



Montezuma Community Schools

504 N 4th Street
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Common Core Standards: Fourth Grade

Numbers and Operations in Base Ten:

Generalize place value understanding for multi-digit whole number

- Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right (4.NBT.1.)
- 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 comparison (4.NBT.2.)
- Use place value understanding to round multi-digit whole number to any place (4.NBT.3.)

Use place value understanding and properties of operations to perform multi-digit arithmetic

- 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. (4.NBT.5.)
- Find whole-number quotients and remainders with up to 4 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. (4.NBT.6.)

Operations and Algebraic Thinking:

Use the four operations with whole numbers to solve problems

- Multiply or divide to solve word problems involving multiplicative comparison distinguishing multiplicative comparison from additive comparison. (4.OA.2)
- 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 unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding (4.OA.3.)

Gain familiarity with factors and multiples

- 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.OA.4.)

Number Operations – Fractions

Extend understanding of fraction equivalence and ordering

- Explain why a fraction $\frac{a}{b}$ is equivalent to a fraction $\frac{n \times a}{n \times b}$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. (4.NF.1.)
- Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$. {4.NF.3}
 - Add and subtract mixed numbers with like denominators, e.g. by replacing each mixed number with an equivalent fraction, and / or by using properties of operations and the relationship between addition and subtraction.
 - Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g. by using visual fraction models and equations to represent the problem.

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Measurement and Data:

- Know relative sizes of measurement units within one system of units including metric and standard forms. {4.MD.1}
- Apply the area and perimeter formulas for rectangles in real world and mathematical problems. {4.MD.3}
- Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). {4.MD.4}
- Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. {4.MD.6}

Geometry:

- Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. {4.G.1}
- 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.G.2}
- 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.G.3}

Learning Targets:	Student <i>I Can</i> Statements:	Report Card:
<ul style="list-style-type: none"> • Students understand that the values of digits in any multi-digit number are based on patterns within a base-10 place value system and that patterns created by the use of 10 digits in a place value system make a place value to the right $1/10$ of the previous place value and a place value to the left 10 times the previous place value. {4.NBT.1} • Students understand that the same quantity can be represented with words, mathematical models, and expanded form based the place value of the digits. {4.NBT.2} • Students understand that rounding aids estimation of quantities by changing the original number to the closest multiple of a power of 10. {4.NBT.3} 	<ul style="list-style-type: none"> • I can use logical reasoning to explain the relationship between two successive place values. {4.NBT.1} • I can represent the quantities in a number of forms including words, base-ten numerals, and expanded form. • I can compare whole numbers in equalities and inequalities. {4.NBT.2} • I can count by 10s, 100s, 1000s, 10,000s, etc... • I can determine what is halfway between two consecutive multiples of powers of 10 (360, 370, 36,000 and 37,000) • I can compare whole numbers. 	<ul style="list-style-type: none"> • Problem Solving • Place Value - Forms, Compare • Place Value - Compare • Rounding

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<ul style="list-style-type: none"> • Students understand that multiplication problems can be solved using a variety of strategies, models, and representations and can use efficient applications of multiplication computation strategies based on the numbers and operations in the problems. {4.NBT.5} • Students understand that division problems can be solved using a variety of strategies, models, and representations and can use efficient application of division computation strategies based on numbers and operations in the problems. Students understand the relationships between models of division problems and symbolic recordings of those models can be used to justify solutions. {4.NBT.6} • Students understand that the operation of multiplication represents contexts of putting together equal sized groups or multiplicative comparisons and division represents partitioning wholes into equal sized shares. The operation of subtraction represents taking apart. Mathematical problems can be solved using a variety of strategies, models and representations. Variable quantities can represent unknown quantities when modeling mathematical situations. {4.OA.2} 	<ul style="list-style-type: none"> • I can use place value vocabulary, models, and logical reasoning to justify solutions to rounding problems. {4.NBT.3} • I can use strategies based on an understanding of place value and properties of operations to find products. • I can use a variety of place value models of multiplication problems to justify solutions and solution paths. {4.NBT.5} • I can model division problems using appropriate tools. • I can record strategies for solving division problems. • I can use logical reasoning to communicate the relationship between models and symbolic (numeric) representations of solutions to division problems. • I can accurately compute quotients with remainders. {4.NBT.6} • I can compare and contrast mathematical context in order to determine the types of mathematical comparisons present. • I can represent multiplicative comparison contexts physically, pictorially, or symbolically. • I can strategically choose and apply a variety of representations to solve multiplicative comparison problems. • I can use symbols to represent unknown quantities in multiplicative comparison equations. 	<ul style="list-style-type: none"> • Place Value • Multiplication • Division • Problem Solving • Multiplication Process • Division Process • Problem Solving
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<ul style="list-style-type: none">• Students understand that the operation of addition represents both putting together and adding to contexts.<ul style="list-style-type: none">◦ The operation of subtraction represents taking apart, taking from, and additive comparison.◦ The operation of multiplication represents contexts of putting together equal sized groups.◦ The operation of division represents partitioning into equal-sized parts.◦ The interpretation of the remainder in a division problem is dependent upon the context and question.◦ Variables represent unknown quantities when modeling mathematical situations algebraically.◦ Solutions can be evaluated by using reasoning to compare the actual solution with estimated solutions. {4.OA.3}	<ul style="list-style-type: none">• I can accurately compute products and quotients.• I can use mathematical language to communicate the connections among contexts involving all four operations and related representations and justify solutions paths. {4.OA.2}• I can represent quantities and operations (+, -, x, and division of whole numbers) physically, pictorially, or symbolically.• I can strategically choose and apply a variety of representations to solve addition, subtraction, multiplication, and division multi-step word problems.• I can use symbols to represent unknown quantities in equations that represent multi-step word problems.• I can use logical reasoning and connections between physical/pictorial representations to justify solutions and solution paths and to interpret remainders.• I can estimate answers in addition, subtraction, multiplication and division problems.• I can evaluate the reasonableness of answers by comparing actual answers to estimates. {4.OA.3}	<ul style="list-style-type: none">• Multiplication Process• Division Process• Problem Solving• Estimation
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<ul style="list-style-type: none"> • Students understand that a whole number is a multiple of each of its factors and that numbers can be classified as prime, composite, or neither, based on their properties and characteristics. {4.OA.4} • Students understand the characteristics of addition and subtraction contexts for whole numbers and like fractions and strategies for representing and solving addition and subtraction problems involving fractions. {4.NF.3} • Students understand the relationship among units within a system of measurement (e.g. metric length, time, standard mass, etc.) are multiplicative comparisons. {4.MD.1} 	<ul style="list-style-type: none"> • I can use models and logical reasoning to determine all possible factor pairs for a whole number between 1–100. • I can accurately compute products and quotients. • I can use and understanding of prime and composite to classify numbers. {4.OA.4} • I can represent quantities (whole numbers and fractions) and operations (additions and subtraction) physically, pictorially, or symbolically. • I can strategically choose and apply a variety of representations to solve addition and subtraction word problems involving problems involving like fractions. • I can use symbols to represent unknown quantities in addition and subtraction equations and solve such equations. • I can accurately compute sums and differences of fractions. • I can use logical reasoning and connections among representations to justify solutions and solution paths. {4.NF.3} • I can multiply or divide to accurately generate number pairs for conversion tables. • I can interpret tables to solve problems. {4.MD.1} 	<ul style="list-style-type: none"> • Number Sense • Multiplication Process • Division Process • Fractions Concepts • Fractions Adding and Subtracting • Problem Solving • Multiplication Process • Division Process • Measurement - Basic Conversion • Graphs • Time
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<ul style="list-style-type: none"> • Students understand strategies for representing contexts involving area and perimeter of rectangular regions, those strategies include standard formulas ($A = l \times w$, $P = 2L + 2W$, $P = l + l + w + w$, or $P = 2(L + W)$) for computing the area and perimeter of rectangular regions. {4.MD.3} • Students understand techniques for constructing line plots and standard units and related tools for measuring length. Students also know strategies for adding and subtracting fractions. {4.MD.4} • Students understand that the rotation of an angle is measured by the number of one-degree angles that exactly cover the rotation of the angle. {4.MD.6} • Students understand that shapes are categorized based on attributes they possess in common such as; angle size, side length, side relationships (parallel and perpendicular). {4.G.1} 	<ul style="list-style-type: none"> • I can discriminate between contexts asking for perimeter and those asking for area measurements. • I can strategically choose and apply appropriate methods for representing and calculating. • I can accurately compute measurements within area and perimeter of rectangular region problems. {4.MD.3} • I can use standard units and related tools to measure length to the nearest 1/8 inch. • I can organize and represent length and measurement data on a line plot. • I can choose and apply appropriate strategies to solve problems generated by conjectures from examining data displays. • I can apply strategies for solving problems involving adding and subtracting fractions. {4.MD.4} • I can use a protractor to measure angles in whole number degrees. • I can use a protractor and rule to sketch angles of a given measure. {4.MD.6} • I can strategically choose and use tools to draw 2-D geometric figures. • I can decompose 2-D figures in a variety of ways in order to name and identify component parts. {4.G.1} 	<ul style="list-style-type: none"> • Geometry - Area/Perimeter • Problem Solving • Geometry - Shapes • Measurement • Measurement - Choosing Correct • Graphs • Problem Solving • Fractions - Adding and Subtracting • Geometry - Identify and measure angles • Geometry - Shapes/Concepts • Geometry - Identify and Measures angles
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<ul style="list-style-type: none">• Students understand that shapes are categorized based on attributes they possess in common such as: angle size, side length, side relationships (parallel and perpendicular) {4.G.2}• Students understand that a line of symmetry divides a shape into two parts such that when folded on the line the two parts match. {4.G.3}	<ul style="list-style-type: none">• I can justify classification of shapes based on the characteristics of their attributes. {4.G.2}• I can draw lines of symmetry and justify their placement. {4.G.3}	<ul style="list-style-type: none">• Geometry - Identify and Measures angles• Geometry - Symmetry
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