# Utah Core Essential Elements and Range of Complexity Examples for Mathematics

**Fourth Grade**

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# COMMON CORE ESSENTIAL ELEMENTS AND COMPLEXITY EXAMPLES FOR FOURTH GRADE

**Fourth Grade Mathematics Standards: Operations and Algebraic Thinking**

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| **Use the four operations with whole numbers to solve problems.**<br><br>**4.OA.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.<br><br>**4.OA.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. | **EE4.OA.1-2.** Demonstrate the connection between repeated addition and multiplication. | **Students will:**<br>**EE4.OA.1-2.** Apply repeated addition to solve a multiplication problem represented with numbers.<br>Ex. Presented with a multiplication problem such as 3 x 6, use egg cartons and concrete objects to create arrays (e.g., sort three objects into six egg slots or six objects into three slots).<br>Ex. When presented with two choices of arrays on the smart board and a multiplication problem, identify (i.e., eye gaze) the correct array.<br>Ex. Use skip counting on a number line to solve multiplication problems (e.g., move two digits five times for the problem 2 x 5).<br><br>**Students will:**<br>**EE4.OA.1-2.** Demonstrate the connection between repeated addition and multiplication.<br>Ex. Skip count by two, five, and 10 to solve multiplication problems.<br>Ex. Using three groups of two objects, communicate that 2 + 2 + 2 is equal to 3 x 2.<br>Ex. Using plastic eggs and an egg carton to hold the eggs in place, place an object in each egg to illustrate 6 + 6 = 12 or 6 x 2 = 12.<br>Ex. Represent the chairs in a class with three rows of four chairs in each (e.g., identify 4 + 4 + 4).<br><br>**Students will:**<br>**EE4.OA.1-2.** Demonstrate repeated addition to sums of 10.<br>Ex. Skip count by two and five to 10.<br>Ex. Add 1 + 1 + 1.<br>Ex. Add 2 + 2 + 2.<br>Ex. Add 3 + 3 + 3.<br>Ex. Add 2 + 2 + 2 + 2 + 2 to equal 10. |

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| | | Ex. Presented with a picture of two chairs in a row and given four pictures of individual chairs, arrange the additional four chairs into equal rows and count all of the chairs.<br><br>**Students will:**<br>**EE4.OA.1-2.** Make a set of 10 and count to 10.<br>Ex. Using fingers count to 10.<br>Ex. Using a 10 frame, place a cube in each square.<br>Ex. Use a switch to count to 10.<br>Ex. Count like objects to make a set of 10. |
| **4.OA.3.** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. | **EE4.OA.3.** Solve one-step word problems using addition or subtraction. | **Students will:**<br>**EE4.OA.3.** Solve two-step problems using addition or subtraction when a number in the problem is unknown (result, start, change, difference).<br>Ex. Use a number line to solve two-step problems.<br>Ex. Use a hundreds chart to solve a two-step problem.<br>Ex. Solve a two-step word problem involving addition (e.g., "If Amy has 10 sheets of paper and you have 10 more sheets than Amy, how many sheets do you have?" [addition – compare total unknown]).<br>Ex. Solve a two-step word problem involving subtractions (e.g., "Sandi has 10 cats and 20 dogs – does she have more cats or dogs? How many more?" [subtraction – compare difference unknown]).<br><br>**Students will:**<br>**EE4.OA.3.** Solve one-step problems using addition or subtraction.<br>Ex. Use manipulatives to add or subtract two groups.<br>Ex. Use manipulatives on a number line to solve addition or subtraction problems.<br>Ex. Solve one-step word problem involving addition (e.g., "If Sam gave away 10 apples and has five apples left, how many did he start with?" [addition – start unknown]).<br>Ex. Solve one-step word problem involving subtractions (e.g., "If June had 50 dollars and spent ten, how much does she have left?" [subtraction – classic take away]). |

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| | | Ex. Solve one-step word problem involving addition (e.g., "If Jessie had 20 cakes and bought five more, how many does he have now?" [addition join-part/part – whole]).<br>Ex. Solve one-step word problem involving subtractions (e.g., "If Sandy wanted to collect 35 cards and she already has 15, how many more does she need?" [subtraction deficit missing amount]).<br><br>**Students will:**<br>**EE4.OA.3.** Solve one-step addition or subtraction problems when there is an unknown (result, start, change, difference) up to 10.<br>Ex. Given a group of five items, determine how many more are needed to make 10.<br>Ex. Given a group of eight items, determine how many to take away to make five.<br><br>**Students will:**<br>**EE4.OA.3.** Add up to five.<br>Ex. Given a group of two, add objects to a total of five.<br>Ex. Given a group of three, add objects to a total of five. |
| **Gain familiarity with factors and multiples.**<br><br>**4.OA.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 | **EE4.OA.4.** Show one way to arrive at product. | **Students will:**<br>**EE4.OA.4.** Show multiple ways to arrive at the same product.<br>Ex. Given a product, use manipulatives to create groups that represent the product.<br>Ex. Given a number (product) of the day, match their factor cards to another student's factor card to equal the product.<br>Ex. Given an equation on a dry erase board (e.g., 2 x 4 = 8), make equal groups to show possible factors for eight (e.g., one group of eight, two groups of four, four groups of two).<br><br>**Students will:**<br>**EE4.OA.4.** Show one way to arrive at a product.<br>Ex. Using a group of manipulatives, separate into equal groups. |

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| number in the range 1–100 is prime or composite. | | Ex. Provided with counters, pieces of string, or yarn and a work map, make equal sets to arrive at the product. Ex. Given eight objects that represent the product, make equal sets to represent the factors (e.g., 2 + 2 + 2 + 2) and count to arrive at the product (e.g., 8). **Students will:** **EE4.OA.4.** Make equal sets and count to determine the product. Ex. Using two spinners, spin first spinner to determine the number of groups and the second spinner to determine how many in each group. Supply the numbers from the spinners as factors in the multiplication equation (e.g., __ x __ = ___). **Students will:** **EE4.OA.4.** Replicate one way to arrive at a product. Ex. Copy a teacher-created model using manipulatives. Ex. Given a set, replicate the equal set. |
| **Generate and analyze patterns.** **4.OA.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* | **EE4.OA.5.** Use repeating patterns to make predictions. | **Students will:** **EE4.OA.5.** Create a pattern based on a given rule and their prediction of what comes next. Ex. Given an AABCAABC rule, create a pattern based on the rule. Ex. Given a die with plus two, or plus three, rolls the die and creates a number pattern based on the outcome. **Students will:** **EE4.OA.5.** Use repeating patterns to make predictions. Ex. Using a number line, predict what the next number will be when you apply the rule "add 2." Ex. Using a shape pattern (e.g., squares, circles, triangles) predict what will come next in the series of three shapes. Ex. Given a simple ABCABC pattern, indicate, "What comes next?" **Students will:** |

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| *between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.* | | **EE4.OA.5.** Replicate a pattern.<br>Ex. Using wooden beads, copy a pattern.<br>Ex. Rhythmic or tactile patterns.<br><br>**Students will:**<br>**EE4.OA.5.** Differentiate between a pattern and a non-pattern.<br>Ex. A pile of blocks vs. an ABAB pattern of blocks.<br>Ex. Play listening game to determine rhythmic patterns versus non-patterns. |

**Fourth Grade Mathematics Standards: Numbers and Operations in Base Ten**

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| **Generalize place value understanding for multi-digit whole numbers.**<br><br>**4.NBT.1.** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.* | **EE4.NBT.1.** Compare numbers to each other based on place value groups by composing and decomposing to 50. | **Students will:**<br>**EE4.NBT.1.** Compare numbers to each other based on place value groups by composing and decomposing greater than 50.<br>Ex. Given a number over 50, use place value blocks to indicate the value of each digit.<br>Ex. Using Popsicle sticks with beans glued to them in groups of 10 and loose beans, illustrate a multi-digit number.<br>Ex. Show a number on the number line and answer the number of tens and ones in the given number.<br>Ex. Decompose numbers to 50 in multiple ways (e.g., 36 is three 10s and six ones, or two 10s and 16 ones, or 36 ones).<br><br>**Students will:**<br>**EE4.NBT.1.** Compare numbers to each other based on place value groups by composing and decomposing to 50.<br>Ex. Given a two digit number up to 50, use place value blocks to indicate the tens value and the ones value.<br>Ex. Use money (dimes and pennies) to represent place value.<br>Ex. Decompose numbers to 50 (e.g., 15 is one 10 and five ones, 22 is two 10s and two ones, 36 is three 10s and six ones, 41 is four 10s and a one, 57 is five 10s and seven ones).<br>Ex. Decompose numbers in one way (e.g. 36 is three sets of 10 and six ones).<br><br>**Students will:**<br>**EE4.NBT.1.** Compose and decompose whole numbers to 20.<br>Ex. Given 15 pennies, create a group of one 10 and a group of five ones.<br>Ex. Use a number balance to determine what two numbers are needed to equal the number on the other side.<br><br>**Students will:** |

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| | | **EE4.NBT.1.** Identify whole numbers to 10.<br>Ex. Given sets, pair with numbers.<br>Ex. Given numbers, match to sets. |
| **4.NBT.2.** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. | **EE4.NBT.2.** Compare whole numbers (<, >, =). | **Students will:**<br>**EE4.NBT.2.** Compare whole numbers using symbols (<, >, =).<br>Ex. Utilize a number line to compare two numbers greater than 50 and place a card with the correct symbol on the line to show the relationship (<, >).<br>Ex. During P.E., compare scores of a game to determine the winner. Use the symbol to show the relationship between the scores.<br>Ex. State or match meaning of >, <, and = as greater than, less than, or equal to.<br><br>**Students will:**<br>**EE4.NBT.2.** Compare whole numbers (<, >, =).<br>Ex. Given two groups of blocks, close or equal in value, determine which is greater, less, or equal.<br>Ex. Using a floor number line, two students stand on two different numbers and determine which is greater or less than.<br><br>**Students will:**<br>**EE4.NBT.2.** Compare whole numbers (<, >, =) from 0-20.<br>Ex. Given two groups of objects, seven blocks and 10 blocks, determine which is greater or which is less.<br>Ex. Play a fish game: One fish and two ponds, each with a certain number of bugs, turn fish towards the pond with the most bugs.<br><br>**Students will:**<br>**EE4.NBT.2.** Compare whole numbers (<, >) from 0-10.<br>Ex. Use a 10 frame with two tactile dots and a 10 frame with 10 tactile dots, determine which is more or less.<br>Ex. Given two sets of objects, determine which is more. |

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| **4.NBT.3.** Use place value understanding to round multi-digit whole numbers to any place. | **EE4.NBT.3.** Round one- and two-digit whole numbers from 0—50 to the nearest 10. | **Students will:** <br> **EE4.NBT.3.** Round one- and two-digit numbers, greater than 50, to the nearest 10. <br> Ex. Roll the dice to count up the rounding tape and state the nearest 10. <br> Ex. Using a hundreds chart and a given number between 50-100, round to the nearest tens place. <br><br> **Students will:** <br> **EE4.NBT.3.** Round single one- and two-digit whole numbers from 0-50 to the nearest 10. <br> Ex. Poster boards, distributed around the room, labeled by tens up to 50, be given a number, and asked to go to the nearest 10. <br> Ex. Using pennies earned, exchange for dimes. <br><br> **Students will:** <br> **EE4.NBT.3.** Round single one-digit numbers to the nearest 10. <br> Ex. Using paper plates labeled zero and 10, given a card with a number zero to 10, place it on the correct plate. <br> Ex. Use a number line to round to the nearest 10. <br><br> **Students will:** <br> **EE4.NBT.3.** Identify numbers that are more or less than five on a number line. <br> Ex. Place their fingers on five on a number line and count to find a number greater than five. <br> Ex. Shown five on a number line, identify a number that is less than five. |
| **Use place value understanding and properties of operations to perform multi-digit arithmetic.** <br><br> **4.NBT.4.** Fluently add and | **EE4.NBT 4.** Add and subtract double-digit whole numbers. | **Students will:** <br> **EE4.NBT.4.** Add and subtract multi-digit whole numbers. <br> Ex. Given base ten pieces, make exchanges to solve multi-digit addition and subtraction problems. <br> Ex. Use a calculator and show how the problem is solved. <br><br> **Students will:** |

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| subtract multi-digit whole numbers using the standard algorithm. | | **EE4.NBT.4.** Add and subtract double-digit whole numbers.<br>Ex. Use a sorting box divided into two sections with manipulatives to add, subtract, and regroup to solve addition and subtraction problems.<br>Ex. Use break-apart numbers (e.g., 20 + 30 = 50, 3 + 5 = 8, 40 + 8 = 48).<br>Ex. Use a number line to demonstrate addition by tens.<br><br>**Students will:**<br>**EE4.NBT.4.** Solve addition with numbers 20-50 and subtraction problems with numbers 0-20.<br>Ex. Use counters to add and subtract.<br>Ex. Use number lines to add or subtract.<br>Ex. Produce addends to 10 fluently.<br>Ex. The teacher orally states 14 − 1 = 13 and use magnetic symbols to display the problem.<br><br>**Students will:**<br>**EE4.NBT.4.** Solve single digit addition problems to add one to another number.<br>Ex .Use counters to add one to another number.<br>Ex .Use number lines to add one to another number. |
| **4.NBT.5.** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. | **EE4.NBT 5.** N/A (See EE. 4.OA.1.) | |

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| **4.NBT.6.** Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. | **EE4.NBT 6.** N/A | |

**Fourth Grade Mathematics Standards: Number and Operations—Fractions[14]**

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| **Extend understanding of fraction equivalence and ordering.**<br><br>**4.NF.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.<br><br>**4.NF.2.** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that | **EE4.NF.1-2.** Understand 2/4 = 1/2. | **Students will:**<br>**EE4.NF.1-2.** Understand two fractions having unlike denominators are equivalent if they represent the same size portion of a whole.<br>Ex. Given two squares of paper, one scored for halves and one scored for eighths, fold the each paper as scored, then unfold the paper scored for thirds and compare to the one folded into 1/2 to find the same size portion (e.g., 4/8 = 1/2).<br><br><br><br>Ex. Use tangrams.<br><br>**Students will:**<br>**EE4.NF.1-2.** Understand 2/4 = 1/2.<br>Ex. Given two rectangles, cut one rectangle into half and a second into fourths and compare the rectangles to determine how many fourths equal a half.<br>Ex. Working with two rectangles of the same size, fold one rectangle in half and the other in fourths and compare to find how many fourths equal half.<br>Ex. Using a picture of two circles, cut one in half and the other in fourths and compare them to find how many fourths equal half.<br><br>**Students will:** |

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[14] Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, 100.

| 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. | | **EE4.NF.1-2.** Understand 4/4 or 2/2 = 1.<br>Ex. Complete two- and four-piece puzzles.<br>Ex. File folder game with self-sticking non-adhesive pieces that make a whole.<br><br>**Students will:**<br>**EE4.NF.1-2.** Understand that two halves is equivalent to one whole.<br>Ex. Wooden shapes are separated into halves and put back together into a whole.<br>Ex. Plastic eggs are broken into halves and put back to whole. |
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| **Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.**<br><br>**4.NF.3.** Understand a fraction $a/b$ with $a > 1$ as a sum of fractions $1/b$.<br><ul><li>Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</li><li>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.,</li></ul> | **EE4.NF.3.** Differentiate between whole, half, and fourth. | **Students will:**<br>**EE4.NF.3.** Differentiate fractional parts less than 1/4.<br>Ex. With fraction bars labeled 1/2, compare the 1/2 to fraction bars less than.<br>Ex. Using squares, fold it in 1/2, 1/4, 1/8, . . .<br><br>**Students will:**<br>**EE4.NF.3.** Differentiate between whole, half, and fourth.<br>Ex. Use fraction strips and fraction tiles to identify whole and half, and which is more.<br>Ex. Using squares of paper, fold it in 1/2 and 1/4 and identify the parts.<br><br>**Students will:**<br>**EE4.NF.3.** Differentiate between whole and half.<br>Ex. Given a whole sandwich versus a half sandwich cut horizontally, vertically, and diagonally select the whole or half upon request.<br>Ex. Show the halfway point on a number line.<br>Ex. With pictures cut into halves and pictures not cut, sort the pictures into halves and wholes.<br><br>**Students will:**<br>**EE4.NF.3.** Recognize that fractions are part of a whole.<br>Ex. Using a self-sticking non-adhesive shape, take apart and put together fractional parts of a whole.<br>Ex. Utilize wooden shapes, separate into halves and put back together into |

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| by using a visual fraction model.<br>*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.*<br>▪ 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.<br>▪ 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. | | Ex. Shown pictures of the whole class and part of the class, select the picture that shows part of the class upon request. |
| **4.NF.4.** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.<br>▪ Understand a fraction *a/b* as a multiple of | **EE4.NF.4.** N/A (See EE. 4.OA.1-2.) | |

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).*
- 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.).*
- 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*

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| *will be needed? Between what two whole numbers does your answer lie?* | | |
| **Understand decimal notation for fractions, and compare decimal fractions.**<br><br>**4.NF.5.** Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[15] *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*<br><br>**4.NF.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.*<br><br>**4.NF.7.** Compare two decimals to hundredths by | **EE4.NF.5.** N/A (Decimals begin at grade 7.) | |

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[15] Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.

| 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. | | |
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**Fourth Grade Mathematics Standards: Measurement and Data**

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| **Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**<br><br>**4.MD.1.** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *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), . . .* | **EE4.MD.1.** Identify the smaller measurement units that divide a larger unit within a measurement system. | **Students will:**<br>**EE4.MD.1.** Solve problems by demonstrating whole units can be broken into smaller units.<br>Ex. Use a one-cup measure to pour water into a pint jar to determine how many plants could be watered if each plant needs one cup of water.<br>Ex. Pour soil from a 1/2-cup measuring cup into a pint to see how many starter pots could be filled with a pint of soil.<br>Ex. Determine which is better for measuring a desktop, a ruler or a yardstick. Measure the tablet, mark the length on the ruler, and compare it to the yardstick.<br>Ex. Pour tablespoons of water into a 1/2 cup a tablespoon at a time and determine how many one-tablespoon portions there are in a cup.<br><br>**Students will:**<br>**EE4.MD.1.** Identify the smaller measurement units that divide a larger unit within a measurement system.<br>Ex. Identify how many inches are the smaller units on a ruler.<br>Ex. Identify how many feet are the smaller units on a yardstick.<br>Ex. Identify how many cups are the smaller units on a pint measuring cup.<br>Ex. Given several measurement tools, match three rulers to one-yard stick.<br><br>**Students will:**<br>**EE4.MD.1.** Identify standard units of measurements.<br>Ex. Use different measurement tools to measure sand in a tray.<br>Ex. Use the inch worms on a foot ruler or yard stick to make the connection that while they both measure, one unit is smaller than the other.<br><br>**Students will:**<br>**EE4.MD.1.** Use measurement tools.<br>Ex. Compare the length of a ruler to the length of a book.<br>Ex. Use a balance scale to compare different sets of objects to determine |

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| | | which objects are <, >, or =. |
| **4.MD.2.** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. | **EE4.MD.2.a.** Tell time to the half hour using a digital clock, or to the hour using an analog clock. | **Students will:** **EE4.MD.2.a.** Tell time to the quarter hour using a digital or analog clock. Ex. Indicate time to the quarter hour on a digital clock. Ex. Place clock hands to show the quarter hour.<br><br>**Students will:** **EE4.MD.2.a.** Tell time to the half hour using a digital clock or to the hour using an analog clock. Ex. Identify which clock shows a stated time on a digital clock (e.g., 2:30). Ex. Move hands on a clock to show a stated half hour. Ex. Say the hour on an analog clock.<br><br>**Students will:** **EE4.MD.2.a.** Relate time to the hour to activities. Ex. Look at clock - 2:00 is time to go home. Ex. Identify activity on schedule by matching the hour on the schedule to the hour on the clock. Ex. Point to hour for next activity on personal schedule.<br><br>**Students will:** **EE4.MD.2.a.** Differentiate a digital and analog clock from other measurement tools as a tool for telling time. Ex. Given a digital or analog clock and a ruler, identify the clock for telling time. Ex. Asked "How do we know when it is time to go to lunch?", indicate a clock. |
| | **EE4.MD.2.b.** Select the appropriate measurement tool from two related options to solve problems. | **Students will:** **EE4.MD.2.b.** Use the appropriate measurement tools to solve problems. Ex. Select and use the appropriate measuring tool to measure different quantities for assigned tasks (e.g., cup for liquid and powder; scale for solids). |

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| | | Ex. On a field trip to the grocery store, use the scale to determine how much a bag of apples weighs.<br><br>**Students will:**<br>**EE4.MD.2.b.** Select the appropriate measurement tool from two related options to solve problems.<br>Ex. During a science experiment, select the best tool to use to measure various ingredients (e.g., tablespoon or cup, ruler or yardstick).<br>Ex. Given a book, select the appropriate measuring tool to use to measure its length (e.g., ruler or yardstick).<br><br>**Students will:**<br>**EE4.MD.2.b.** Select the appropriate measurement tool from two unrelated options to solve problems.<br>Ex. Given options of unrelated measuring tools, choose the best tool for a particular task (e.g., "When making cookies, which would you use to measure flour, a cup or ruler?").<br>Ex. In a field trip to the grocery store, show which measuring tool should be used to weigh a bag of apples. Allow students to practice by choosing other fruits or vegetables to weigh.<br><br>**Students will:**<br>**EE4.MD.2.b.** Identify measurement tools.<br>Ex. Sort non-standard and standard measurement tools into two different groups.<br>Ex. Using pictures of standard and non-standard tools, identify which can be used to measure different items. |
| | **EE4.MD.2.c**. Use standard measurement to compare lengths of objects. | **Students will:**<br>**EE4.MD.2.c.** Use standard measurements to compare length of objects and indicate how many each is by standard measures.<br>Ex. Given a pencil and book, mark the length of each on a ruler to tell which is longer and approximately how many each is by inches.<br>Ex. Given a tape measure, mark the length of a bookcase and the teacher's |

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| | | desk on the tape measure to show which is longer and approximately how many each is by feet.<br><br>**Students will:**<br>**EE4.MD.2.c.** Use standard measurement to compare lengths of objects.<br>Ex. Given a pencil and book, mark the length of each on a ruler to tell which is longer.<br>Ex. Given a tape measure, mark the length of a bookcase and the teacher's desk on the tape measure to show which is longer.<br><br>**Students will:**<br>**EE4.MD.2.c.** Measure length of objects using standard tools, such as rulers, yardsticks, and meter sticks.<br>Ex. Given an object and a measuring tool, use the tool to mark the length of the object.<br>Ex. Given a ruler and sand in a bucket, mark the depth of the sand on a ruler.<br>Ex. Given a yardstick, measure different lengths or widths of the room and record the length on the yardstick in number of yardsticks.<br><br>**Students will:**<br>**EE4.MD.2.c.** Identify items as long or short.<br>Ex. Given two different items, one much longer than the first, indicate long/short.<br>Ex. After traveling to somewhere in the classroom and somewhere outside of room, indicate each distance as long or short. |
| | **EE4.MD.2.d.** Identify objects that have volume. | **Students will:**<br>**EE4.MD.2.d.** Determine volume of a cube by counting units of measure.<br>Ex. Use cubes to fill a box (small number, how many) and count the number of cubes needed to fill the box.<br>Ex. Use liquid to fill bowl (how much, one cup, etc.).<br><br>**Students will:** |

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| | | **EE4.MD.2.d.** Identify objects that have volume.<br>Ex. Given a group of pictures (cup, rock, fork), choose which one can be filled.<br>Ex. Identify objects in the room that can be filled (cup, fish tank, etc.).<br>Ex. Given a square and a cube, indicate cube.<br><br>**Students will:**<br>**EE4.MD.2.d.** Demonstrate solid or full, empty and part full.<br>Ex. Given a piece of paper and a cube, indicate, "Which one takes up more space?"<br>Ex. Fill a cup half full from the water fountain.<br>Ex. As the teacher is filling a cup, say stop when it is half full.<br><br>**Students will:**<br>**EE4.MD.2.d.** Identify vocabulary related to volume (full, empty).<br>Ex. Match picture of unopened bottle of soda to "full."<br>Ex. Identify an "empty" cup.<br>Ex. Indicate which is full and/or which is empty when holding/feeling a full can of soda and an empty can of soda. |
| | **EE4.MD.2.e.** Identify coins (penny, nickel, dime, quarter) and their values. | **Students will:**<br>**EE4.MD.2.e.** Identify relative value of different collections of coins.<br>Ex. When asked what is worth five cents, choose a nickel. When asked what is worth 25 cents, choose a quarter.<br>Ex. Given two coins, identify the value of each and indicate which is more.<br>Ex. Given 14 pennies and two dimes, indicate which set is worth more.<br><br>**Students will:**<br>**EE4.MD.2.e.** Identify coins (penny, nickel, dime, quarter) and their values.<br>Ex. Given two coins, choose correct coin by name and value.<br>Ex. Shown a coin, names coin.<br>Ex. Show relative values of penny, nickel, dime, quarter by arranging them in order from least to most. |

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|  |  | **Students will:**<br>**EE4.MD.2.e.** Match coins that are alike (penny, nickel, dime, quarter).<br>Ex. Given a group of coins, match coins that are alike.<br>Ex. Given a picture of a quarter, choose a quarter from a group of coins.<br><br>**Students will:**<br>**EE4.MD.2.e.** Select objects that are used for money.<br>Ex. Given three pictures (two non-coins and one coin), identify which one is a coin.<br>Ex. Given two choices, identify which one is a coin. |
| **4.MD.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.* | **EE4.MD.3.** N/A (Area begins at 6th grade and perimeter begins at 7th grade.) |  |
| **Represent and interpret data.**<br><br>**4.MD.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 | **EE4.MD.4.a.** Insert data into a preconstructed bar graph template. | **Students will:**<br>**EE4.MD.4.a.** Insert data into a graph to represent a data set with a scale equal to 10 (0 to 10 by ones).<br>Ex. Using a bar graph, enter one unit for each student to show their favorite activity in the correct category (lunch, physical therapy, music, P.E.) to determine most popular and least popular.<br>Ex. Go to the lost and found, categorize and count types of items and graph them to determine most and least.<br><br>**Students will:** |

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| 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.* | | **EE4.MD.4.a.** Insert data into a preconstructed bar graph template. Ex. Clean out desks; sort objects found into reusable, recyclable, reducible, or take-home items; and graph results with one bar for each – reuse, recycle, reduce, or take home. Ex. Given a preconstructed bar graph and data, enter the data on the bar graph by shading one unit of the bar for each piece of data. **Students will:** **EE4.MD.4.a.** Identify an appropriate scale for the data set. Ex. Identify if it is appropriate to use degrees or ounces on a weather graph. Ex. Determine if it is appropriate to use inches or pounds on a height graph. **Students will:** **EE4.MD.4.a.** Given a topic, identify appropriate data to collect. Ex. Using a weather graph, identify appropriate data given the choice between a picture of the sun and a picture of a shoe. Ex. Given the topic of snacks, determine whether jelly beans or books are appropriate for the graph. |
| | **EE4.MD.4.b.** Interpret data from a variety of graphs to answer questions. | **Students will:** **EE4.MD.4.b.** Create their own questions that can be answered by the data on a picture and bar graph. Ex. Cut simple graphs from newspapers/magazines and glue them onto card stock, create questions/answers based on the graph. Ex. Create their own questions/answers based on the information from a graph showing class preferences between two different activities. **Students will:** **EE4.MD.4.b.** Interpret data from a variety of graphs to answer questions. Ex. Answer questions based on information provided in a picture schedule. Ex. Tell how many sunny days there were in a month, based on a weather graph. |

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| | | **Students will:**<br>**EE4.MD.4.b.** Make observational statements about data in a picture and bar graph.<br>Ex. Tell you what they observe on a graph of students' eye colors.<br>Ex. Show students a graph of the Big 12 football teams and ask them what they think it is about.<br><br>**Students will:**<br>**EE4.MD.4.b.** Demonstrate awareness that symbols may be used to represent objects and events.<br>Ex. Understand that a picture of ice cream represents a favorite flavor.<br>Ex. Understand that a picture of snow represents a snowy day. |
| **Geometric measurement: understand concepts of angle and measure angles.**<br><br>**4.MD.5.** Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:<br>▪ 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 | **EE4.MD.5.** Recognize angles in geometric shapes. | **Students will:**<br>**EE4.MD.5.** Label different types of angles in geometric shapes.<br>Ex. Construct geometric shapes using counting sticks. Then determine whether angles are right angles or not.<br>Ex. Given a square, determine whether the angles are right angles or not and state a square has four angles.<br><br>**Students will:**<br>**EE4.MD.5.** Recognize angles in geometric shapes.<br>Ex. Draw an arc to identify the angles after teacher draws a geometric shape on a whiteboard.<br>Ex. Given pictures of different geometric shapes and angles that match the shapes, overlay shapes with matching angles.<br><br>**Students will:**<br>**EE4.MD.5.** Identify an angle.<br>Ex. Wipe away the shape that does not contain an angle when teacher draws a shape with an angle and a circle.<br>Ex. Identify as many angles as they can see or feel on the playground.<br>Ex. Given an angle template, hold it to shapes in the classroom and tell if it |

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| 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.<br>▪ An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees. | | matches.<br>Ex. Given a set of four shapes (one with angles and three with no angles), indicate the shape with angles.<br><br>**Students will:**<br>**EE4.MD.5.** Identify shapes that contain angles.<br>Ex. Given a square and a circle, identify the square.<br>Ex. Find an object that is shaped like a square in the classroom. |
| **4.MD.6.** Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. | **EE4.MD.6.** Identify angles as larger and smaller. | **Students will:**<br>**EE4.MD.6.** Construct angles of various sizes.<br>Ex. Construct right and acute angles.<br>Ex. Replicate angles from geometric shapes containing right and acute angles.<br><br>**Students will:**<br>**EE4.MD.6.** Identify angles as larger and smaller.<br>Ex. Given an angle shaded to less than 45⁰ and one shaded to more than 120⁰, indicate "Which is larger?"<br>Ex. Given two fraction puzzles pieces, one containing a significantly larger angle than the other, indicate "Which is smaller?"<br>**Students will:**<br>**EE4.MD.6.** Differentiate angles in shapes.<br>Ex. Given an angle and a circle, indicates "Which is an angle?"<br>Ex. Given a ball and a cube, indicate "Which has an angle?"<br><br>**Students will:**<br>**EE4.MD.6.** Replicate an angle.<br>Ex. Use popsicle sticks to replicate a given angle.<br>Ex. Bend a pipe cleaner to replicate a given angle. |

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| **4.MD.7.** Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. | **EE4.MD.7.** N/A (See EE4.MD.5.) | |

**Fourth Grade Mathematics Standards: Geometry**

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| **Draw and identify lines and angles, and classify shapes by properties of their lines and angles.**<br><br>**4.G.1.** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. | **EE4.G.1.** Distinguish between parallel and intersecting lines. | **Students will:**<br>**EE4.G.1.** Create a representation of parallel and intersecting lines.<br>Ex. Using Popsicle sticks, create parallel and intersecting lines.<br>Ex. Play "Simon Says" to illustrate parallel and intersecting lines with arm movements (or eye gaze a picture of students making the correct movements).<br><br>**Students will:**<br>**EE4.G.1.** Distinguish between parallel and intersecting lines.<br>Ex. Using a road map rug, trace over the parallel lines and then trace over the intersecting lines.<br>Ex. Using a map of the school on an interactive whiteboard, trace the classrooms that are in a parallel line and the hallways that intersect.<br>Ex. Find parallel lines in shapes.<br><br>**Students will:**<br>**EE4.G.1.** Identify an intersecting line.<br>Ex. Use sidewalk chalk to draw an intersecting line.<br>Ex. Go on an environment hunt and identify intersecting lines.<br>Ex. Trace intersecting lines (e.g., roads or hallways) on a map.<br><br>**Students will:**<br>**EE4.G.1.** Identify a line.<br>Ex. Using yarn, stretch and glue a line on paper.<br>Ex. Draw a line when directed.<br>Ex. Walk on a line taped to the floor when directed.<br>Ex. Given a line and a circle, indicate which is the line. |
| **4.G.2.** Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or | **EE4.G.2.** Distinguish between different attributes of shapes (lines, curves, angles). | **Students will:**<br>**EE4.G.2.** Classify shapes according to attributes.<br>Ex. After reading "The Button Box," determine which attributes can be used to sort geometric buttons (buttons can also be felt by visually impaired students or teacher can trace the shapes into the palm of a |

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| absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. | | hand).<br>Ex. Given several shapes, classify the shapes according to attributes such as shape and angles. (Teacher will trace geometric shape into student's palm and, after given choices of shapes, activate a switch to indicate a category of attribute.)<br><br>**Students will:**<br>**EE4.G.2.** Distinguish between different attributes of shapes (lines, curves, angles).<br>Ex. Sort different types of objects to show lines, curves, and angles.<br>Ex. Find pictures that represent lines, angles, and curves.<br>Ex. Draw a picture and identify the lines, angles, and curves used in the picture.<br><br>**Students will:**<br>**EE4.G.2.** Identify attributes of geometric shapes.<br>Ex. Use attribute blocks to sort shapes.<br>Ex. Assigned a shape, cut out magazine pictures to represent the assigned shape.<br><br>**Students will:**<br>**EE4.G.2.** Identify curves.<br>Ex. Assemble a selection of curved items.<br>Ex. Using a road map, use toy cars to find curves.<br>Ex. Given a square and a circle, indicate which is curved/round. |
| **4.G.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 | **EE4.G.3.** Recognize a line of symmetry in a simple shape. | **Students will:**<br>**EE4.G.3.** Locate the line of symmetry in a geometric shape.<br>Ex. Fold paper, in a geometric shape, and have student trace the fold line to identify the line of symmetry.<br>Ex. Using magnetic shapes, match a given pattern of shapes to create a symmetrical design.<br>**Students will:**<br>**EE4.G.3.** Recognize a line of symmetry in a simple shape. |

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| draw lines of symmetry. | | Ex. Place dots of paint on a coffee filter and fold in half. Place a pipe cleaner on the line of symmetry.<br>Ex. Use a symmetry mirror, move it around on shapes until the students see that both sides match.<br><br>**Students will:**<br>**EE4.G.3.** Recognize polygons.<br>Ex. Given a "mystery bag" with a geometric shape in it, find three objects, from around the school that match the shape and bring them back to class. Takes turns showing their items and have the rest of the students guess what the "mystery shape" is.<br>Ex. Identify polygons in pictures/shape.<br><br>**Students will:**<br>**EE4.G.3.** Recognize simple shapes (square, triangle, and rectangle).<br>Ex. Identify the shapes of environmental signs.<br>Ex. Match the name to a shape from two choices. |