Mathematics

Grade 4

PA Alternate Eligible Content

PA Reporting Category: M04.A-T Numbers and Operations in Base Ten

PA Core Standards:

CC.2.1.4.B.1 Apply place-value concepts to show an understanding of multi-digit whole numbers.

ASSESSMENT ANCHOR

M04.A-T.1 Generalize place-value understanding for multi-digit whole numbers.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.A-T.1.1 **Apply place-value and numeration concepts to compare, find equivalencies, and round.**	**M04.A-T.1.1.1** **Demonstrate an understanding that in a multi-digit whole number (through 1,000,000), a digit in one place represents ten times what it represents in the place to its right.** **Example: Recognize that in the number 770, the 7 in the hundreds place is ten times the 7 in the tens place.**	**M04AT1.1.1a**	**Model relationships between adjacent digits in a multi-digit whole number**
	M04.A-T.1.1.2 **Read and write whole numbers in expanded, standard, and word form through 1,000,000.**		
	M04.A-T.1.1.3 **Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place, using >, =, and < symbols.**	**M04AT1.1.3a**	**Compare to determine if a value is greater than, less than, or equal to another value**
	M04.A-T.1.1.4 **Round multi-digit whole numbers (through 1,000,000) to any place.**		

PA Reporting Category: M04.A-T Numbers and Operations in Base Ten

PA Core Standards:
CC.2.1.4.B.2 Use place value understanding and properties of operations to perform multi-digit arithmetic.

ASSESSMENT ANCHOR
M04.A-T.2 Use place-value understanding and properties of operations to perform multi-digit arithmetic.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.A-T.2.1 Use operations to solve problems.	**M04.A-T.2.1.1 Add and subtract multi-digit whole numbers (limit sums and subtrahends up to and including 1,000,000).**	**M04AT2.1.1a**	**Add or subtract whole numbers with sums and differences <1000**
	M04.A-T.2.1.2 Multiply a whole number of up to four digits by a one-digit whole number and multiply 2 two-digit numbers.	**M04AT2.1.2a**	**Demonstrate understanding of multiplication or division with small sets**
	M04.A-T.2.1.3 Divide up to four-digit dividends by one-digit divisors with answers written as whole-number quotients and remainders.		
	M04.A-T.2.1.4 Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits (for multiplication, no more than 2 digits × 1 digit, excluding powers of 10).	**M04AT2.1.4a**	**Assess the plausibility of results from addition or subtraction**

PA Reporting Category: M04.A-F Numbers and Operations—Fractions

PA Core Standards:
CC.2.1.4.C.1 Extend the understanding of fractions to show equivalence and ordering.

ASSESSMENT ANCHOR
M04.A-F.1 Extend understanding of fraction equivalence and ordering.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.A-F.1.1 **Find equivalencies and compare fractions.**	**M04.A-F.1.1.1** **Recognize and generate equivalent fractions.**	**M04AF1.1.1a**	**Identify equivalent fractions**
	M04.A-F.1.1.2 **Compare two fractions with different numerators and different denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100) using the symbols >, =, or < and justify the conclusions.**	**M04AF1.1.2a**	**Compare two fractions with like denominators**

PA Reporting Category: M04.A-F Numbers and Operations—Fractions

PA Core Standards:
CC.2.1.4.C.2 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

ASSESSMENT ANCHOR
M04.A-F.2 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.A-F.2.1 **Solve problems involving fractions and whole numbers (straight computation or word problems).**	**M04.A-F.2.1.1** **Add and subtract fractions with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; answers do not need to be simplified; and no improper fractions as the final answer).**	**M04AF.2.1.1a**	**Add or subtract fractions with common denominators (denominators limited to 2, 3, 4, or 8)**
	M04.A-F.2.1.2 **Decompose a fraction or a mixed number into a sum of fractions with the same denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100), recording the decomposition by an equation. Justify decompositions (e.g., by using a visual fraction model).** **Example 1: 3/8 = 1/8 + 1/8 + 1/8 OR 3/8 = 1/8 + 2/8** **Example 2: 2 1/12 = 1 + 1 + 1/12 =** **12/12 + 12/12 + 1/12**	**M04AF.2.1.2a**	**Decompose a proper fraction into multiple copies of a unit fraction (denominators limited to 3, 4, or 8)**
	M04.A-F.2.1.3 **Add and subtract mixed numbers with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; no regrouping with subtraction; fractions do not need to be simplified; and no improper fractions as the final answers).**		
	M04.A-F.2.1.4 **Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100).**		
	M04.A-F.2.1.5 **Multiply a whole number by a unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100 and final answers do not need to be simplified or written as a mixed number).** **Example: 5 × (1/4) = 5/4**		

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
	M04.A-F.2.1.6 **Multiply a whole number by a non-unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100 and final answers do not need to be simplified or written as a mixed number).** **Example: 3 × (5/6) = 15/6**		
	M04.A-F.2.1.7 **Solve word problems involving multiplication of a whole number by a fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100).**		

PA Reporting Category: M04.A-F Numbers and Operations—Fractions

PA Core Standards:
CC.2.1.4.C.3 Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g., 19/100).

ASSESSMENT ANCHOR
M04.A-F.3 Understand decimal notation for fractions and compare decimal fractions.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.A-F.3.1 **Use operations to solve problems involving decimals, including converting between fractions and decimals (may include word problems).**	**M04.A-F.3.1.1** **Add two fractions with respective denominators 10 and 100.** **Example: Express 3/10 as 30/100, and add 3/10 + 4/100 = 30/100 + 4/100 = 34/100.**		
	M04.A-F.3.1.2 **Use decimal notation for fractions with denominators 10 or 100.** **Example: Rewrite 0.62 as 62/100 and vice versa.**	**M04AF3.1.2a**	**Identify equivalent values in decimal or fraction form (limited to denominator of 10)**
	M04.A-F.3.1.3 **Compare two decimals to hundredths using the symbols >, =, or <, and justify the conclusions.**		

PA Reporting Category: M04.B-O Operations and Algebraic Thinking

PA Core Standards:
CC.2.2.4.A.1 Represent and solve problems involving the four operations.

ASSESSMENT ANCHOR
M04.B-O.1 Use the four operations with whole numbers to solve problems.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.B-O.1.1 **Use numbers and symbols to model the concepts of expressions and equations.**	**M04.B-O.1.1.1** **Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.** **Example 1: Interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5.** **Example 2: Know that the statement 24 is 3 times as many as 8 can be represented by the equation 24 = 3 × 8 or 24 = 8 × 3.**		
	M04.B-O.1.1.2 **Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison.** **Example: Know that 3 × 4 can be used to represent that Student A has 4 objects and Student B has 3 times as many objects not just 3 more objects.**	**M04BO1.1.2a**	**Use a model to solve a real-world multiplication problem**
	M04.B-O.1.1.3 **Solve multi-step word problems posed with whole numbers using the four operations. Answers will be either whole numbers or have remainders that must be interpreted yielding a final answer that is a whole number. Represent these problems using equations with a symbol or letter standing for the unknown quantity.**	**M04BO1.1.3a**	**Solve a real-world problem with one or more steps using addition or subtraction**
	M04.B-O.1.1.4 **Identify the missing symbol (+, −, ×, ÷, =, <, and >) that makes a number sentence true (single-digit divisor only).**		

PA Reporting Category: M04.B-O Operations and Algebraic Thinking

PA Core Standards:
CC.2.2.4.A.2 Develop and/or apply number theory concepts to find factors and multiples.

ASSESSMENT ANCHOR
M04.B-O.2 Gain familiarity with factors and multiples.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.B-O.2.1. Develop and apply number theory concepts to represent numbers in various ways.	**M04.B-O.2.1.1 Find all factor pairs for a whole number in the interval 1 through 100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the interval 1 through 100 is a multiple of a given one digit number. Determine whether a given whole number in the interval 1 through 100 is prime or composite.**	M04BO2.1.1a	**Identify the multiples of 5 to 100 and 10 to 100 (e.g., count money)**

PA Reporting Category: M04.B-O Operations and Algebraic Thinking

PA Core Standards:
CC.2.2.4.A.4 Generate and analyze patterns using one rule.

ASSESSMENT ANCHOR
M04.B-O.3 Generate and analyze patterns.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.B-O.3.1 Recognize, describe, extend, create, and replicate a variety of patterns.	**M04.B-O.3.1.1 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. Example 1: Given the rule "add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms alternate between odd and even numbers. Example 2: Given the rule "increase the number of sides by 1" and starting with a triangle, observe that the tops of the shapes alternate between a side and a vertex.**	**M04BO3.1.1a**	**Extend a pattern when shown a model and told the rule**
	M04.B-O.3.1.2 Determine the missing elements in a function table (limit to +, −, or × and to whole numbers or money).		
	M04.B-O.3.1.3 Determine the rule for a function given a table (limit to +, −, or × and to whole numbers).		

PA Reporting Category: M04.C-G Geometry

PA Core Standards:
CC.2.3.4.A.1 Draw lines and angles and identify these in two-dimensional figures.
CC.2.3.4.A.2 Classify two-dimensional figures by properties of their lines and angles.
CC.2.3.4.A.3 Recognize symmetric shapes and draw lines of symmetry.

ASSESSMENT ANCHOR
M04.C-G.1 Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.C-G.1.1 **List properties, classify, draw, and identify geometric figures in two dimensions.**	**M04.C-G.1.1.1** **Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two dimensional figures.**		
	M04.C-G.1.1.2 **Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.**	**M04CG1.1.2a**	**Classify two-dimensional shapes based on attributes**
	M04.C-G.1.1.3 **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 mirroring parts. Identify line-symmetric figures and draw lines of symmetry (up to two lines of symmetry).**	**M04CG1.1.3a**	**Recognize a line of symmetry in a two-dimensional figure**

PA Reporting Category: M04.D-M Measurement and Data

PA Core Standards:
CC.2.4.4.A.1 Solve problems involving measurement and conversions from a larger unit to a smaller unit.

ASSESSMENT ANCHOR
M04.D-M.1 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.D-M.1.1 **Solve problems involving length, weight (mass), liquid volume, time, area, and perimeter.**	**M04.D-M.1.1.1** **Know relative sizes of measurement units within one system of units including standard units (in., ft, yd, mi; oz., lb; and c, pt, qt, gal), metric units (cm, m, km; g, kg; and mL, L), and time (sec, min, hr, day, wk, mo, and yr). Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. A table of equivalencies will be provided.** **Example 1: Know that 1 kg is 1,000 times as heavy as 1 g.** **Example 2: Express the length of a 4-foot snake as 48 in.**	**M04DM1.1.1a**	**Identify the appropriate unit of measurement in a real-world problem**
	M04.D-M.1.1.2 **Use the four operations to solve word problems involving distances, intervals of time (such as elapsed time), liquid volumes, masses of objects; 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.**		
	M04.D-M.1.1.3 **Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (may include finding a missing side length). Whole numbers only. The formulas will be provided.**	**M04DM1.1.3a**	**Identify the area or perimeter of a rectangle**
	M04.D-M.1.1.4 **Identify time (analog or digital) as the amount of minutes before or after the hour.** **Example 1: 2:50 is the same as 10 minutes before 3:00.** **Example 2: Quarter past six is the same as 6:15.**		

PA Reporting Category: M04.D-M Measurement and Data

PA Core Standards:

CC.2.4.4.A.2 Translate information from one type of data display to another.

CC.2.4.4.A.4 Represent and interpret data involving fractions using information provided in a line plot.

ASSESSMENT ANCHOR

M04.D-M.2 Represent and interpret data.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.D-M.2.1 Organize, display, and answer questions based on data.	**M04.D-M.2.1.1 Make a line plot to display a data set of measurements in fractions of a unit (e.g., intervals of 1/2, 1/4, or 1/8).**	**M04DM2.1.1a**	**Organize data into a pictograph, line plot, or bar graph**
	M04.D-M.2.1.2 Solve problems involving addition and subtraction of fractions by using information presented in line plots (line plots must be labeled with common denominators, such as 1/4, 2/4, 3/4).	**M04DM2.1.2a**	**Answer a question about data in a pictograph, line plot, or bar graph**
	M04.D-M.2.1.3 Translate information from one type of display to another (table, chart, bar graph, or pictograph).		

PA Reporting Category: M04.D-M Measurement and Data

PA Core Standards:
CC.2.4.4.A.6 Measure angles and use properties of adjacent angles to solve problems.

ASSESSMENT ANCHOR
M04.D-M.3 Geometric measurement: understand concepts of angle; measure and create angles.

DESCRIPTOR	Comments Suggestions	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M04.D-M.3.1 **Use appropriate tools and units to sketch an angle and determine angle measurements.**	**M04.D-M.3.1.1** **Measure angles in whole-number degrees using a protractor. With the aid of a protractor, sketch angles of specified measure.**		
	M04.D-M.3.1.2 **Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems. (Angles must be adjacent and non-overlapping.)**		