Mathematics Grade 7

PA Alternate Eligible Content

PA Reporting Category: M07.A-N The Number System

PA Core Standards:

CC.2.1.7.E.1 Apply and extend previous understandings of operations with fractions to operations with rational numbers.

Assessment Anchor

M07.A-N.1 Apply and extend previous understandings of operations to add, subtract, multiply, and divide rational numbers.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M07.A-N.1.1 Solve real-world and mathematical problems involving the four operations with rational numbers.	M07.A-N.1.1.1 Apply properties of operations to add and subtract rational numbers, including real-world contexts.	M07AN1.1.1a	Solve a 1-step addition or subtraction problem with fractions, decimals, or positive/negative integers
	M07.A-N.1.1.2 Represent addition and subtraction on a horizontal or vertical number line.	M07AN1.1.2a	Identify the difference between two numbers on the number line
	M07.A-N.1.1.3 Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.	M07AN1.1.3a	Solve a multiplication or division problem with positive/negative rational numbers

PA Reporting Category: M07.A-R Ratios and Proportional Relationships

PA Core Standards:

CC.2.1.7.D.1 Analyze proportional relationships and use them to model and solve real-world and mathematical problems.

Assessment Anchor

M07.A-R.1 Demonstrate an understanding of proportional relationships.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M07.A-R.1.1 Analyze, recognize, and represent proportional relationships and use them to solve real-world and mathematical problems.	M07.A-R.1.1.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. Example: If a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2 / 1/4 miles per hour, equivalently 2 miles per hour.	M07AR1.1.1a	Find the unit rate in a real-world problem
	M07.A-R.1.1.2 Determine whether two quantities are proportionally related (e.g., by testing for equivalent ratios in a table, graphing on a coordinate plane and observing whether the graph is a straight line through the origin).		
	M07.A-R.1.1.3 Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	M07AR1.1.3a	Represent a proportional relationship on a line graph
	M07.A-R.1.1.4 Represent proportional relationships by equations. Example: If total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.		
	M07.A-R.1.1.5 Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r), where r is the unit rate.	M07AR1.1.5a	Interpret an ordered pair in a real-world problem
	M07.A-R.1.1.6 Use proportional relationships to solve multi-step ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease.	M07AR1.1.6a	Use percentages to solve a real-world problem

PA Reporting Category: M07.B-E Expressions and Equations

PA Core Standards:

CC.2.2.7.B.1 Apply properties of operations to generate equivalent expressions.

Assessment Anchor

M07.B-E.1 Represent expressions in equivalent forms.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	DRAFT ALTERNATE ELIGIBLE CONTENT
M07.B-E.1.1 Use properties of operations to generate equivalent expressions.	M07.B-E.1.1.1 Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients. Example 1: The expression $1/2 \cdot (x + 6)$ is equivalent to $1/2 \cdot x + 3$. Example 2: The expression $5.3 - y + 4.2$ is equivalent to $9.5 - y$ (or $-y + 9.5$). Example 3: The expression $4w - 10$ is equivalent to $2(2w - 5)$.		

PA Reporting Category: M07.B-E Expressions and Equations

PA Core Standards:

CC.2.2.7.B.3 Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.

Assessment Anchor

M07.B-E.2 Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M07.B-E.2.1 Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers.	M07.B-E.2.1.1 Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. Example: If a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50 an hour (or 1.1 × \$25 = \$27.50).		
M07.B-E.2.2 Use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems.	M07.B-E.2.2.1 Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Example: The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?	M07BE2.2.1a	Select an algebraic expression (equations or inequalities) using addition or subtraction of fractions, decimals, or positive/negative integers to solve a 1-step real-world problem
	M07.B-E.2.2.2 Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers, and graph the solution set of the inequality. Example: A salesperson is paid \$50 per week plus \$3 per sale. This week she wants her pay to be at least \$100. Write an inequality for the number of sales the salesperson needs to make and describe the solutions.		
M07.B-E.2.3 Determine the reasonableness of the answer(s) in problem- solving situations.	M07.B-E.2.3.1 Determine the reasonableness of answer(s) or interpret the solution(s) in the context of the problem. Example: If you want to place a towel bar that is 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.	M07BE2.3.1a	Identify a reasonable solution in the context of a problem using the four basic operations and numbers under 20

PA Reporting Category: M07.C-G Geometry

PA Core Standards:

CC.2.3.7.A.2 Visualize and represent geometric figures and describe the relationships between them.

Assessment Anchor

M07.C-G.1 Demonstrate an understanding of geometric figures and their properties.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	DRAFT ALTERNATE ELIGIBLE CONTENT
M07.C-G.1.1 Describe and apply properties of geometric figures.	M07.C-G.1.1.1 Solve problems involving scale drawings of geometric figures, including finding length and area.	M07CG1.1.1a	Solve a 1-step real-world problem related to scaling
	M07.C-G.1.1.2 Identify or describe the properties of all types of triangles based on angle and side measures.	M07CG1.1.2a	Identify the properties of a right triangle
	M07.C-G.1.1.3 Use and apply the triangle inequality theorem.		
	M07.C-G.1.1.4 Describe the two-dimensional figures that result from slicing three-dimensional figures. Example: Describe plane sections of right rectangular prisms and right rectangular pyramids.	M07CG1.1.4a	Identify a three-dimensional figure with specific attributes

PA Reporting Category: M07.C-G Geometry

PA Core Standards:

CC.2.3.7.A.1 Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.

Assessment Anchor

M07.C-G.2 Solve real-world and mathematical problems involving angle measure, circumference, area, surface area, and volume.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M07.C-G.2.1 Identify, use, and describe properties of angles and their measures.	M07.C-G.2.1.1 Identify and use properties of supplementary, complementary and adjacent angles in a multi- step problem to write and solve simple equations for an unknown angle in a figure.	M07CG2.1.1a	Use angle relationships to find the missing angle
	M07.C-G.2.1.2 Identify and use properties of angles formed when two parallel lines are cut by a transversal (e.g., angles may include alternate interior, alternate exterior, vertical, corresponding).		
M07.C-G.2.2 Determine circumference, area, surface area, and volume	M07.C-G.2.2.1 Find the area and circumference of a circle. Solve problems involving area and circumference of a circle(s). Formulas will be provided.		
	M07.C-G.2.2.2 Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Formulas will be provided.	M07CG2.2.2a	Find the area or volume of a two- or three-dimensional object given the formula

PA Reporting Category: M07.D-S Statistics and Probability

PA Core Standards:

CC.2.4.7.B.1 Draw inferences about populations based on random sampling concepts.

Assessment Anchor

M07.D-S.1 Use random sampling to draw inferences about a population.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M07.D-S.1.1 Use random samples.	M07.D-S.1.1.1 Determine whether a sample is a random sample given a real-world situation.		
	M07.D-S.1.1.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Example 1: Estimate the mean word length in a book by randomly sampling words from the book. Example 2: Predict the winner of a school election based on randomly sampled survey data.		

PA Reporting Category: M07.D-S Statistics and Probability

PA Core Standards:

CC.2.4.7.B.2 Draw informal comparative inferences about two populations.

Assessment Anchor

M07.D-S.2 Draw comparative inferences about populations.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M07.D-S.2.1 Use statistical measures to compare two numerical data distributions.		M07DS2.1.1a	Compare two sets of data within a single pictograph, line plot, or bar graph
distributions of heights. Example 2: Decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth- grade science book.	M07DS2.1.1b	Use measures of central tendency to interpret data, including overall patterns in the data	

PA Reporting Category: M07.D-S Statistics and Probability

PA Core Standards:

CC.2.4.7.B.3 Investigate chance processes and develop, use, and evaluate probability models.

Assessment Anchor

M07.D-S.3 Investigate chance processes and develop, use, and evaluate probability models.

DESCRIPTOR	ELIGIBLE CONTENT	Alternate Eligible Content Code	ALTERNATE ELIGIBLE CONTENT
M07.D-S.3.1 Predict or determine the likelihood of outcomes.	M07.D-S.3.1.1 Predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible (i.e., a probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event).	M07DS3.1.1a	Identify the probability of events occurring as possible/impossible or likely/unlikely
M07.D-S.3.2 Use probability to predict outcomes	M07.D-S.3.2.1 Determine the probability of a chance event given relative frequency. Predict the approximate relative frequency given the probability. Example: When rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times but probably not exactly 200 times.		
	M07.D-S.3.2.2 Find the probability of a simple event, including the probability of a simple event not occurring. Example: What is the probability of not rolling a 1 on a number cube?		
	M07.D-S.3.2.3 Find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulation.		