

**Eighth Grade Math Assessment Framework
Standard 6A – Representations and Ordering**

		Related Textbook pages	Related Additional Resources	Local Assessment Items
Read, Write, & Represent Numbers	6.8.01 Read, write, and recognize equivalent representations of integer powers of 10.			
	6.8.02 Read, write, recognize, model, and interpret integers, including translating numerical expressions.			
	6.8.03 Recognize, translate between, and apply multiple representations of rational numbers (decimals, fractions, mixed numbers, percents, and roots).			
	6.8.04 Use scientific notation to represent numbers and solve problems.			
	6.8.05 Represent repeated factors using exponents.			
Order & Compare Numbers	6.8.06 Order and compare rational numbers.			
Number Line	6.8.07 Identify and locate rational and irrational numbers (e.g., π , $\sqrt{2}$, $\sqrt{5}$) on a number line.			
Classifications of Numbers	6.8.08 Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., exponents, roots, prime/composite, prime factorization, greatest common factor, least common multiple).			

Standards 6B, 6C – Computation, Operations, Estimation, and Properties

Number Operations	<p>6.8.09 Solve problems and number sentences involving addition, subtraction, multiplication, and division using rational numbers, exponents, and roots.</p>			
	<p>6.8.10 Identify and apply order of operations to simplify numeric expressions involving integers (including exponents and roots), fractions, and decimals.</p>			
Properties	<p>6.8.11 Identify and apply the following properties of operations with rational numbers:</p> <ul style="list-style-type: none"> • the commutative and associative properties for addition and multiplication; • the distributive property; • the additive and multiplicative identity properties; • the additive and multiplicative inverse properties; and • the multiplicative property of zero. 			
	<p>6.8.12 Describe the effect of multiplying and dividing by numbers, including the effect of multiplying or dividing a rational number by:</p> <ul style="list-style-type: none"> • a number less than zero; • zero; • a number between zero and one; and • a number greater than one. 			

Estimations	6.8.13 Select, use, and justify appropriate operations, methods, and tools to compute or estimate with rational numbers. Verify solutions and determine the reasonableness of results.			
	6.8.14 Estimate the square or cube root of a number less than 1,000 between two whole numbers (e.g., $\sqrt[3]{200}$ is between 5 and 6).			

Standard 6D – Ratios, Proportions, and Percents

Identify & Express Ratios	6.8.15 Use ratios to describe problem situations.			
Proportional Reasoning	6.8.16 Use proportional reasoning to model and solve problems.			
Percents	6.8.17 Read, write, recognize, model, and interpret percents, including those less than 1% and greater than 100%.			
	6.8.18 Solve number sentences and problems involving fractions, decimals, and percents (e.g., percent increase and decrease, interest rates, tax, discounts, tips).			

Standards 7A, 7B, 7C – Units, Tools, Estimation, and Applications

<p>Measurement Tools</p>	<p>7.8.01 Select and use appropriate standard units and tools to solve measurement problems, including measurements of polygons and circles.</p>			
<p>Area , Perimeter, & Circumference</p>	<p>7.8.02 Solve problems involving perimeter/circumference and area of polygons, circles, and composite figures using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description).</p>			
<p>Estimation</p>	<p>7.8.03 Compare and estimate length (including perimeter/circumference), area, volume, weight/mass, and angles (0° to 360°) using referents.</p>			
<p>Volume & Surface Area</p>	<p>7.8.04 Solve problems involving the volume or surface area of a right rectangular prism, right circular cylinder, or composite shape using an appropriate formula or strategy.</p>			
<p>Measurement Conversions</p>	<p>7.8.05 Solve problems involving unit conversions <u>within the same measurement system</u> for length, weight/mass, capacity, square units, and measures expressed as rates (e.g., converting feet/second to yards/minute).</p>			

Indirect Measurements & Scale Drawings	7.8.06 Solve problems involving scale drawings, maps, and indirect measurement (e.g., determining the height of a building by comparing its known shadow length to the known height and shadow length of another object).			
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Standard 8A – Representations, Patterns, and Expressions

Patterns	8.8.01 Analyze, extend, and create sequences or linear functions, and determine algebraic expressions to describe the n^{th} term of a sequence.			
Write & Simplify Expressions	8.8.02 Write an expression using variables to represent unknown quantities.			
	8.8.03 Simplify algebraic expressions.			
	8.8.04 Recognize and generate equivalent forms of algebraic expressions.			
Evaluate Algebraic Expressions	8.8.05 Evaluate or simplify algebraic expressions with one or more rational variable values (e.g., $3a^2 - b$ for $a = 3$ and $b = 7$).			

Standard 8B – Connections Using Tables, Graphs, and Symbols

Describing Change	8.8.06 Recognize, describe, and extend patterns using rate of change.			
Coordinate System	8.8.07 Represent linear equations and quantitative relationships on a rectangular coordinate system, and interpret the meaning of a specific part of a graph.			
Representations	8.8.08 Translate between different representations (table, written, graphical, or pictorial) of whole number relationships and linear expressions.			
	8.8.09 Interpret the meaning of slope and intercepts in linear situations.			
Inequalities	8.8.10 Identify, graph, and interpret up to two inequalities with a single variable (including the intersection or union of these inequalities) on a number line.			

Standards 8C, 8D – Writing, Interpreting, and Solving Equations

Write Equations & Inequalities	8.8.11 Represent and analyze problems with linear equations and inequalities.			
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Solve Equations & Inequalities	8.8.12 Solve linear equations and inequalities in one variable over the rational numbers (e.g., $5x+7=-13$, $4x-3=-7x+8$, $-2x+3>-5$).			
	8.8.13 Solve word problems involving unknown quantities.			

Standard 9A – Properties of Single Figures and Coordinate Geometry

Properties of Single Figures	9.8.01 Solve problems involving two- and three-dimensional shapes.			
	9.8.02 Solve problems that require knowledge of triangle and quadrilateral properties (e.g., triangle inequality).			
	9.8.03 Find the length of any side of a right triangle using the Pythagorean theorem (whole number solutions).			
Circles	9.8.04 Identify, describe, and determine the radius, diameter, and circumference of a circle and their relationship to each other and to pi.			

Coordinate Geometry	9.8.05 Graph points, and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).			
	9.8.06 Represent and identify geometric figures using coordinate geometry, including those resulting from transformations.			
Transformations	9.8.07 Analyze the results of a combination of transformations, and determine a different transformation that could produce the same result.			
Lines, Segments, Rays, & Angles	9.8.08 Identify or analyze relationships of angles formed by intersecting lines (including parallel lines cut by a transversal) and angles formed by radii of a circle.			
	9.8.09 Solve problems involving vertical, complementary, and supplementary angles.			

Standard 9B – Relationships Between and Among Multiple Figures

Relationships Between Two- & Three-Dimensional Objects	9.8.10 Identify front, side, and top views of a three-dimensional solid built with cubes.			
Congruency & Similarity	9.8.11 Solve problems involving congruent and similar figures.			
Distance	9.8.12 Relate absolute value to distance on the number line			

Standard 9C – Justifications of Conjectures and Conclusions

This standard is not assessed in isolation. Rather, its essence is assessed indirectly through problems that require this type of thinking.

Standard 9D – Trigonometry

This standard is not assessed on the state assessment until grade 11.

Standards 10A, 10B – Data Analysis and Statistics

Read & Interpret Displays	10.8.01 Read, interpret (including possible misleading characteristics), and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two or three circles), chart/table, line graph, scatterplot, circle graph, stem–and–leaf plot, or histogram.			
	10.8.02 Compare and contrast the effectiveness of different representations of the same data.			
Complete & Create Displays	10.8.03 Create a bar graph, chart/table, line graph, or circle graph and solve a problem using the data in the graph for a given set of data.			
Line of Best Fit	10.8.04 Identify or draw a reasonable approximation of the line of best fit from a set of data or a scatter plot, and use the line to make predictions.			
Statistics	10.8.05 Analyze and apply measures of central tendency (mode, range, median, and mean) in problem–solving situations.			

Standard 10C – Probability

Probability	10.8.06 Solve problems involving the probability of an event composed of repeated trials, compound events (including independent events), or future events with or without replacement.			
Outcomes & Counting Principles	10.8.07 Represent all possible outcomes (sample space) for simple or compound events (e.g., tables, grids, tree diagrams).			
	10.8.08 Solve simple problems involving the number of ways objects can be arranged (permutations and combinations).			