

Illinois Mathematics Assessment Framework, Grade 8, Correlated to *Glencoe Pre-Algebra**

Lessons in which the objectives are a primary focus are indicated in **bold**.

Assessment Objective		Student Edition Lesson(s)
STATE GOAL 6 NUMBER SENSE		
Standard 6A—Representations and Ordering		
6.8.01	Read, write, and recognize equivalent representations of integer powers of 10.	4-8
6.8.02	Read, write, recognize, model, and interpret integers, including translating numerical expressions.	1-2, 2-1
6.8.03	Recognize, translate between, and apply multiple representations of rational numbers (decimals, fractions, mixed numbers, percents, and roots).	5-1, 5-2, 6-4
6.8.04	Use scientific notation to represent numbers and solve problems.	4-8
6.8.05	Represent repeated factors using exponents.	4-2, RM4, 4-6, 4-7
6.8.06	Order and compare rational numbers.	2-1, 4-5, 5-1, 5-2, PS5
6.8.07	Identify and locate rational and irrational numbers (e.g., π , $\sqrt{2}$, $\sqrt{5}$) on a number line.	2-1, 9-1
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).	RM2, 4-1, 4-3, 4-4, RM5, 5-6, 5-6F, 9-2
Standards 6B, 6C—Computation, Operations, Estimation, and Properties		
6.8.09	Solve problems and number sentences involving addition, subtraction, multiplication, and division using rational numbers, exponents, and roots.	1-1, 2-2P, 2-2, 2-3, 2-4, 2-5, 4-2, 4-5, 5-3, 5-4, 5-5, 5-7, 9-1, 9-5P, 9-5, 9-7, 9-8, PS1, PS2, PS3, PS4, PS8, PS10
6.8.10	Identify and apply order of operations to simplify numeric expressions involving integers (including exponents and roots), fractions, and decimals.	1-2
6.8.11	Identify and apply the following properties of operations with rational numbers: <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. 	1-4, 3-1, 5-4
6.8.12	Describe the effect of multiplying and dividing by numbers, including the effect of multiplying or dividing a rational number by: <ul style="list-style-type: none"> • a number less than zero; • zero; • a number between zero and one; and • a number greater than one. 	5-3, 5-4
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.	6-6, 9-1, 9-5F, PS7, PS9, PS11, PS12
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).	9-1, 9-5F
Standard 6D—Ratios, Proportions, and Percents		
6.8.15	Use ratios to describe problem situations.	6-1, RM6, 9-8P, 9-8
6.8.16	Use proportional reasoning to model and solve problems.	6-2, 6-2F, 6-5, 9-8F
6.8.17	Read, write, recognize, model, and interpret percents, including those less than 1% and greater than 100%.	6-4, 6-5P, 6-6

P = Preview Lesson, F = Follow-Up Lesson, RM = Reading Math Lesson, PS = Prerequisite Skill Appendix (pp. 706–723)

*For a correlation of the Illinois Mathematics Assessment Framework, Grade 7, to *Glencoe Pre-Algebra*, visit www.il.pre-alg.com.

Assessment Objective		Student Edition Lesson(s)
6.8.18	Solve number sentences and problems involving fractions, decimals, and percents (e.g., percent increase and decrease, interest rates, tax, discounts, tips).	6-4, 6-5, 6-6, 6-7, 6-7F, 6-8

STATE GOAL 7 MEASUREMENT

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

7.8.01	Select and use appropriate standard units and tools to solve measurement problems, including measurements of polygons and circles.	1-7P, 9-3, 9-5F, 11-7
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).	3-7F, 10-5P, 10-5, 10-7, 10-8
7.8.03	Compare and estimate length (including perimeter/circumference), area, volume, weight/mass, and angles (0° to 360°) using referents.	RM9, RM11, 11-7
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.	11-2P, 11-2, 11-4, 11-6
7.8.05	Solve problems involving unit conversions within the same measurement system for length, weight/mass, capacity, square units, and measures expressed as rates (e.g., converting feet/second to yards/minute).	PS13, PS14
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).	6-3, 9-5P, 9-5, 9-7, 9-8P, 9-8, 9-8F

STATE GOAL 8 ALGEBRA

Standard 8A—Representations, Patterns, and Expressions

8.8.01	Analyze, extend, and create sequences or linear functions, and determine algebraic expressions to describe the n th term of a sequence.	1-1, 5-10
8.8.02	Write an expression using variables to represent unknown quantities.	RM1, 1-3, 3-2
8.8.03	Simplify algebraic expressions.	3-2
8.8.04	Recognize and generate equivalent forms of algebraic expressions.	1-3
8.8.05	Evaluate or simplify algebraic expressions with one or more rational variable values (e.g., $3a^2 - b$ for $a = 3$ and $b = 7$).	1-3, 1-3F, 3-2

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

8.8.06	Recognize, describe, and extend patterns using rate of change.	8-4P, 8-4, 8-5P, 8-5, 8-6, 8-6F, 8-7
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.	1-6, 1-7P, 1-7, 8-2, 8-3, 8-4, 8-5, 8-6, 8-6F
8.8.08	Translate between different representations (table, written, graphical, or pictorial) of whole number relationships and linear expressions.	1-6, 1-7P, 1-7, 8-1, 8-2, RM8, 8-3, 8-4, 8-5, 8-6, 8-6F, 8-7
8.8.09	Interpret the meaning of slope and intercepts in linear situations.	8-4P, 8-4, 8-5P, 8-5
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.	7-3, 7-4, 7-5, 7-6

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

8.8.11	Represent and analyze problems with linear equations and inequalities.	1-5, 3-3, 3-4, 3-5, 3-6, 3-7, 6-7, 7-1, 7-2, RM7, 7-3, 7-4, 7-5, 7-6, 13-5
8.8.12	Solve linear equations and inequalities in one variable over the rational numbers (e.g., $5x + 7 = -13$, $4x - 3 = -7x + 8$, $-2x + 3 > -5$).	1-5, 3-3 and 3-4P, 3-3, 3-4, 3-5, 3-6, 3-7, 5-9, 6-7, 7-1P, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6

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Assessment Objective		Student Edition Lesson(s)
8.8.13	Solve word problems involving unknown quantities.	1-1, 3-3, 3-4, 3-5, 3-6, 3-7, 6-7, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6
STATE GOAL 9 GEOMETRY		
Standard 9A—Properties of Single Figures and Coordinate Geometry		
9.8.01	Solve problems involving two- and three-dimensional shapes.	9-5, 10-5, 11-6
9.8.02	Solve problems that require knowledge of triangle and quadrilateral properties (e.g., triangle inequality).	9-4, 9-5P, 9-5, 10-4
9.8.03	Find the length of any side of a right triangle using the Pythagorean theorem (whole number solutions).	9-5P, 9-5
9.8.04	Identify, describe, and determine the radius, diameter, and circumference of a circle and their relationship to each other and to pi.	10-7
9.8.05	Graph points, and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).	1-6, 1-7, 2-6
9.8.06	Represent and identify geometric figures using coordinate geometry, including those resulting from transformations.	10-3
9.8.07	Analyze the results of a combination of transformations, and determine a different transformation that could produce the same result.	10-3, 10-3F
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.	10-1
9.8.09	Solve problems involving vertical, complementary, and supplementary angles.	10-1
Standard 9B—Relationships Between and Among Multiple Figures		
9.8.10	Identify front, side, and top views of a three-dimensional solid built with cubes.	11-1P
9.8.11	Solve problems involving congruent and similar figures.	9-7, 10-2
9.8.12	Relate absolute value to distance on the number line.	2-1
Standard 9C—Justifications of Conjectures and Conclusions		
<i>This standard is not assessed in isolation. Rather, its essence is assessed indirectly through problems that require this type of thinking.</i>		
Standard 9D—Trigonometry <i>This standard is not assessed on the state assessment until grade 11.</i>		
STATE GOAL 10 DATA ANALYSIS, STATISTICS, AND PROBABILITY		
Standards 10A, 10B—Data Analysis and Statistics		
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.	1-7P, 1-7, 1-7F, 5-8P, 5-8, 9-2, 12-1, 12-3, 12-5, PS15
10.8.02	Compare and contrast the effectiveness of different representations of the same data.	12-5
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.	9-3F, 12-1, 12-3, 12-3F, 12-4, 12-4F
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.	1-7P, 1-7, 1-7F, 8-8
10.8.05	Analyze and apply measures of central tendency (mode, range, median, and mean) in problem-solving situations.	5-8P, 5-8, 5-8F
Standard 10C—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.	6-9, 6-9F, 12-9
10.8.07	Represent all possible outcomes (sample space) for simple or compound events (e.g., tables, grids, tree diagrams).	6-9
10.8.08	Solve simple problems involving the number of ways objects can be arranged (permutations and combinations).	12-6, 12-6F, 12-7

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