.A.1 | Recognize and draw shapes having specified attributes, such as a given number of angles or sides. Identify triangles, quadrilaterals, pentagons, hexagons, circles, and cubes. | 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.1 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. |
| 2.GM.A.2 | Partition a rectangle into rows and columns of approximately same-size squares and count to find the total number of them. | 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.GM.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 wholeas two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. | 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. |
| 2.GM.A.4 | Understand that three-dimensional objects (prisms and pyramids) have two-dimensional faces and identify the shapes of those faces. |  |  |
| 2.GM.B.1 | Estimate and measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. | 2.MD.A.1  2.MD.A.3 | Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.  Estimate lengths using units of inches, feet, centimeters, and meters. |
|  | Not in proposed standards. | 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.GM.B.2 | Recognize that the size of the measurement unit used is related to the number of units needed to measure the object. For example, when larger units are used, fewer of the units will be used to measure the object. | 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.GM.C.1 | Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. | 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.GM.C.2 | Represent whole numbers as lengths on a number line diagram and find whole-number sums and differences within 100 using a number line diagram. | 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.GM.D.1 | Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. | 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.GM.D.2 | Describe a time shown on a digital clock as representing hours and minutes, and relate a time shown on a digital clock to the same time on an analog clock. (Use only times shown to the nearest 5 minutes.) |  |  |
| 2.GM.D.3 | Find and represent the value of combinations of dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ appropriately. | 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.GM.D.4 | Find combinations of coins that equal a given amount*. For example, 50¢ can be shown as two quarters, five dimes, ten nickels, or one quarter, two dimes, and one nickel, etc.* |  |  |
| **DATA AND STATISTICS** | | **MEASUREMENT AND DATA** | |
| 2.DS.A.1 | Given a horizontal scale marked in whole numbers, create a line plot to represent a given set of numeric data. | 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.DS.A.2 | Generate measurement data by measuring lengths of several related objects (e.g. shoe lengths) to the nearest whole unit, or by making multiple measurements of the same object (e.g. the length of the room). Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units. |
| 2.DS.A.3 | Draw a picture graph and/or a bar graph (with single-scale) to represent a data set with up to four categories. | 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 problems1using information presented in a bar graph. |
| 2.DS.A.4 | Solve simple addition and subtraction (put-together, take-apart, and compare) problems using information presented in a bar graph. *See table of problem types located in appendix.* |
| 2.DS.A.5 | Draw conclusions from line plots, picture graphs, and bar graphs. |  |  |

**Third Grade**

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| **Code** | **Proposed Standards**  **(listed in order proposed)** | **Code** | **Current Missouri Learning Standards** |
| **NUMBER SENSE AND OPERATIONS IN BASE TEN** | | **NUMBER AND OPERATIONS IN BASE TEN** | |
| 3.NBT.A.1 | Use place value understanding to round whole numbers to the nearest 10 or 100 in the context of estimation. | 3.NBT.A.1 | Use place value understanding to round whole numbers to the nearest 10 or 100. |
| 3.NBT.A.2 | Read, write, and identify multi-digit whole numbers within 100,000 using base ten numerals, number names and expanded notation. |  |  |
| 3.NBT.A.3 | Fluently add and subtract with numbers and results within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. *(Fluency refers to accuracy and efficiency and does not equate to memorization. See note on fluency in the Introduction.)(A range of algorithms may be used.)* | 3.NBT.A.2 | Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. |
| 3.NBT.A.4 | Multiply one-digit whole numbers with multiples of 10 in the range 10-90 *(e.g., 9 x 80, 50 x 6)* using strategies based on place value and properties of operations. | 3.NBT.A.3 | Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations. |
| **NUMBER SENSE AND OPERATIONS - FRACTIONS** | | **NUMBER AND OPERATIONS - FRACTIONS** | |
| 3.NF.A.1 | Understand a unit fraction as the quantity formed by one part when a whole is partitioned into equal parts. *(For example, ¼ [1 fourth] represents 1 of the 4 equal parts or ¼ of the whole.)* | 3.NF.A.1 | Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*. |
| 3.NF.A.2 | Understand that when a whole is partitioned equally, a fraction can be used to represent a portion of the whole.   * The numerator of the fraction represents the number of pieces being considered. * The denominator is the number of pieces that make the whole. *(For example, ¾ [3 fourths] represents 3 pieces that are each ¼ of the whole.)* |  |  |
| 3.NF.A.3 | Understand a fraction as a number on the number line; represent fractions on a number line diagram. (Limit to fractions with denominators 2, 3, 4, 6, and 8.)   * Understand the whole is the interval from 0 to 1. * Understand the whole is partitioned into equal parts. * Understand a fraction represents the endpoint of the length a given number of partitions from 0. (For example, ¾ is located at the end of the length that is 3 partitions from 0 when each partition is a fourth.) | 3.NF.A.2 | Understand a fraction as a number on the number line; represent fractions on a number line diagram.  a) Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.  b) Represent a fraction *a*/*b* on a number line diagram by marking off a lengths 1/*b* from 0. Recognize that the resulting interval has size *a*/*b* and that its endpoint locates the number *a*/*b* on the number line. |
| 3.NF.A.4 | Understand two fractions are equivalent (equal) if they are the same size, or the same point on a number line. | 3.NF.A.3 | Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.  a) Understand two fractions as equivalent (equal) if they are the same size, 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.  c) Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: 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*.  d) 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. |
| 3.NF.A.5 | Using visual models, recognize and generate simple equivalent fractions, *e.g. ½ = 2/4, 4/6=2/3. Explain why the fractions are equivalent. Include fractions that are equal to 1. (e.g., 3/3 = 1)* (Limit to fractions with denominators 2, 3, 4, 6, and 8.) |  |  |
| 3.NF.A.6 | Compare two fractions with the same numerator or same denominator by reasoning about their size. Record the results of the comparisons using <, >, or =, and justify the conclusions by using number lines, manipulatives, or drawings. (Limit to fractions with denominators 2, 3, 4, 6, and 8.) |  |  |
| 3.NF.A.7 | Recognize that fraction comparisons are only valid when the two fractions refer to the same whole. |  |  |
| **RELATIONSHIPS AND ALGEBRAIC THINKING** | | **OPERATIONS AND ALGEBRAIC THINKING** | |
| 3.RA.A.1 | Interpret products of whole numbers, *e.g. interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each.* | 3.OA.A.1 | Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7*. |
| 3.RA.A.2 | Interpret quotients of whole numbers. [Students should work with situations resulting from both sharing (the number of groups is known) and measurement (the number in each group is known) processes.]  *For example, 56÷8 can be interpreted as:*   * *56 objects beings divided into groups with 8 objects each (measurement, or* * *56 objects being divided into 8 equal groups (sharing)* | 3.OA.A.2 | Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 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. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8*. |
| 3.RA.A.3 | Describe in words or drawings a problem that illustrates a multiplication or division situation.  *For example:*   * *“Janet had 3 boxes that each held 5 books” represents “3 x 5”.* * *“2 x 4” could be contextualized as “James had 2 boxes with 4 toys in each.”* * *“Brad has 30 cookies. He creates piles of 5 cookies” represents “30 ÷ 5”.* | 3.OA.A.1  3.OA.A.2 | Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7*.  Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 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. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8*. |
| 3.RA.A.4 | Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and rectangular area, e.g., *by using drawings and/or equations with a symbol for the unknown number to represent the problem.* | 3.OA.A.3 | Use multiplication and division within 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.1 |
| 3.RA.A.5 | Determine the unknown number in a multiplication or division equation relating three whole numbers. *For example, find the unknown number in each of these equations:*  *8 x ? = 48; ? ÷ 3 = 5; 6 x 6 = ?; ? = 5 x 7; ? = 24 ÷ 4* | 3.OA.A.4    [3.OA.B.6](http://www.corestandards.org/Math/Content/3/OA/B/6/) | Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = \_ ÷ 3, 6 × 6 = ?*  Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8*. |
| 3.RA.B.1 | Apply appropriate properties of operations as strategies to multiply and divide. (Students **should not** be expected to use the formal names for the properties. Assessment of this standard may occur throughout the year through teacher observation.)  *For example:*   * *If 6 x 4 = 24, then 4 x 6 = 24 (Commutative property).* * *3 x 5 x 2 can be found by 3 x 5 = 15 and 15 x 2 = 30, OR by 5 x 2 = 10 and 10 x 3 = 30 (Associative property).* * *7 x 8 can be organized mentally as 5 groups of 8 and 2 more groups of 8, so 5 groups of 8 = 40 and 2 groups of 8 = 16 meaning 7 groups of 8 = 40 + 16 = 56 (Distributive property).* * *8 x 6 can be thought of as 2 sets of 4 groups of 6, meaning 8 x 6 = 4 x 6 + 4 x 6. (Distributive property).* | 3.OA.B.5 | Apply properties of operations as strategies to multiply and divide.2 *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)* |
| 3.RA.C.1 | Multiply and divide with numbers and results within 100 using strategies such as the relationship between multiplication and division or properties of operations. | 3.OA.C.7 | Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. |
| 3.RA.C.2 | Know all products of two one-digit numbers. While automaticity for basic facts is desired, quick use of mental strategies may suffice. |  |  |
| 3.RA.D.1 | Solve two-step word problems using any of the four operations. Represent these problems using equations with a letter standing for the unknown quantity. | 3.OA.D.8 | Solve two-step word problems using the four operations. 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.3 |
| 3.RA.D.2 | Assess the reasonableness of answers using mental computation and estimation strategies including rounding. |  |  |
| 3.RA.E.1 | Identify arithmetic patterns (including patterns in the addition or multiplication table) and explain the patterns using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.* | 3.OA.D.9 | Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends*. |
| **GEOMETRY AND MEASUREMENT** | | **GEOMETRY/MEASUREMENT AND DATA** | |
| 3.GM.A.1 | Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides) and that the shared attributes can define a larger category (e.g., quadrilaterals). | 3.G.A.1 | Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. |
| 3.GM.A.2 | Recognize rhombuses and rectangles (including squares) as examples of quadrilaterals, and draw examples of quadrilaterals, including those that do not belong to any of these subcategories. |  |  |
| 3.GM.A.3 | Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as ¼ of the area of the shape.* | 3.G.A.2 | Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape*. |
| 3.GM.B.1 | Tell and write time to the nearest minute. | 3.MD.A.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, e.g., by representing the problem on a number line diagram. |
| 3.GM.B.2 | Estimate time intervals in minutes. *For example, will it take more than 5 minutes or less than 5 minutes to read 5 chapters of a book?* |  |  |
| 3.GM.B.3 | Solve one-step word problems involving addition and subtraction of minutes using number lines, clock faces, or other strategies. *For example, James left home at 1:20 and rode his bike for 30 minutes. What time did he stop riding? It took Gerry 25 minutes to walk to school. If he arrived at 8:40, what time did he leave home?* | 3.MD.A.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, e.g., by representing the problem on a number line diagram. |
| 3.GM.B.4 | Choose the appropriate tools and units (metric and customary); estimate and measure the length *(no smaller than the nearest centimeter or ¼ inch)*, liquid volume, and weight of given objects. | 3.MD.A.2 | Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).1 Add, subtract, multiply, or divide to solve 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.2 |
| 3.GM.B.5 | Use the four operations to solve problems involving lengths *(no smaller than the nearest centimeter or ¼ inch)*, liquid volumes, or weights given in the same units. |  |  |
| 3.GM.C.1 | Understand that area is measured by using unit squares to cover a plane (two-dimensional) figure with no gaps or overlaps. | 3.MD.C.5 | Recognize area as an attribute of plane figures and understand concepts of area measurement.  a) A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.  b) A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units. |
| 3.GM.C.2 | Measure areas by counting unit squares. Use square units to label area measurements, *e.g. square cm. or sq. cm or cm2.* | 3.MD.C.6 | Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units). |
| 3.GM.C.3 | Show that tiling a rectangle to find the area and multiplying the side lengths result in the same value. | [3.MD.C.7](http://www.corestandards.org/Math/Content/3/MD/C/7/) | Relate area to the operations of multiplication and addition.  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 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* × *b* and *a* × *c*. Use area models to represent the distributive property in mathematical reasoning.  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. |
| 3.GM.C.4 | Multiply side lengths to find areas of rectangles with whole-number side lengths and solve problems involving the area of rectangles. |  |  |
| 3.GM.C.5 | Find rectangular arrangements that can be formed for a given area. *For example, an area of 12 sq. cm can be shown as a 3 x 4 rectangle, a 2 x 6 rectangle, or a 1 x 12 rectangle.* |  |  |
| 3.GM.C.6 | Decompose a rectangle into two smaller rectangles, find the area of each smaller rectangle, and combine the areas to find the area of the original rectangle (Note: This is an application of the distributive property.) *For example, a 16 x 5 rectangle could be divided into a 10 x 5 rectangle and a 6 x 5 rectangle. The area of the original rectangle can be found by adding 50 + 30.* |  |  |
| 3.GM.D.1 | Solve problems involving perimeters of polygons including finding the perimeter when given side lengths and finding missing side lengths when given the perimeter. | 3.MD.D.8 | Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. |
| 3.GM.D.2 | Understand that rectangles can have equal perimeters but different areas. Understand that rectangles can have equal areas but different perimeters. |  |  |
| **DATA AND STATISTICS** | | **DATA AND MEASUREMENT** | |
| 3.DS.A.1 | Create frequency tables, picture graphs and/or bar graphs to represent a given data set with several categories. Include picture graphs in which the symbol used represents more than 1, and bar graphs with the scale marked in intervals greater than 1. | 3.MD.B.3 | 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. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets*. |
| 3.DS.A.2 | Solve one- and two-step problems using information presented in bar and/or picture graphs. *For example, “how many more” or “how many less”.* |  |  |
| 3.DS.A.3 | Given a scale marked in appropriate units (whole numbers, halves, and quarters), create a line plot to represent data generated by multiple measures of the same object (*e.g., all students measured the length of the same table*) or by measuring several related objects (*e.g., each student measured his/her own pencil).* | 3.MD.B.4 | Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters. |
| 3.DS.A.4 | Use the data shown in a line plot to generate a set of observations about the data and to answer questions about the data,( *e.g.,* *What do you notice about the data we collected? Why didn’t we all get the same length when we measured our desks? What’s the difference in length between the shortest and longest pencil (if data is reported to nearest whole number)? How many students have a pencil longer than 10 cm? What pencil length is most common?*) (Formal terms such as ‘mode’, ‘range’, or ‘maximum’ are not required at this grade level.) |  |  |

**Fourth Grade**

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| **Code** | **Proposed Standards**  **(listed in order proposed)** | **Code** | **Current Missouri Learning Standards** |
| **NUMBER SENSE AND OPERATIONS IN BASE TEN** | | **NUMBER AND OPERATIONS IN BASE TEN** | |
| 4.NBT.A.1 | Use place value understanding to round multi-digit whole numbers to any place in the context of estimation. | 4.NBT.A.3 | Use place value understanding to round multi-digit whole numbers to any place. |
| 4.NBT.A.2 | Read, write, and identify multi-digit whole numbers up to one million using base ten numerals, number names and expanded notation. | 4.NBT.A.2 | Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. |
| 4.NBT.A.3 | Compare two multi-digit numbers based on meanings of the digits in each place using >, =, < to record the results of the comparison. |
| 4.NBT.A.4 | Understand 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.A.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.*For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division*. |
| 4.NBT.A.5 | Fluently add and subtract multi-digit whole numbers using a standard algorithm. (Fluency refers to accuracy and efficiency and does not equate to memorization.) | 4.NBT.B.4 | Fluently add and subtract multi-digit whole numbers using the standard algorithm. |
| 4.NBT.A.6 | 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, area models, and/or other methods. | 4.NBT.B.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. |
| 4.NBT.A.7 | 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, area models, and/or other methods. | 4.NBT.B.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. |
| **NUMBER SENSE AND OPERATIONS - FRACTIONS** | | **NUMBER AND OPERATIONS - FRACTIONS** | |
| 4.NF.A.1 | Explain and/or illustrate why two fractions are equivalent. | 4.NF.A.1 | Explain why a fraction *a*/*b* is equivalent to a fraction (*n* × *a*)/(*n* × *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.A.2 | Recognize and generate equivalent fractions. |
| 4.NF.A.3 | 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 ½.)* Record the results of comparisons with symbols >, =, <, and justify the conclusions, (*e.g., by using a visual fraction model.*) | 4.NF.A.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 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. |
| 4.NF.B.1 | Understand addition and subtraction of fractions as joining/composing and separating/decomposing parts referring to the same whole. | 4.NF.B.3 | Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*.  a) Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.  b) 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. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8*.  c) 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.  d) 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. |
| 4.NF.B.2 | Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition with an equation. *Examples: 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8 = 17/8* Justify decompositions, e.g., by using number lines, manipulatives, or drawings. |
| 4.NF.B.3 | Add and subtract fractions and mixed numbers with like denominators. *(Sums and differences may be expressed in equivalent forms and simplified forms are not required.)* *Examples:*  + = ;  *2 1/8 + 3/8 = 2 4/8; 3 1/3 + 2 2/3 = 5 3/3;* |
| 4.NF.B.4 | Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators. |
| 4.NF.B.5 | Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. *( e.g., 10 x 2/5 means 10 groups of 2/5 or 20 fifths; alternatively 2/5 x 10 means 2/5 of a group of 10)* | 4.NF.B.4 | Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.  a) Understand a fraction *a*/*b* as a multiple of 1/*b*. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4)*.  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. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*  c) 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. *For example, 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?* |
| 4.NF.B.6 | Solve word problems involving multiplication of a fraction by a whole number. |
|  | Not in proposed standards. | 4.NF.C.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 100.2*For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100*. |
| 4.NF.C.1 | Use decimal notation for fractions with denominators of 10 or 100. | 4.NF.C.6 | Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram*. |
| 4.NF.C.2 | Understand that fractions (with denominators of 10 or 100) and decimals are equivalent representations of the same quantity. |  |  |
| 4.NF.C.3 | Read and write decimals to the hundredths place in word, standard, and expanded form. |  |  |
| 4.NF.C.4 | Compare two decimals to the hundredths place by reasoning about their size. Record the results of comparisons with symbols >, =, <, and justify the conclusions, *e.g., by using number lines, manipulatives, or drawings.* | 4.NF.C.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. |
| **RELATIONSHIPS AND ALGEBRAIC THINKING** | | **OPERATIONS AND ALGEBRAIC THINKING** | |
|  | Not in proposed standards. | 4.OA.A.1 | Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. |
| 4.RA.A.1 | Multiply or divide to solve word problems involving multiplicative comparison. (*Examples: Brad ran 5 laps. Gerry ran three times as many laps as Brad. How many laps did Gerry run?*  *Janet ate 12 cookies. This was four times as many as Lori ate. How many did Lori eat?)* | 4.OA.A.2 | Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.1 |
| 4.RA.A.2 | Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Use estimation to assess reasonableness of answers. | 4.OA.A.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. |
| 4.RA.A.3 | Solve whole number division word problems in which remainders need to be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Use estimation to assess reasonableness of answers. |
| 4.RA.B.1 | Understand that a whole number is a multiple of each of its factors and find the multiples for a given whole number. | 4.OA.B.4 | Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its 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. |
| 4.RA.B.2 | Find all factor pairs for whole numbers up to 100. Determine whether a given whole number in the range 1 – 100 is composite or prime. |
| 4.RA.C.1 | Generate a number pattern that follows a given rule. | 4.OA.C.5 | Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, 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*. |
| 4.RA.C.2 | Use words or mathematical symbols to express the rule for a given pattern*. For example, “starting at zero add three to each term; starting at three add two each time.”* |  |  |
| **GEOMETRY AND MEASUREMENT** | | **GEOMETRY/MEASUREMENT AND DATA** | |
| 4.GM.A.1 | Draw points, lines, line segments, rays, angles (right, acute, obtuse) and perpendicular and parallel lines. Identify these in two-dimensional figures. | 4.G.A.1 | Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. |
| 4.GM.A.2 | Classify two-dimensional shapes by their sides and/or angles *(e.g. acute equilateral triangle; if a quadrilateral has two pairs of parallel sides it would be classified as a parallelograms)* | 4.G.A.2 | Classify two-dimensional 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. |
| 4.GM.A.3 | Identify lines of symmetry for a two-dimensional figure. | 4.G.A.3 | Recognize a line of symmetry for a two-dimensional 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. |
| 4.GM.B.1 | Understand angles as geometric shapes that are formed wherever two rays share a common endpoint. | 4.MD.C.5 | Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:  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 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.GM.B.2 | Understand angles are measured with reference to the degrees of a circle. |
| 4.GM.B.3 | Draw and measure angles in whole-number degrees using a protractor. | 4.MD.C.6 | Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. |
| 4.GM.C.1 | Understand relative sizes of measurement units within one system of units limited to in., ft., yd., km, m, cm; kg, g, lb., oz.; l, ml, pt., qt., gal; hr., min, sec. Within a single system of measurement, express measurements of a larger unit in terms of a smaller unit given the equivalent unit conversion (*Example: know that 1 ft. is 12 times as long as 1 in. Express the length of a 4 ft. snake as 48 in.)* | 4.MD.A.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. *For example, 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.GM.C.2 | Use the four operations to solve word problems involving distances, intervals of time, liquid volume, weight of objects, and money, including problems involving simple fractions or decimals. *(Students may use the equivalent unit conversions.)* | 4.MD.A.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.GM.C.3 | Apply the area and perimeter formulas for rectangles in real world and mathematical problems*. (For this grade level, area problems involve whole-number side lengths and* *division problems involve single digit divisors.) For example, find the width of a rectangular room given the area of the flooring and the length.* | 4.MD.A.3 | Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, 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*. |
| **DATA AND STATISTICS** | | **MEASUREMENT AND DATA** | |
| 4.DS.A.1 | Create a frequency table and/or line plot with the scale marked in whole numbers and/or fractions of a unit (,, ) to display a data set of measurements. | 4.MD.B.4 | Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection*. |
| 4.DS.A.2 | Solve problems involving addition and subtraction by using information presented in a data display *(e.g. line plot, bar graph, picture graph, frequency table)* |
| 4.DS.A.3 | Analyze the data in a frequency table, line plot, bar graph or picture graph to include determining the mode and range. *(At this grade level, fraction operations use only like denominators.)* |  |  |

**Fifth Grade**

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| **Code** | **Proposed Standards**  **(listed in order proposed)** | **Code** | **Current Missouri Learning Standards** |
| **NUMBER SENSE AND OPERATIONS IN BASE TEN** | | **NUMBERS AND OPERATIONS IN BASE TEN** | |
| 5.NBT.A.1 | Read, write and identify numbers from millions to thousandths using base ten numerals, number names, and expanded notation. | 5.NBT.A.3 | Read, write, and compare decimals to thousandths.  a) Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).  b) Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. |
| 5.NBT.A.2 | Understand 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. | 5.NBT.A.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. |
| 5.NBT.A.3 | Evaluate the value of powers of 10 (exponents with a base of 10) and understand the relationship to the place value system. | 5.NBT.A.2 | Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain 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.A.4 | Use place value understanding to round decimals, including to the nearest whole number, in the context of estimation. | 5.NBT.A.4 | Use place value understanding to round decimals to any place. |
| 5.NBT.A.5 | Add and subtract multi-digit whole numbers and decimals to the thousandths place using an appropriate strategy and justify solutions. | 5.NBT.B.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 addition and subtraction; relate the strategy to a written method and explain the reasoning used. |
| 5.NBT.A.6 | Multiply multi-digit whole numbers and decimals to the hundredths place using an appropriate strategy and justify solutions. | 5.NBT.B.5  5.NBT.B.7 | Fluently multiply multi-digit whole numbers using the standard algorithm.  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 addition and subtraction; relate the strategy to a written method and explain the reasoning used. |
| 5.NBT.A.7 | Divide multi-digit whole numbers and decimals to the hundredths place using up to two- digit whole number divisors and four-digit dividends using an appropriate strategy and justify solutions. | 5.NBT.B.6  5.NBT.B.7 | 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, and/or area models.  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 addition and subtraction; relate the strategy to a written method and explain the reasoning used. |
| **NUMBER SENSE AND OPERATIONS – FRACTIONS** | | **NUMBER AND OPERATIONS - FRACTIONS** | |
| 5.NF.A.1 | Understand that parts of a whole can be expressed as fractions and/or decimals *(Limit to denominators that are factors of 100.).* |  |  |
| 5.NF.A.2 | Convert decimals to fractions and fractions to decimals including values greater than one *(Limit to denominators that are factors of 100).* |  |  |
| 5.NF.A.3 | Compare and order fractions, or decimal numbers to the thousandths place, by reasoning about their size. Record the results of comparisons with symbols >, =, <, and justify the conclusions, e.g., by using benchmarks, number lines, manipulatives, or drawings. | 5.NBT.A.3 | Read, write, and compare decimals to thousandths.  a) Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).  b) Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. |
| 5.NF.B.1 | Estimate results of sums, differences and products with fractions and with decimals to thousandths, including numbers greater than one. | 5.NF.A.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 assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*. |
| 5.NF.B.2 | Justify the reasonableness of a product when multiplying with fractions.   1. Estimate the size of the product based on the size of the two factors; 2. Explain why multiplying a given number by a number greater than 1 (e.g., improper fractions, mixed numbers, whole numbers) results in a product larger than the given number; 3. Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; 4. Explain why multiplying the numerator and denominator by the same number has the same effect as multiplying the fraction by 1. | 5.NF.B.5 | Interpret multiplication as scaling (resizing), by:  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* × *a*)/(*n* × *b*) to the effect of multiplying *a*/*b* by 1. |
| 5.NF.B.3 | Solve problems involving addition and subtraction of fractions with unlike denominators (including mixed numbers) using an appropriate strategy and justify solutions. | 5.NF.A.1  5.NF.A.2 | 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. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*  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 assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*. |
| 5.NF.B.4 | Apply and extend previous understanding of multiplication to multiply a fraction or whole number by a fraction.   1. Recognize the relationship between multiplying fractions and finding the areas of rectangles with fractional side lengths; 2. Solve and interpret multiplication of a fraction or a whole number by a fraction; (e.g. 1/5 x 5/12 is one fifth of five objects called twelfths; 2 ½ x 4/5 is two groups of four fifths and another half-group of four fifths). | 5.NF.B.4  5.NF.B.6 | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.  a) Interpret the product (*a*/*b*) × *q* as *a* parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations*a* × *q* ÷ *b*. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*  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.  Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. |
| 5.NF.B.5 | Extend the concept of division to divide unit fractions and whole numbers by using visual fraction models and equations.   1. Solve and interpret division of a unit fraction by a non-zero whole number and compute the quotient; 2. Solve and interpret division of a whole number by a unit fraction and compute the quotient. | 5.NF.B.7 | Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.1  a) Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3*.  b) Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4*.  c) 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. *For example, 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?* |
|  | Not in proposed standards. | 5.NF.B.3 | Interpret a fraction as division of the numerator by the denominator (*a*/*b* = *a* ÷ *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. *For example, 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?* |
| **RELATIONSHIPS AND ALGEBRAIC THINKING** | | **OPERATIONS AND ALGEBRAIC THINKING** | |
| 5.RA.A.1 | Investigate the relationship between two numerical patterns expressed as rules, tables, sets of ordered pairs, or graphs.   1. Generate two numerical patterns given two rules and organize in tables; 2. Translate the two numerical patterns into two sets of ordered pairs then graph the two sets of ordered pairs on the same coordinate plane; 3. Identify the relationship between the two numerical patterns.   *For example, given the rule “Starting at 0, add 3”, and given the rule “Starting at 0, add 6”, 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.* | 5.OA.B.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. *For example, 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*. |
| 5.RA.A.2 | Given a numerical pattern, write a rule to describe or explain the pattern. *Example: Given the pattern 64, 32, 16, … generate the rule. “Starting at 64, divide the previous term by 2”* or *“Starting at 64 multiply the previous term by ½”.* |  |  |
| 5.RA.B.1 | Write, evaluate and interpret numerical expressions using order of operations *(not including exponents)*. | 5.OA.A.1  5.OA.A.2 | Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.  Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product*. |
| 5.RA.B.2 | Translate written expressions into numerical expressions. |  |  |
| 5.RA.C1 | Solve multistep word problems using whole numbers and decimals. Represent these problems as equations with a letter standing for the unknown quantity. Use estimation to assess the reasonableness of answers. | 5.NBT.B.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 addition and subtraction; relate the strategy to a written method and explain the reasoning used. |
| 5.RA.C.2 | Solve multistep word problems using whole numbers and fractions. Represent these problems as equations with a letter standing for the unknown quantity. Use estimation to assess the reasonableness of answers*. (Exclude division of fractions by fractions.)* | 5.NF.A.2  5.NF.B.3  5.NF.B.6 | 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 assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*.  Interpret a fraction as division of the numerator by the denominator (*a*/*b* = *a* ÷ *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. *For example, 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?*  Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. |
| **GEOMETRY AND MEASUREMENT** | | **GEOMETRY/MEASUREMENT AND DATA** | |
| 5.GM.A.1 | Understand that attributes belonging to a category of two-dimensional or three-dimensional geometric shapes also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.* | 5.G.B.3 | Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles. |
| 5.GM.A.2 | Classify quadrilaterals in a hierarchy based on properties. *(NOTE: Trapezoids are defined as having exactly one pair of parallel sides.)* | 5.G.B.4 | Classify two-dimensional figures in a hierarchy based on properties. |
| 5.GM.A.3 | Analyze properties of prisms and pyramids, describing them by the number of edges, faces, or vertices as well as the types of bases. |  |  |
| 5.GM.B.1 | Understand the concept of volume and recognize that volume is measured in cubic units:   1. A cube with edge length 1 unit is called a “unit cube” and is said to have “one cubic unit” of volume, and can be used to measure volume. 2. Understand that the volume of a right rectangular prism can be found by packing the prism with cubes or stacking multiple layers of the base. | 5.MD.C.3  5.MD.C.4 | Recognize volume as an attribute of solid figures and understand concepts of volume measurement.  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.  Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. |
| 5.GM.B.2 | Apply the formulas *V = l × w × h* and *V = B × h* for volume of right rectangular prisms with whole-number edge lengths. | 5.MD.C.5 | Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.  a) 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. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.  b) Apply the formulas *V* = *l* × *w* × *h* and *V* = *b* × *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.  c) 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. |
| 5.GM.C.1 | Define a coordinate system.   1. The *x-* and *y-* axes are perpendicular number lines that intersect at 0 (the origin); 2. Any point on the coordinate plane can be represented by its coordinates; 3. The first number in an ordered pair is the *x-*coordinate and represents the horizontal distance from the origin; 4. The second number in an ordered pair is the *y-*coordinate and represents the vertical distance from the origin. | 5.G.A.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.GM.C.2 | Plot and interpret points in the first quadrant of the coordinate plane to represent real-world and mathematical situations. | 5.G.A.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. |
| 5.GM.D.1 | Convert measurements of capacity, length and weight within a single measurement system *(customary-to-customary and metric-to-metric systems)* given the equivalent unit conversion. | 5.MD.A.1 | Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. |
| 5.GM.D.2 | Solve multi-step problems that require measurement conversions. |
| **DATA AND STATISTICS** | | **MEASUREMENT AND DATA** | |
| 5.DS.A.1 | Create a line graph to represent a given or generated data set. Analyze the data to answer questions and solve problems. |  |  |
| 5.DS.A.2 | Create a line plot to represent a given or generated data set *(data could include fractions or decimals)*. Analyze the data to answer questions and solve problems, recognizing the outliers and generating the median. | 5.MD.B.2 | Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, 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*. |