

SIDE BY SIDE OF OKLAHOMA PASS AND COMMON CORE STATE STANDARDS

PASS			Strand and Standard		
Strand	Standard #	PASS		Grade	Common Core State Standard
FOURTH GRADE					
* Legends/Abbreviations can be found in a separate table.					
A	1	Standard 1: Algebraic Reasoning: Patterns and Relationships - The student will use a variety of problem-solving approaches to create, extend, and analyze patterns.			
A	1.1	Discover, describe, extend, and create a wide variety of patterns using tables, graphs, rules, and verbal models (e.g., determine the rule from a table or "function machine", extend visual and number patterns).	OA.5	4	Generate and analyze patterns. 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.
A	1.1	Discover, describe, extend, and create a wide variety of patterns using tables, graphs, rules, and verbal models (e.g., determine the rule from a table or "function machine", extend visual and number patterns).	OA.3	5	Analyze patterns and relationships. 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.

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A	1.1	Discover, describe, extend, and create a wide variety of patterns using tables, graphs, rules, and verbal models (e.g., determine the rule from a table or "function machine", extend visual and number patterns).	OA.9	3	Solve problems involving the four operations, and identify and explain patterns in arithmetic. 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.
A	1.2	Find variables in simple arithmetic problems by solving open sentences (equations) and other problems involving addition, subtraction, multiplication, and division with whole numbers.	OA.2	4	Use the four operations with whole numbers to solve problems. 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.
A	1.2	Find variables in simple arithmetic problems by solving open sentences (equations) and other problems involving addition, subtraction, multiplication, and division with whole numbers.	OA.3	4	Use the four operations with whole numbers to solve problems. 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.
A	1.2	Find variables in simple arithmetic problems by solving open sentences (equations) and other problems involving addition, subtraction, multiplication, and division with whole numbers.	OA.4	3	Represent and solve problems involving multiplication and division. 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 $8 \times ? = 48$, $5 = _ \div 3$, $6 \times 6 = ?$.
A	1.2	Find variables in simple arithmetic problems by solving open sentences (equations) and other problems involving addition, subtraction, multiplication, and division with whole numbers.	OA.6	3	Understand properties of multiplication and the relationship between multiplication and division. Understand division as an unknown-factor problem. For example, divide $32 \div 8$ by finding the number that makes 32 when multiplied by 8.

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A	1.3	Recognize and apply the associative property of multiplication (e.g., $6 \cdot (2 \cdot 3) = (6 \cdot 2) \cdot 3$).	OA.5	3	Understand properties of multiplication and the relationship between multiplication and division. Apply properties of operations as strategies to multiply and divide. Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$ then $15 \times 2 = 30$, or by $5 \times 2 = 10$ then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.) (Students need not use formal terms for these properties.)
A	1.3	Recognize and apply the associative property of multiplication (e.g., $6 \cdot (2 \cdot 3) = (6 \cdot 2) \cdot 3$).	OA.9	3	Solve problems involving the four operations, and identify and explain patterns in arithmetic. 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.
N	2	Standard 2: Number Sense and Operation - The student will use numbers and number relationships to acquire basic facts. The student will estimate and compute with whole numbers and fractions.			
N	2.1a	Number Sense: Place Value: i. Apply the concept of place value through 6 digits (e.g., write numbers in expanded form). ii. Model, read, write and rename decimal numbers to the hundredths (e.g., money, numerals to words).	NBT.1	4	Generalize place value understanding for multi-digit whole numbers. 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 $700 \div 70 = 10$ by applying concepts of place value and division. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)

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N	2.1a	<p>Number Sense: Place Value:</p> <p>i. Apply the concept of place value through 6 digits (e.g., write numbers in expanded form).</p> <p>ii. Model, read, write and rename decimal numbers to the hundredths (e.g., money, numerals to words).</p>	NBT.3a	5	<p>Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.</p>
N	2.1a	<p>Number Sense: Place Value:</p> <p>i. Apply the concept of place value through 6 digits (e.g., write numbers in expanded form).</p> <p>ii. Model, read, write and rename decimal numbers to the hundredths (e.g., money, numerals to words).</p>	NBT.1	3	<p>Use place value understanding and properties of operations to perform multi-digit arithmetic. Use place value understanding to round whole numbers to the nearest 10 or 100.</p>
N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $1/2$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $1/3$, $3/4$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NBT.2	4	<p>Generalize place value understanding for multi-digit whole numbers. 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. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)</p>

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N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.1	4	<p>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. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)</p>
N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.2	4	<p>Extend understanding of fraction equivalence and ordering. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)</p>

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N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.3	4	<p>Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)</p>
N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.3a	4	<p>Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</p>

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N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.3b	4	<p>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: $\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$; $\frac{3}{8} = \frac{1}{8} + \frac{2}{8}$; $2 \frac{1}{8} = 1 + 1 + \frac{1}{8} = \frac{8}{8} + \frac{8}{8} + \frac{1}{8}$.</p>
N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.4	4	<p>Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)</p>

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N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.5	4	<p>Understand decimal notation for fractions, and compare decimal fractions. 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. For example, express $\frac{3}{10}$ as $\frac{30}{100}$ and add $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$. (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.) (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)</p>
N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.7	4	<p>Understand decimal notation for fractions, and compare decimal fractions. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons comparisons are valid only when 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. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)</p>

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N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.2	3	<p>Develop understanding of fractions as numbers. Understand a fraction as a number on the number line; represent fractions on a number line diagram. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)</p>
N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.2a	3	<p>Represent a fraction $\frac{1}{b}$ 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 $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)</p>

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N	2.1b	<p>Whole Number, Fraction, and Decimal:</p> <p>i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).</p> <p>ii. Use 0, $\frac{1}{2}$, and 1 or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).</p> <p>iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).</p> <p>iv. *Explore and connect negative numbers using real world situations (e.g. owing money, temperature, measuring elevations above and below sea level).</p>	NF.2b	3	<p>Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)</p>
N	2.2a	<p>Number Operation: Estimate and find the product of up to three-digit by three-digit using a variety of strategies to solve application problems.</p>	OA.3	4	<p>Use the four operations with whole numbers to solve problems. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>
N	2.2a	<p>Number Operation: Estimate and find the product of up to three-digit by three-digit using a variety of strategies to solve application problems.</p>	NBT.5	4	<p>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. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)</p>

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N	2.2a	Number Operation: Estimate and find the product of up to three-digit by three-digit using a variety of strategies to solve application problems.	NBT.5	5	Perform operations with multi-digit whole numbers and with decimals to hundredths. Fluently multiply multi-digit whole numbers using the standard algorithm.
N	2.2b	Number Operation: Division Concepts and Fact Families: i. Demonstrate fluency (memorize and apply) with basic division facts up to $144 \div 12$ and the associated multiplication facts (e.g., $144 \div 12 = 12$ and $12 \times 12 = 144$). ii. Estimate the quotient with one- and two-digit divisors and a two- or three-digit dividend to solve application problems. iii. Find the quotient (with and without remainders) with 1-digit divisors and a 2- or 3-digit dividend to solve application problems.	OA.1	4	Use the four operations with whole numbers to solve problems. Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ 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.
N	2.2b	Number Operation: Division Concepts and Fact Families: i. Demonstrate fluency (memorize and apply) with basic division facts up to $144 \div 12$ and the associated multiplication facts (e.g., $144 \div 12 = 12$ and $12 \times 12 = 144$). ii. Estimate the quotient with one- and two-digit divisors and a two- or three-digit dividend to solve application problems. iii. Find the quotient (with and without remainders) with 1-digit divisors and a 2- or 3-digit dividend to solve application problems.	NBT.3a	4	Generalize place value understanding for multi-digit whole numbers. Use place value understanding to round multi-digit whole numbers to any place. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)
N	2.2b	Number Operation: Division Concepts and Fact Families: i. Demonstrate fluency (memorize and apply) with basic division facts up to $144 \div 12$ and the associated multiplication facts (e.g., $144 \div 12 = 12$ and $12 \times 12 = 144$). ii. Estimate the quotient with one- and two-digit divisors and a two- or three-digit dividend to solve application problems. iii. Find the quotient (with and without remainders) with 1-digit divisors and a 2- or 3-digit dividend to solve application problems.	NBT.6	4	Use place value understanding and properties of operations to perform multi-digit arithmetic. 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. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)

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N	2.2b	<p>Number Operation: Division Concepts and Fact Families:</p> <p>i. Demonstrate fluency (memorize and apply) with basic division facts up to $144 \div 12$ and the associated multiplication facts (e.g., $144 \div 12 = 12$ and $12 \times 12 = 144$).</p> <p>ii. Estimate the quotient with one- and two-digit divisors and a two- or three-digit dividend to solve application problems.</p> <p>iii. Find the quotient (with and without remainders) with 1-digit divisors and a 2- or 3-digit dividend to solve application problems.</p>	OA.2	3	<p>Represent and solve problems involving multiplication and division. Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.</p>
N	2.b	<p>Number Operation: Division Concepts and Fact Families:</p> <p>i. Demonstrate fluency (memorize and apply) with basic division facts up to $144 \div 12$ and the associated multiplication facts (e.g., $144 \div 12 = 12$ and $12 \times 12 = 144$).</p> <p>ii. Estimate the quotient with one- and two-digit divisors and a two- or three-digit dividend to solve application problems.</p> <p>iii. Find the quotient (with and without remainders) with 1-digit divisors and a 2- or 3-digit dividend to solve application problems.</p>	NF.3d	3	<p>Compare two fractions with the same numerator or the same denominator, by reasoning about their size, Recognize that valid comparisons rely on the two fractions referring 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. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)</p>
G	3	<p>Standard 3: Geometry - The student will use geometric properties and relationships to analyze shapes.</p>			
G	3.1	<p>Identify, draw, and construct models of intersecting, parallel, and perpendicular lines.</p>	G.1	4	<p>Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.</p>

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G	3.1	Identify, draw, and construct models of intersecting, parallel, and perpendicular lines.	G..2	4	Draw and identify lines and angles, and classify shapes by properties of their lines and angles. 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.
G	3.2	Identify and compare angles equal to, less than, or greater than 90 degrees (e.g., use right angles to determine the approximate size of other angles).	MD.5	4	Geometric measurement: understand concepts of angle and measure angles. 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.
G	3.2	Identify and compare angles equal to, less than, or greater than 90 degrees (e.g., use right angles to determine the approximate size of other angles).	G.1	4	Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
G	3.2	Identify and compare angles equal to, less than, or greater than 90 degrees (e.g., use right angles to determine the approximate size of other angles).	G.2	4	Draw and identify lines and angles, and classify shapes by properties of their lines and angles. 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.

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G	3.3	Identify, draw, and construct models of regular and irregular polygons including triangles, quadrilaterals, pentagons, hexagons, heptagons, and octagons to solve problems.	G.1	4	Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
G	3.3	Identify, draw, and construct models of regular and irregular polygons including triangles, quadrilaterals, pentagons, hexagons, heptagons, and octagons to solve problems.	G.2	4	Draw and identify lines and angles, and classify shapes by properties of their lines and angles. 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.
G	3.3	Identify, draw, and construct models of regular and irregular polygons including triangles, quadrilaterals, pentagons, hexagons, heptagons, and octagons to solve problems.	G.3	4	Draw and identify lines and angles, and classify shapes by properties of their lines and angles. 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.
G	3.3	Identify, draw, and construct models of regular and irregular polygons including triangles, quadrilaterals, pentagons, hexagons, heptagons, and octagons to solve problems.	G.1	2	Reason with shapes and their attributes. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (Sizes are compared directly or visually, not compared by measuring.)
G	3.3	Identify, draw, and construct models of regular and irregular polygons including triangles, quadrilaterals, pentagons, hexagons, heptagons, and octagons to solve problems.	G.1	3	Reason with shapes and their attributes. 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.

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G	3.4	Describe the effects on two-dimensional objects when they slide (translate), flip (reflect), and turn (rotate) (e.g., tessellations).	G.1	8	Understand congruence and similarity using physical models, transparencies, or geometry software. Verify experimentally the properties of rotations, reflections, and translations: -- a. Lines are taken to lines, and line segments to line segments of the same length. -- b. Angles are taken to angles of the same measure. -- c. Parallel lines are taken to parallel lines.
M	4	Standard 4: Measurement - The student will solve problems using appropriate units of measure in a variety of situations.			
M	4.1a	Measurement: Estimate the measures of a variety of objects using customary units.	MD.1	4	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 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),
M	4.1b	Measurement: Establish benchmarks for metric units and estimate the measures of a variety of objects (e.g., mass: the mass of a raisin is about 1 gram, length: the width of a finger is about 1 centimeter).	MD.7	4	Geometric measurement: understand concepts of angle and measure angles. 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.

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M	4.1c	Measurement: Select appropriate customary and metric units of measure and measurement instruments to solve application problems involving length, weight, mass, area, and volume.	MD.1	4	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 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),
M	4.1c	Measurement: Select appropriate customary and metric units of measure and measurement instruments to solve application problems involving length, weight, mass, area, and volume.	MD.2	4	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 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.
M	4.1c	Measurement: Select appropriate customary and metric units of measure and measurement instruments to solve application problems involving length, weight, mass, area, and volume.	MD.7	4	Geometric measurement: understand concepts of angle and measure angles. 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.

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M	4.1c	Measurement: Select appropriate customary and metric units of measure and measurement instruments to solve application problems involving length, weight, mass, area, and volume.	MD.5	2	Relate addition and subtraction to length. 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.
M	4.1c	Measurement: Select appropriate customary and metric units of measure and measurement instruments to solve application problems involving length, weight, mass, area, and volume.	MD.5	3	<p>Geometric measurement: understand concepts of area and relate area to multiplication and to addition. Recognize area as an attribute of plane figures and understand concepts of area measurement.</p> <p>-- 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.</p> <p>-- 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.</p>
M	4.1c	Measurement: Select appropriate customary and metric units of measure and measurement instruments to solve application problems involving length, weight, mass, area, and volume.	EE.4	8	<p>Work with radicals and integer exponents. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.</p>
M	4.1d	Measurement: Develop and use the concept of area of different shapes using grids to solve problems.	MD.2	4	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 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.

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M	4.1d	Measurement: Develop and use the concept of area of different shapes using grids to solve problems.	MD.3	4	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 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.
M	4.1d	Measurement: Develop and use the concept of area of different shapes using grids to solve problems.	G.2	2	Reason with shapes and their attributes. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
M	4.1d	Measurement: Develop and use the concept of area of different shapes using grids to solve problems.	MD.5	3	Geometric measurement: understand concepts of area and relate area to multiplication and to addition. 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.
M	4.1d	Measurement: Develop and use the concept of area of different shapes using grids to solve problems.	MD.6	3	Geometric measurement: understand concepts of area and relate area to multiplication and to addition. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).
M	4.1d	Measurement: Develop and use the concept of area of different shapes using grids to solve problems.	MD.7	3	Geometric measurement: understand concepts of area and relate area to multiplication and to addition. Relate area to the operations of multiplication and addition.

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M	4.2a	Time and Temperature: Solve elapsed time problems.	MD.2	4	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 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.
M	4.2b	Time and Temperature: Read thermometers using different intervals (intervals of 1, 2, or 5) and solve for temperature change.			
M	4.3	Money: Determine the correct amount of change when a purchase is made with a twenty dollar bill.	MD.2	4	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 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.
M	4.3	Money: Determine the correct amount of change when a purchase is made with a twenty dollar bill.	MD.8	2	Work with time and money. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ (dollars) and ¢ (cents) symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?
D	5	Standard 5: Data Analysis - The student will demonstrate an understanding of collection, display, and interpretation of data and probability.			

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D	5.1a	Data Analysis: Read and interpret data displays such as tallies, tables, charts, and graphs and use the observations to pose and answer questions (e.g., choose a table in social studies of population data and write problems).	MD.3	3	Represent and interpret data. 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.
D	5.1b	Data Analysis: Collect, organize and record data in tables and graphs (e.g., line graphs (plots), bar graphs, pictographs).	MD.4	4	Represent and interpret data. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.
D	5.1b	Data Analysis: Collect, organize and record data in tables and graphs (e.g., line graphs (plots), bar graphs, pictographs).	MD.4	3	Represent and interpret data. 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.
D	5.2	Probability: Predict the probability of outcomes of simple experiments using words such as certain, equally likely, impossible (e.g., coins, number cubes, spinners).			
D	5.3	Central Tendency: Determine the median (middle), and the mode (most often) of a set of data.			