

## CONTENT AREA: Mathematics

### GRADE LEVEL: 4

#### Standard Descriptions:

In grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; and (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

Blue: Standards 1 through 3 (TEST WINDOW 1)

Yellow: Standards 4 through 6 (TEST WINDOW 2)

(1) Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate and generalize methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

(2) Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g.,  $15/9 = 5/3$ ), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

(3) Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.	
Operations and Algebraic Thinking (OA)	Use the four operations with whole numbers to solve problems.
	Gain familiarity with factors and multiples.
	Generate and analyze patterns.
Number and Operations in Base Ten (NBT)	Generalize place value understanding for multi-digit whole numbers.
	Use place value understanding and properties of operations to perform multi-digit arithmetic.
Number and Operations—Fractions (NF)	Extend understanding of fraction equivalence and ordering.
	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
	Understand decimal notation for fractions, and compare decimal fractions.
Measurement and Data (MD)	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
	Represent and interpret data.
	Geometric measurement: understand concepts of angle and measure angles.

Geometry (G)	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Grade Level/ Content Area	Alternate K-PREP Statements Aligned KAS Standards	KAS Standard
Grade 4 Mathematics	(M-4.1) Multiply and divide to solve word problems.	<b>KAS (4.OA.2)</b> 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.
	(M-4.2) Generate a number pattern that follows a given rule. Identify apparent features of the pattern.	<b>KAS (4.OA.5)</b> 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.
	(M-4.3) Within the following systems of measurement, express measurement of time and length as larger and smaller units and record measurement equivalents in a two column table.	<b>KAS (4.MD.1)</b> 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), ...
	<p><b>(M-4.4)</b></p> <p>Apply the area and perimeter formulas for rectangles in real world and mathematical problems.</p>	<p><b>KAS (4.MD.3)</b></p> <p>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.</p>
	<p><b>(M-4.5)</b></p> <p>Identify points, lines, perpendicular lines, parallel lines and right, acute and obtuse angles in two dimensional figures.</p>	<p><b>KAS (4.G.1)</b></p> <p>Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two dimensional figures.</p>
	<p><b>(M-4.6)</b></p> <p>Classify two-dimensional figures based on perpendicular lines, parallel lines and angle measure.</p>	<p><b>KAS (4.G.2)</b></p> <p>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.</p>