

# Florida Sunshine State Standards, Grade 8, Correlated to *Glencoe Pre-Algebra*

Sunshine State Standards and Grade Level Expectations, Grade 8	Student Edition Lesson
<b>Strand A: Number Sense, Concepts, and Operations</b>	
<b>Standard 1:</b> <i>The student understands the different ways numbers are represented and used in the real world.</i>	
<b>Benchmark MA.A.1.3.1:</b> <i>The student associates verbal names, written word names, and standard numerals with integers, fractions, decimals; numbers expressed as percents; numbers with exponents; numbers in scientific notation; radicals; absolute value; and ratios.</i>	
1. knows word names and standard numerals for integers, fractions, decimals, numbers expressed as percents, numbers with exponents, numbers expressed in scientific notation, absolute value, radicals, and ratios.	1-2A, 2-1, 4-2, 4-5B, 4-7, 4-8
<b>Benchmark MA.A.1.3.2:</b> <i>The student understands the relative size of integers, fractions, and decimals; numbers expressed as percents; numbers with exponents; numbers in scientific notation; radicals; absolute value; and ratios.</i>	
1. compares and orders fractions, decimals, integers, and radicals using graphic models, number lines, and symbols.	2-1, 5-1, 5-6, 6-1, 6-4, 9-2
2. compares and orders numbers expressed in absolute value, scientific notation, integers, percents, numbers with exponents, fractions, decimals, radicals, and ratios.	2-1, 4-2, 4-7, 4-8, 5-1, 5-6, 6-1, 6-1B, 6-4, 9-1, 9-2
<b>Benchmark MA.A.1.3.3:</b> <i>The student understands concrete and symbolic representations of rational numbers and irrational numbers in real-world situations.</i>	
1. knows examples of rational and irrational numbers in real-world situations.	5-2
2. describes the meanings of rational and irrational numbers using physical or graphical displays.	5-1, 5-2, 5-3, 5-4, 5-6, 5-7, 9-1, 9-2
3. constructs models to represent rational and irrational numbers.	4-3
<b>Benchmark MA.A.1.3.4:</b> <i>The student understands that numbers can be represented in a variety of equivalent forms, including integers, fractions, decimals, percents, scientific notation, exponents, radicals, and absolute value.</i>	
1. knows the relationships among fractions, decimals, and percents given a real-world context.	5-1, 5-2, 6-1, 6-4, 6-5A, 6-5, 9-2
2. simplifies expressions using integers, exponents, and radicals.	2-4, 2-5, 4-2, 4-6, 4-7, 9-1, 9-2
3. knows equivalent forms of large and small numbers in scientific and standard notation.	4-8
4. identifies and explains the absolute value of a number.	2-1
<b>Standard 2:</b> <i>The student understands number systems.</i>	
<b>Benchmark MA.A.2.3.1:</b> <i>The student understands and uses exponential and scientific notation.</i>	
1. expresses rational numbers in exponential notation including negative exponents (for example, $2^{-3} = \frac{1}{2^3} = \frac{1}{8}$ ).	4-2, 4-7
2. expresses numbers in scientific or standard notation including decimals between 0 and 1.	4-8, 10-2
3. evaluates numerical or algebraic expressions that contain exponential notation.	4-2, 4-7
<b>Benchmark MA.A.2.3.2:</b> <i>The student understands the structure of number systems other than the decimal number system.</i>	
1. expresses base ten numbers as equivalent numbers in different bases, such as base two, base five, and base eight.	4-2B

2. discusses the application of the binary (base two) number system in computer technology.	4-2B
3. expresses non-base ten numbers as equivalent numbers in base ten.	4-2B
<b>Standard 3:</b> <i>The student understands the effects of operations on numbers and the relationships among these operations, selects appropriate operations, and computes for problem solving.</i>	
<b>Benchmark MA.A.3.3.1:</b> <i>The student understands and explains the effects of addition, subtraction, multiplication, and division on whole numbers, fractions, including mixed numbers, and decimals, including the inverse relationships of positive and negative numbers.</i>	
1. knows the effects of the four basic operations on whole numbers, fractions, mixed numbers, decimals, and integers.	2-2A, 2-2, 2-3, 2-4, 2-5, 5-3, 5-4, 5-5
2. knows the inverse relationship of positive and negative numbers.	2-2, 2-3, 3-3
3. applies the properties of real numbers to solve problems (commutative, associative, distributive, identity, equality, inverse, and closure).	1-4, 2-2, 2-3, 2-4, 2-5, 4-6, 5-4, 5-5, 5-7, 13-2, 13-3
<b>Benchmark MA.A.3.3.2:</b> <i>The student selects the appropriate operation to solve problems involving addition, subtraction, multiplication, and division of rational numbers, ratios, proportions, and percents, including the appropriate application of the algebraic order of operations.</i>	
1. knows the appropriate operations to solve real-world problems involving integers, ratios, rates, proportions, numbers expressed as percents, decimals, and fractions.	1-1, 2-2, 2-3, 2-4, 2-5, 5-9, 6-1, 6-2, 6-2B, 6-4, 6-5, 6-7, 6-7B, 6-8
2. solves real-world problems involving integers, ratios, proportions, numbers expressed as percents, decimals, and fractions in two- or three-step problems.	1-1, 2-2, 2-3, 2-4, 2-5, 6-1, 6-2, 6-2B, 6-4, 6-5, 6-7, 6-7B, 6-8, 7-1, 7-2
3. solves real-world problems involving percents including percents greater than 100% (for example percent of change, commission).	1-2, 6-2, 6-4, 6-8
4. writes and simplifies expressions from real-world situations using the order of operations.	1-3, 4-2, 6-2, 6-4, 6-8
<b>Benchmark MA.A.3.3.3:</b> <i>The student adds, subtracts, multiplies, and divides whole numbers, decimals, and fractions, including mixed numbers, to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.</i>	
1. solves multi-step real-world problems involving fractions, decimals, and integers using appropriate methods of computation, such as mental computation, paper and pencil, and calculator.	1-1, 2-5, 3-6, 3-7, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6
<b>Standard 4:</b> <i>The student uses estimation in problem solving and computation.</i>	
<b>Benchmark MA.A.4.3.1:</b> <i>The student uses estimation strategies to predict results and to check the reasonableness of results.</i>	
1. knows appropriate estimation techniques for a given situation using real numbers.	6-2B, 6-7
2. estimates to predict results and to check reasonableness of results.	1-1, 3-5, 5-4, 5-5, 5-7, 6-2B, 6-7, 8-2A
<b>Standard 5:</b> <i>The student understands and applies theories related to numbers.</i>	
<b>Benchmark MA.A.5.3.1:</b> <i>The student uses concepts about numbers, including primes, factors, and multiples, to build number sequences.</i>	
1. knows if numbers are relatively prime.	4-4
2. applies number theory concepts to determine the terms in a real number sequence.	5-10
3. applies number theory concepts, including divisibility rules, to solve real-world or mathematical problems.	4-1, 4-3, 4-4, 4-5

<b>Strand B: Measurement</b>	
<b>Standard 1:</b> <i>The student measures quantities in the real world and uses the measures to solve problems.</i>	
<b>Benchmark MA.B.1.3.1:</b> <i>The student uses concrete and graphic models to derive formulas for finding perimeter, area, surface area, circumference, and volume of two- and three-dimensional shapes, including rectangular solids and cylinders.</i>	
1. uses concrete and graphic models to explore and derive formulas for surface area and volume of three-dimensional regular shapes, including pyramids, prisms, and cones.	10-5A, 10-5, 10-7, 11-2A, 11-2, 11-3, 11-4, 11-5, 11-6A
2. solves and explains real-world problems involving surface area and volume of three-dimensional shapes.	11-2, 11-3, 11-4, 11-5
<b>Benchmark MA.B.1.3.2:</b> <i>The student uses concrete and graphic models to derive formulas for finding rates, distance, time, and angle measures.</i>	
1. applies formulas for finding rates, distance, time and angle measures.	3-7, 5-3, 5-4, 8-2A, 9-3, 9-4, 10-1, 10-4, 10-6
2. describes and uses rates of change (for example, temperature as it changes throughout the day, or speed as the rate of change in distance over time) and other derived measures.	8-2A, 8-5
<b>Benchmark MA.B.1.3.3:</b> <i>The student understands and describes how the change of a figure in such dimensions as length, width, height, or radius affects its other measurements such as perimeter, area, surface area, and volume.</i>	
1. knows how a change in a figure's dimensions affects its perimeter, area, circumference, surface area, or volume.	4-2, 11-2A, 11-2, 11-3, 11-4, 11-6A, 11-6
2. knows how changes in the volume, surface area, area, or perimeter of a figure affect the dimensions of the figure.	11-6A, 11-6
3. solves real-world or mathematical problems involving the effects of changes either to the dimensions of a figure or to the volume, surface area, area, perimeter, or circumference of figures.	4-2, 11-6A, 11-6
<b>Benchmark MA.B.1.3.4:</b> <i>The student constructs, interprets, and uses scale drawings such as those based on number lines and maps to solve real-world problems.</i>	
1. interprets and applies various scales including those based on number lines, graphs, models, and maps. (Scale may include rational numbers.)	6-3
2. constructs and uses scale drawings to recreate a given situation.	6-3
<b>Standard 2:</b> <i>The student compares, contrasts, and converts within systems of measurement (both standard/nonstandard and metric/customary).</i>	
<b>Benchmark MA.B.2.3.1:</b> <i>The student uses direct (measured) and indirect (not measured) measures to compare a given characteristic in either metric or customary units.</i>	
1. finds measures of length, weight or mass, and capacity or volume using proportional relationships and properties of similar geometric figures.	6-2, 6-3, 9-7
<b>Benchmark MA.B.2.3.2:</b> <i>The student solves problems involving units of measure and converts answers to a larger or smaller unit within either the metric or customary system.</i>	
1. solves problems using mixed units within each system, such as feet and inches, hours and minutes.	5-3, 5-4, 5-5, 6-1
2. solves problems using the conversion of measurements within the customary system.	3-4, 4-5, 5-4, 6-1
3. solves problems using the conversions of measurement within the metric system.	4-5, 6-1

<b>Standard 3:</b> <i>The student estimates measurements in real-world problem situations.</i>	
<b>Benchmark MA.B.3.3.1:</b> <i>The student solves real-world and mathematical problems involving estimates of measurements including length, time, weight/mass, temperature, money, perimeter, area, and volume, in either customary or metric units.</i>	
1. knows a variety of strategies to estimate, describe, make comparisons, and solve real-world and mathematical problems involving measurements.	3-4, 5-7
<b>Standard 4:</b> <i>The student selects and uses appropriate units and instruments for measurement to achieve the degree of precision and accuracy required in real-world situations.</i>	
<b>Benchmark MA.B.4.3.1:</b> <i>The student selects appropriate units of measurement and determines and applies significant digits in a real-world context. (Significant digits should relate to both instrument precision and to the least precise unit of measurement).</i>	
1. selects the appropriate unit of measure for a given situation.	6-6, 11-7A, 11-7
2. knows the precision of different measuring instruments.	6-6, 11-7
3. determines the appropriate precision unit for a given situation.	1-7A, 11-7
4. identifies the number of significant digits as it relates to the least precise unit of measure.	11-7
5. determines the greatest possible error of a given measurement and the possible actual measurements of an object.	11-7
<b>Benchmark MA.B.4.3.2:</b> <i>The student selects and uses appropriate instruments, technology, and techniques to measure quantities in order to achieve specified degrees of accuracy in a problem situation.</i>	
1. applies significant digits in the real-world context.	11-7
2. selects and uses appropriate instruments, technology, and techniques to measure quantities and dimensions to a specified degree of accuracy.	11-7
<b>Strand C: Geometry and Spatial Sense</b>	
<b>Standard 1:</b> <i>The student describes, draws, identifies, and analyzes two- and three-dimensional shapes.</i>	
<b>Benchmark MA.C.1.3.1:</b> <i>The student understands the basic properties of, and relationships pertaining to, regular and irregular geometric shapes in two- and three-dimensions.</i>	
1. determines and justifies the measures of various types of angles based upon geometric relationships in two- and three-dimensional shapes.	9-7, 10-2, 10-4, 10-6, 10-8
2. compares regular and irregular polygons and two- and three-dimensional shapes.	9-7, 10-5A, 10-8, 11-1, 11-2, 11-4, 11-6A, 11-6
3. draws and builds three-dimensional figures from various perspectives (for example, flat patterns, isometric drawings, nets).	10-3A, 10-3, 10-6B, 11-1A, 11-1
4. knows the properties of two- and three-dimensional figures.	9-7, 10-3A, 10-5, 10-7, 10-8, 11-1, 11-2, 11-3, 11-4, 11-5, 11-6A, 11-6
<b>Standard 2:</b> <i>The student visualizes and illustrates ways in which shapes can be combined, subdivided, and changed.</i>	
<b>Benchmark MA.C.2.3.1:</b> <i>The student understands the geometric concepts of symmetry, reflections, congruency, similarity, perpendicularity, parallelism, and transformations, including flips, slides, turns, and enlargements.</i>	
1. use the properties of parallelism, perpendicularity, and symmetry in solving real-world problems.	9-7, 10-1, 10-1B, 10-3A
2. identifies congruent and similar figures in real-world situations and justifies the identification.	9-7, 10-2, 11-6
3. identifies and performs the various transformations (reflection, translation, rotation, dilation) of a given figure on a coordinate plane.	10-3, 10-3B
<b>Benchmark MA.C.2.3.2:</b> <i>The student predicts and verifies patterns involving tessellations (a covering of a plane with congruent copies of the same pattern with no holes and no overlaps, like floor tiles).</i>	
1. continues a tessellation pattern using the needed transformations.	10-6B

2. creates an original tessellating tile and tessellation pattern using a combination of transformations.	10-6B
<b>Standard 3:</b> <i>The student uses coordinate geometry to locate objects in both two- and three dimensions and to describe objects algebraically.</i>	
<b>Benchmark MA.C.3.3.1:</b> <i>The student represents and applies geometric properties and relationships to solve real-world and mathematical problems.</i>	
1. observes, explains, makes and tests conjectures regarding geometric properties and relationships (among regular and irregular shapes of two and three dimensions).	9-4, 9-7, 11-6A, 11-6
2. applies the Pythagorean Theorem in real-world problems (for example, finds the relationship among sides in $45^\circ$ - $45^\circ$ and $30^\circ$ - $60^\circ$ right triangles).	9-5A, 9-5
<b>Benchmark MA.C.3.3.2:</b> <i>The student identifies and plots ordered pairs in all four quadrants of a rectangular coordinate system (graph) and applies simple properties of lines.</i>	
1. given an equation or its graph, finds ordered-pair solutions (for example, $y = 2x$ ).	1-6, 2-6, 8-2
2. given the graph of a line, identifies the slope of the line (including the slope of vertical and horizontal lines).	8-4, 8-5A, 8-5, 8-6, 8-7
3. given the graph of a linear relationship, applies and explains the simple properties of lines on a graph, including parallelism, perpendicularity, and identifying the $x$ and $y$ intercepts, the midpoint of a horizontal or vertical line segment, and the intersection point of two lines.	8-3, 8-6, 8-9, 10-1
<b>Strand D: Algebraic Thinking</b>	
<b>Standard 1:</b> <i>The student describes, analyzes, and generalizes a wide variety of patterns, relations, and functions</i>	
<b>Benchmark MA.D.1.3.1:</b> <i>The student describes a wide variety of patterns, relationships, and functions through models, such as manipulatives, tables, graphs, expressions, equations, and inequalities.</i>	
1. reads, analyzes, and describes graphs of linear relationships.	1-2A, 8-1, 8-2, 8-4, 8-5, 8-10, 13-5
2. uses variables to represent unknown quantities in real-world problems.	1-2A, 1-3, 1-5, 3-3, 3-4, 3-5, 3-6, 3-7B, 8-2, 8-6, 8-9, 8-10, 8-10B
3. uses the information provided in a table, graph, or rule to determine if a function is linear and justifies reasoning.	8-2, 13-5
4. finds a function rule to describe tables of related input-output variables.	3-7B, 8-1A, 8-7
5. predicts outcomes based upon function rules.	1-2A, 3-7B, 8-1A, 8-2A, 8-2B
<b>Benchmark MA.D.1.3.2:</b> <i>The student creates and interprets tables, graphs, equations, and verbal descriptions to explain cause-and-effect relationships.</i>	
1. interprets and creates tables and graphs (function tables).	1-6, 4-6B, 8-1A, 8-1, 8-2A, 8-2, 8-4, 8-5A, 8-5, 8-9, 8-10, 8-10B, 13-5
2. writes equations and inequalities to express relationships.	1-5, 3-6, 3-7B, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 8-6, 8-7, 8-8, 8-9, 8-10, 8-10B
3. graphs equations and inequalities to explain cause-and-effect relationships.	8-10, 8-10B
4. interprets the meaning of the slope of a line from a graph depicting a real-world situation.	8-4, 8-5A, 8-5, 8-6, 8-7

<b>Standard 2:</b> <i>The student uses expressions, equations, inequalities, graphs, and formulas to represent and interpret situations.</i>	
<b>Benchmark MA.D.2.3.1:</b> <i>The student represents and solves real-world problems graphically, with algebraic expressions, equations, and inequalities.</i>	
1. translates verbal expressions and sentences into algebraic expressions, equations, and inequalities.	1-3, 1-5, 1-6, 3-2, 3-6, 3-7B, 4-2, 5-3, 7-3, 7-4, 7-5, 7-6, 8-9, 8-10
2. translates algebraic expressions, equations, or inequalities representing real-world relationships into verbal expressions or sentences.	1-3, 4-5B
3. solves single- and multiple-step linear equations and inequalities in concrete or abstract form.	3-3A, 3-3, 3-4, 3-5, 3-6, 3-7, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6
4. graphs linear equations on the coordinate plane using tables of values.	2-6, 8-2, 8-5A
5. graphically displays real-world situations represented by algebraic equations or inequalities.	8-2A, 8-6, 8-9, 8-10, 8-10B
6. evaluates algebraic expressions, equations, and inequalities by substituting integral values for variables and simplifying the results.	1-3, 2-3, 4-2, 4-6B, 4-7, 13-2
7. simplifies algebraic expressions that represent real-world situations by combining like terms and applying the properties of real numbers.	2-4, 3-2, 13-2, 13-3
<b>Benchmark MA.D.2.3.2:</b> <i>The student uses algebraic problem-solving strategies to solve real-world problems involving linear equations and inequalities.</i>	
1. simplifies algebraic expressions with a maximum of two variables.	2-4, 3-2, 3-3, 4-5, 7-1, 7-2, 7-3, 13-2, 13-3, 13-4
2. solves single- and multi-step linear equations and inequalities that represent real-world situations.	3-3, 3-4, 3-5, 3-6, 3-7, 7-1, 13-4
<b>Strand E: Data Analysis and Probability</b>	
<b>Standard 1:</b> <i>The student understands and uses the tools of data analysis for managing information.</i>	
<b>Benchmark MA.E.1.3.1:</b> <i>The student collects, organizes, and displays data in a variety of forms, including tables, line graphs, charts, bar graphs, to determine how different ways of presenting data can lead to different interpretations.</i>	
1. reads and interprets data displayed in a variety of forms including histograms.	1-7A, 1-7, 1-7B, 12-1, 12-3, 12-3B, 12-4, 12-4B, 12-5
2. constructs and interprets displays of data, (including circle, line, bar, and box-and-whisker graphs) and explains how different displays of data can lead to different interpretations.	1-7A, 1-7B, 4-6B, 12-1, 12-3, 12-3B, 12-4, 12-4B, 12-5
<b>Benchmark MA.E.1.3.2:</b> <i>The student understands and applies the concepts of range and central tendency (mean, median, and mode).</i>	
1. finds the mean, median, and mode of a set of data using raw data, tables, charts, or graphs.	2-5, 5-8A, 5-8, 5-8B
2. interprets measures of dispersion (range) and of central tendency.	5-8A, 5-8, 5-8B, 12-2
3. determines appropriate measures of central tendency for a given situation or set of data.	5-8A, 5-8, 5-8B, 12-2
<b>Benchmark MA.E.1.3.3:</b> <i>The student analyzes real-world data by applying appropriate formulas for measures of central tendency and organizing data in a quality display, using appropriate technology, including calculators and computers.</i>	
1. determines the mean, median, mode, and range of a set of real-world data using appropriate technology.	5-8B
2. organizes, graphs and analyzes a set of real-world data using appropriate technology.	5-8B, 12-3B, 12-4B

<b>Standard 2:</b> <i>The student identifies patterns and makes predictions from an orderly display of data using concepts of probability and statistics.</i>	
<b>Benchmark MA.E.2.3.1:</b> <i>The student compares experimental results with mathematical expectations of probabilities.</i>	
1. compares and explains the results of an experiment with the mathematically expected outcomes.	6-9, 12-9B
2. calculates simple mathematical probabilities for independent and dependent events.	6-9B, 12-6, 12-9
<b>Benchmark MA.E.2.3.2:</b> <i>The student determines odds for and odds against a given situation</i>	
1. predicts the mathematical odds for and against a specified outcome in a given real-world situation.	12-8
<b>Standard 3:</b> <i>The student uses statistical methods to make inferences and valid arguments about real-world situations.</i>	
<b>Benchmark MA.E.3.3.1:</b> <i>The student formulates hypotheses, designs experiments, collects and interprets data, and evaluates hypotheses by making inferences and drawing conclusions based on statistics (range, mean, median, and mode) and tables, graphs, and charts.</i>	
1. formulates a hypothesis and designs an experiment.	5-8A, 5-8, 12-9B
2. performs the experiment and collects, organizes, and displays the data.	5-8A, 5-8, 12-9B
3. evaluates the hypothesis by making inferences and drawing conclusions based on statistical results.	1-7, 6-9A, 12-1, 12-2, 12-3, 12-9B
<b>Benchmark MA.E.3.3.2:</b> <i>The student identifies the common uses and misuses of probability or statistical analysis in the everyday world.</i>	
1. knows appropriate uses of statistics and probability in real-world situations.	6-9A, 12-5, 12-9B
2. knows when statistics and probability are used in misleading ways.	6-9A, 12-5
3. identifies and uses different types of sampling techniques (for example, random, systematic, stratified).	6-9A, 12-5
4. knows whether a sample is biased.	6-9A, 12-5, 12-5B