

**New Jersey Core Curriculum Standards for Mathematics, Grade 12,
Correlated to Glencoe Algebra 1, Glencoe Geometry, and Glencoe Algebra 2**

Lessons in which the Core Curriculum Standards are a primary focus are indicated in **bold**.

Strands and Cumulative Progress Indicators		Student Edition Lesson(s)	
		Algebra 1	Geometry
STANDARD 4.1 Number and Numerical Operations			
A. Number Sense			
4.1.12A1	Extend understanding of the number system to all real numbers.	1-1, 1-2, 1-3, 1-4, 2-1, 2-2, 2-3, 2-4, 2-7 , 3-1, 3-2, 3-3, 3-4, 3-5, 3-6, 3-7, 3-8, 3-9, 4-7P, 4-7, 4-8, 7-1P, 8-3, 9-1, 10-7, 11-1, 11-2, 11-4, 11-5, 11-6, 12-1, 12-3, 12-4, 12-5, 12-6, 12-7, 12-8, 12-9, 13-2, 13-3F, 14-1, 14-2, 14-3, 14-4	1-1, 1-3, 1-4, 1-5, 1-6, 2-1, 2-2, 2-4, 2-5, 2-6, 2-8, 3-3, 3-4, 3-5, 3-6, 4-1, 4-2, 4-3, 4-5, 4-7, 5-1, 5-2, 5-4, 6-1, 6-2, 6-3, 6-4, 7-1, 7-4, 7-5, 7-6, 7-7, 8-1, 8-2, 8-4, 8-5, 8-6, 9-1, 9-2, 9-4, 9-6, 9-7, 10-1, 10-2, 10-4, 10-5, 10-6, 10-7, 10-8, 11-2, 11-3, 11-5, 12-2, 12-3, 12-4, 12-7, 13-1, 13-3, 13-5
4.1.12A2	Compare and order rational and irrational numbers.	2-1, 2-7	PS5 (#1-10), PS 7, PS8
4.1.12A3	Develop conjectures and informal proofs of properties of number systems and sets of numbers.	1-4, 1-5, 1-7, 1-8F, 1-9, 2-4, 2-5, 2-6, 2-6F, 3-1, 3-2, 3-4P, 3-4, 3-6, 3-7, 4-2F, 4-6 F, 5-2, 5-3P, 5-3F, 5-5, 5-7, 6-2P, 7-2, 8-1F, 8-2, 8-3, 8-4P, 9-2P, 9-5, 10-1, 10-7AA, 11-2, 11-7P, 13-5F, 14-5	1-3, 2-1, 2-5, 2-7, 3-6, 4-1, 4-2, 4-5, 5-1, 5-2, 5-5, 6-3, 6-5, 6-6P, 7-2, 8-2, 8-5, 8-6, 9-5, 10-1, 10-4, 10-7
B. Numerical Operations			
4.1.12B1	Extend understanding and use of operations to real numbers and algebraic procedures.	1-1, 1-2, 1-3, 1-4, 2-1, 2-2, 2-3, 2-4, 2-7 , 3-1, 3-2, 3-3, 3-4, 3-5, 3-6, 3-7, 3-8, 3-9, 4-7P, 4-7, 4-8, 7-1P, 8-3, 9-1, 10-7, 11-1, 11-2, 11-4, 11-5, 11-6, 12-1, 12-3, 12-4, 12-5, 12-6, 12-7, 12-8, 12-9, 13-2, 13-3F, 14-1, 14-2, 14-3, 14-4	1-1, 1-3, 1-4, 1-5, 1-6, 2-1, 2-2, 2-4, 2-5, 2-6, 2-8, 3-3, 3-4, 3-5, 3-6, 4-1, 4-2, 4-3, 4-5, 4-7, 5-1, 5-2, 5-4, 6-1, 6-2, 6-3, 6-4, 7-1, 7-4, 7-5, 7-6, 7-7, 8-1, 8-2, 8-4, 8-5, 8-6, 9-1, 9-2, 9-4, 9-6, 9-7, 10-1, 10-2, 10-4, 10-5, 10-6, 10-7, 10-8, 11-2, 11-3, 11-5, 12-2, 12-3, 12-4, 12-7, 13-1, 13-3, 13-5
4.1.12B2	Develop, apply, and explain methods for solving problems involving rational and negative exponents.	1-1, 8-1, 8-2 , 8-3	5-7
4.1.12B3	Perform operations on matrices. <ul style="list-style-type: none"> • Addition and subtraction • Scalar multiplication 	13-2 , 13-3	4-2

Strands and Cumulative Progress Indicators	Student Edition Lesson(s)		
	Algebra 1	Geometry	Algebra 2
4.1.12B4 Understand and apply the laws of exponents to simplify expressions involving numbers raised to powers.	1-1, 1-2, 8-1, 8-2, 8-3		5-7, 5-1
C. Estimation			
4.1.12C1 Recognize the limitations of estimation, assess the amount of error resulting from estimation, and determine whether the error is within acceptable tolerance limits.	1-3, 1-9, 2-7, 3-2, 3-4, 3-7, 5-7, 7-1, 7-4, 10-2, 11-5	11-4	
4.2. Geometry and Measurement			
A. Geometric Properties			
4.2.12A1 Use geometric models to represent real-world situations and objects and to solve problems using those models (e.g., use Pythagorean Theorem to decide whether an object can fit through a doorway).	11-4, 11-6	3-6, 4-7, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 7-7, 8-4, 8-5, 8-6, 10-2, 10-3, 10-4, 10-6, 12-3, 12-4, 12-5, 12-6, 12-7	p. 17 (#66-67), p. 416 (#40), PS4, PS3
4.2.12A2 Draw perspective views of 3D objects on isometric dot paper, given 2D representations (e.g., nets or projective views).		12-1, 12-2	3-5P, 8-1F
4.2.12A3 Apply the properties of geometric shapes. <ul style="list-style-type: none"> Parallel lines – transversal, alternate interior angles, corresponding angles Triangles <ul style="list-style-type: none"> Conditions for congruence Segment joining midpoints of two sides is parallel to and half the length of the third side Triangle Inequality Minimal conditions for shape to be a special quadrilateral Circles – arcs, central and inscribed angles, chords, tangents Self-similarity 	3-1, 3-8, 4-2, 5-5, 5-6, 6-2, 7-1, 8-1, 8-2, 8-7, 11-1, 11-2	3-1, 3-2, 3-5, 4-1, 4-2, 4-3, 4-4, 4-5, 4-5F, 4-6, 4-7, 5-2, 5-4, 5-5, 6-2, 6-3, 6-4, 6-5, 6-6, 8-1, 8-2, 8-3, 8-4, 8-5, 8-6, 8-7, 10-1, 10-2, 10-3, 10-4, 10-5, 10-6, 10-7, 10-8, 11-1, 11-2, 11-5	2-3, PS3; pp. 32, 184, 185, 612, 625-626, 382, 699, 703, 707
4.2.12A4 Use reasoning and some form of proof to verify or refute conjectures and theorems. <ul style="list-style-type: none"> Verification or refutation of proposed proofs Simple proofs involving congruent triangles Counterexamples to incorrect conjectures 	1-7, 1-9, 2-3, 3-6, 4-3, 4-6, 6-2, 7-1, 8-1, 12-9, 13-4, 14-3	2-1, 2-3, 2-5, 2-6, 2-7, 2-8, 3-1, 3-5, 4-1, 4-2, 4-3, 4-4, 4-5, 4-5F, 4-6, 4-7, 5-1, 5-3, 5-4, 5-5, 6-3, 6-5, 7-7, 8-3, 8-4, 9-1, 9-5, 11-2, 12-7	11-8, p. 14 (#3), p. 32 (#68-71), p. 92 (#1), p. 92 (#1), p. 185 (#4)
B. Transforming Shapes			
4.2.12B1 Determine, describe, and draw the effect of a transformation, or a sequence of transformations, on a geometric or algebraic object, and, conversely, determine whether and how one object can be transformed to another by a transformation or a sequence of transformations.	4-2, 10-5	4-3, 9-1, 9-2, 9-3, 9-4, 9-5, 9-6, 9-7, 13-5	4-4, 14-2

Strands and Cumulative Progress Indicators	Student Edition Lesson(s)		
	Algebra 1	Geometry	Algebra 2
4.2.12B2 Recognize three-dimensional figures obtained through transformations of two-dimensional figures (e.g., cone as rotating an isosceles triangle about an altitude), using software as an aid to visualization.	Beyond the scope of this textbook	Beyond the scope of this textbook	Beyond the scope of this textbook
4.2.12B3 Determine whether two or more given shapes can be used to generate a tessellation.		9-4, 9-4 F	
4.2.12B4 Generate and analyze iterative geometric patterns. <ul style="list-style-type: none"> • Fractals (e.g., Sierpinski's Triangle) • Patterns in areas and perimeters of self-similar figures • Outcome of extending iterative process indefinitely 	11-6	6-6P, 6-6	p. 611
C. Coordinate Geometry			
4.2.12C1 Use coordinate geometry to represent and verify properties of lines. <ul style="list-style-type: none"> • Distance between two points • Midpoint and slope of a line segment • Finding the intersection of two lines • Lines with the same slope are parallel • Lines that are \perp have slopes whose product is -1 	4-1, 5-1 , 5-2, 5-3, 5-6, 7-1, 11-5	1-3 , 3-1, 3-2, 3-3, 3-4, 3-5, 3-6P, 3-6, 4-4, 4-7, 5-1	8-1, 3-3, 2-3
4.2.12C2 Show position and represent motion in the coordinate plane using vectors. <ul style="list-style-type: none"> • Addition and subtraction of vectors 		9-6	
D. Units of Measurement			
4.2.12D1 Understand and use the concept of significant digits.			
4.2.12D2 Choose appropriate tools and techniques to achieve the specified degree of precision and error needed in a situation. <ul style="list-style-type: none"> • Degree of accuracy of a given measurement tool • Finding the interval in which a computed measure (e.g., area or volume) lies, given the degree of precision of linear measurements 		1-2 , 1-4, 11-1, 11-2, 11-3, 11-4	
E. Measuring Geometric Objects			
4.2.12E1 Use techniques of indirect measurement to represent and solve problems. <ul style="list-style-type: none"> • Similar triangles • Pythagorean theorem • Right triangle trigonometry (sine, cosine, tangent) 	11-4, 11-6; 11-7P, 11-7	1-3F, 6-3, 6-4, 6-5, 6-6, 7-2, 7-4, 7-5, 7-6, 7-7, 7-7F, 7-3, 11-2	PS3, PS4, 13-1, 13-2
4.2.12E2 Use a variety of strategies to determine perimeter and area		1-6F, 11-1, 11-2, 11-3, 11-4, 12-	4-5 (#14), 6-1 (#48-50, 53)

Strands and Cumulative Progress Indicators	Student Edition Lesson(s)	
	Algebra 1	Geometry
<p>of plane figures and surface area and volume of 3D figures.</p> <ul style="list-style-type: none"> Approximation of area using grids of different sizes Finding which shape has minimal (or maximal) area, perimeter, volume, or surface area under given conditions using graphing calculators, dynamic geometric software, and/or spreadsheets Estimation of area, perimeter, volume, and surface area 		1, 12-2, 12-3, 12-4, 12-5, 12-6, 12-7, 13-1, 13-2, 13-3, 13-4, 13-5
4.3. Patterns and Algebra		
A. Patterns		
4.3.12A1 Use models and algebraic formulas to represent and analyze sequences and series. <ul style="list-style-type: none"> Explicit formulas for r^n terms Sums of finite arithmetic series Sums of finite and infinite geometric series 	4-7P, 4-7, 10-7	11-1, 11-2, 11-3, 11-4
4.3.12A2 Develop an informal notion of limit.	4-7, RM p. 239, 4-8	2-1
4.3.12A3 Use inductive reasoning to form generalizations.		11-8
B. Functions and Relationships		
4.3.12B1 Understand relations and functions and select, convert flexibly among, and use various representations for them, including equations or inequalities, tables, and graphs.	1-8, 4-3, 4-4, 4-5, 4-6, 5-1, 5-4, 5-5, 5-7, 8-4, 9-1, 9-2, 9-3, 9-4, 9-5, 9-6, 10-1	2-1, 2-2, 2-4, 2-5, 2-6, 2-7, 3-1, 3-3
4.3.12B2 Analyze and explain the general properties and behavior of functions of one variable, using appropriate graphing technologies. <ul style="list-style-type: none"> Slope of a line or curve Domain and range Intercepts Continuity Maximum/minimum Estimating roots of equations Intersecting points as solutions of systems of equations Rates of change 	1-8, 4-1, 4-4, 4-5, 5-1, 5-2, 5-3P, 5-4, 5-6, 6-6, 7-1, 7-2, 7-3, 7-4, 7-5, 10-1, 10-2, 10-3, 10-4, 10-4F, 10-7F, 12-1, 13-4	2-1, 2-2, 2-3, 2-4, 3-1, 3-3, 6-1, 6-2, 7-2, 9-3, 9-3F, 10-6
4.3.12B3 Understand and perform transformations on commonly used functions. <ul style="list-style-type: none"> Translations, reflections, dilations Effects on linear and quadratic graphs of parameter changes in equations 	4-2, 5-3F, 10-1F, 10-3F, 10-5	1-6F, 9-1, 9-2, 9-3, 9-5, 9-6

Strands and Cumulative Progress Indicators	Student Edition Lesson(s)	
	Algebra 1	Geometry
<p>4.3.12B4</p> <ul style="list-style-type: none"> Using graph. calc./computers for more complex functions <p>Understand and compare the properties of classes of functions, including exponential, polynomial, rational, and trigonometric functions.</p> <ul style="list-style-type: none"> Linear vs. non-linear Symmetry Increasing/decreasing on an interval 	4-2, 4-5, 4-6, 4-8, 10-1, 13-3F	2-2, 2-3, 5-2, 6-1, 6-2, 7-1, 7-2, 10-1, 10-2
C. Modeling		
<p>4.3.12C1</p> <p>Use functions to model real-world phenomena and solve problems that involve varying quantities.</p> <ul style="list-style-type: none"> Linear, quadratic, exponential, periodic (sine and cosine), and step functions (e.g., price of mailing a first-class letter over the past 200 years) Direct and inverse variation Absolute value Expressions, equations and inequalities Same function can model variety of phenomena Growth/decay and change in the natural world Applications in mathematics, biology, and economics (including compound interest) 	2-1, 3-7, 3-8, 3-9, 4-5, 4-6, 4-8, 5-2, 5-4, 5-5, 5-6, 5-7, 6-1, 6-3, 6-4, 6-5, 6-6, 7-1, 7-2, 7-3, 7-4, 7-5, 9-1, 9-2, 9-3, 9-4, 9-5, 9-6, 10-1, 10-2, 10-3, 10-4, 10-5, 10-6, 10-7, 11-1, 11-2, 11-3, 11-4, 11-5, 11-6, 11-7, 12-1, 12-2, 12-3, 12-4, 12-5, 12-6, 12-7, 12-8, 12-9	1-4 (#51-56), 2-2 (Ex. 2), 2-5, 2-6, 2-7 (Ex.2), 6-1, 8-5 (#35-36), 9-4, 10-1P, 10-1, 10-5 (Ex. 6), 10-6 (Ex 2), 10-6, 13-3, 14-1
<p>4.3.12C2</p> <p>Analyze and describe how a change in an independent variable leads to change in a dependent one.</p>	4-4, 4-5, 5-2, 5-3P, 12-1	2-1
<p>4.3.12C4</p> <p>Convert recursive formulas to linear or exponential functions (e.g., Tower of Hanoi and doubling).</p>	4-7	11-6
D. Procedures		
<p>4.3.12D1</p> <p>Evaluate and simplify expressions.</p> <ul style="list-style-type: none"> Add and subtract polynomials Multiply a polynomial by a monomial or binomial Divide a polynomial by a monomial 	1-5, 1-6, 3-2, 3-5, 8-1, 8-2, 8-5P, 8-5, 8-6, 8-7P, 8-7, 12-3, 12-4, 12-5, 12-6, 12-7	5-2, 5-3
<p>4.3.12D2</p> <p>Select and use appropriate methods to solve equations and inequalities.</p> <ul style="list-style-type: none"> Linear equations – algebraically Quadratic equations – factoring (when the coefficient of x^2 is 1) and using the quadratic formula All types of equations using graphing, computer, and graphing calculator techniques 	3-2, 3-3, 3-4, 3-5, 3-8, 4-5, 4-5F, 5-3, 5-4, 7-1, 7-5, 9-1, 9-2, 9-3, 9-4, 9-5, 9-6 (factoring), 10-2, 10-3, 10-4, 10-4F, 11-3, 12-9	2-2, 2-7, 3-1, 3-2, 3-3F, 3-4, 5-8F, 6-1, 6-3, 6-5, 9-6F, GCI, p. 36
<p>4.3.12D3</p> <p>Judge the meaning, utility, and reasonableness of the</p>	4-2F, 4-5F, 5-3F, 5-7F, 6-6F,	2-2, 2-5, 2-7, 4-1, 4-2, 6-1

Strands and Cumulative Progress Indicators	Student Edition Lesson(s)	
	Algebra 1	Geometry
results of symbol manipulations, including those carried out by technology.	7-1F, 10-1F, 10-3F, 10-4F, 11-3F, 12-2F, 13-3F	Algebra 2
4.4. Data Analysis, Probability, and Discrete Mathematics		
A. Data Analysis		
4.4.12A1 Use surveys and sampling techniques to generate data and draw conclusions about large groups. <ul style="list-style-type: none"> Advantages/disadvantages of sample selection methods (e.g., convenience sampling, responses to survey, random sampling) 	13-1	12-9, AA, p. 681
4.4.12A2 Evaluate the use of data in real-world contexts. <ul style="list-style-type: none"> Accuracy and reasonableness of conclusions drawn Bias in conclusions drawn (e.g., influence of how data is displayed) Statistical claims based on sampling 	1-9, 5-7, 13-1, 13-3, 13-4, 13-5, RM, p. 714, 13-5F	2-5, 12-9
4.4.12D3 Design a statistical experiment, conduct the experiment, and interpret and communicate the outcome.		12-9F
4.4.12D4 Estimate or determine lines of best fit (or curves of best fit if appropriate) with technology, and use them to interpolate within the range of the data.	5-7, 5-7F, 13-3F	2-5, 2-5F
4.4.12D5 Analyze data using technology, and use statistical terminology to describe conclusions. <ul style="list-style-type: none"> Measures of dispersion: variance, standard deviation, outliers Correlation coefficient Normal distribution (e.g., approximately 95% of the sample lies between two standard deviations on either side of the mean) 	5-7F, 13-3F, 13-4	12-6, 12-7, PS8; Glencoe Advanced Mathematical Concepts 1-6
B. Probability		
4.4.12B1 Calculate the expected value of a probability-based game, given the probabilities and payoffs of the various outcomes, and determine whether the game is fair.	2-6, 2-6F, 14-1	
4.4.12B2 Use concepts and formulas of area to calculate geometric probabilities.		1-2 F, 11-5
4.4.12B3 Model situations involving probability with simulations (using spinners, dice, calculators and computers) and theoretical models, and solve problems using these models.	2-6, 14-5	12-4 (#36-39, 52-53), 12-4AA
4.4.12B4 Determine probabilities in complex situations.	14-3	12-4

Strands and Cumulative Progress Indicators	Student Edition Lesson(s)	
	Algebra 1	Geometry
<ul style="list-style-type: none"> Conditional events Complementary events Dependent and independent events 		
4.4.12B5 Estimate probabilities and make predictions based on experimental and theoretical probabilities.	14-5	12-3 (#66-69)
4.4.12B6 Understand and use the "law of large numbers" (that experimental results tend to approach theoretical probabilities after a large number of trials).	14-5	
C. Discrete Mathematics—Systematic Listing and Counting		
4.4.12C1 Calculate combinations with replacement (e.g., the number of possible ways of tossing a coin 5 times and getting 3 heads) and without replacement (e.g., number of possible delegations of 3 out of 23 students).	14-2	12-2
4.4.12C2 Apply the multiplication rule of counting in complex situations, recognize the difference between situations with replacement and without replacement, and recognize the difference between ordered and unordered counting situations.	14-1, 14-2	12-1, 12-2
4.4.12C3 Justify solutions to counting problems.	14-1, 14-2	12-1
4.4.12C4 Recognize and explain relationships involving combinations and Pascal's Triangle, and apply those methods to situations involving probability.	2-6F, 14-2	11-7
D. Discrete Mathematics—Vertex-Edge Graphs and Algorithms		
4.4.12D1 Use vertex-edge graphs and algorithmic thinking to represent and solve practical problems. <ul style="list-style-type: none"> Circuits that include every edge in a graph Circuits that include every vertex in a graph Scheduling problems (e.g., when project meetings should be scheduled to avoid conflicts) using graph coloring Applications to science (e.g., who-eats-whom graphs, genetic trees, molecular structures) 		
4.4.12D2 Explore strategies for making fair decisions. <ul style="list-style-type: none"> Combining individual preferences into a group decision (e.g., determining winner of an election or selection process) Determining how many Student Council representatives 		12-9

Strands and Cumulative Progress Indicators	Student Edition Lesson(s)	
	Algebra 1	Geometry
each class (9 th , 10 th , 11 th , and 12 th grade) gets when the classes have unequal sizes (apportionment)		Algebra 2
4.5. Mathematical Processes		
A. Problem Solving		
4.5.12A1 Learn mathematics through problem solving, inquiry, and discovery.	covered throughout	covered throughout
4.5.12A2 Solve problems that arise in mathematics and in other contexts (cf. workplace readiness standard 8.3). <ul style="list-style-type: none"> Open-ended problems Non-routine problems Problems with multiple solutions Problems that can be solved in several ways 	covered throughout in <i>Open-Ended and Critical Thinking</i> problems	covered throughout in <i>Open-Ended and Critical Thinking</i> problems
4.5.12A3 Select and apply a variety of appropriate problem-solving strategies (e.g., "try a simpler problem" or "make a diagram") to solve problems.	3-1, 3-9, 4-8, 5-4, 6-5, 7-4, 10-4, 12-9	2-4F, 4-1, 4-2, 4-5, 4-6, 4-7, 5-3, 5-5, 6-4, 6-6, 7-7F, 11-4
4.5.12A4 Pose problems of various types and levels of difficulty.	covered throughout	covered throughout
4.5.12A5 Monitor their progress and reflect on the process of their problem solving activity.	AA	covered throughout WQ 1-5
B. Communication		
4.5.12B1 Use communication to organize and clarify their mathematical thinking. <ul style="list-style-type: none"> Reading and writing Discussion, listening, and questioning 	covered throughout in <i>RM and Writing in Mathematics</i>	covered throughout in <i>RM and Writing in Mathematics</i>
4.5.12B2 Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.	covered throughout in <i>Writing in Mathematics</i> and <i>RM</i>	covered throughout in <i>Writing in Mathematics, RM, AA, and GCJ</i>
4.5.12B3 Analyze and evaluate the mathematical thinking and strategies of others.	covered throughout in <i>Error Analysis</i> questions	covered throughout in <i>Error Analysis</i> questions
4.5.12B4 Use the language of mathematics to express mathematical ideas precisely.	covered throughout in <i>Writing in Mathematics</i> and <i>RM</i>	covered throughout in <i>Writing in Mathematics</i> and <i>RM</i>
C. Connections		
4.5.12C1 Recognize recurring themes across mathematical domains (e.g., patterns in number, algebra, and geometry).	3-4, 4-8, 6-3, 7-4, 8-8, 10-4, 11-3F, 12-9	2-6, 3-2, 3-5, 4-5F, 7-7F, 11-4
4.5.12C2 Use connections among mathematical ideas to explain concepts (e.g., two linear equations have a unique solution because the lines they represent intersect at a single point).	covered throughout	covered throughout
4.5.12C3 Recognize that mathematics is used in a variety of contexts	covered throughout	covered throughout

Strands and Cumulative Progress Indicators	Student Edition Lesson(s)	
	Algebra 1	Geometry
outside of mathematics.		
4.5.12C4 Apply mathematics in practical situations and in other disciplines.	covered throughout	covered throughout
4.5.12C5 Trace the development of mathematical concepts over time and across cultures (cf. world languages and social studies standards).		WQ 4
4.5.12C6 Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	covered throughout	covered throughout
D. Reasoning		
4.5.12D1 Recognize that mathematical facts, procedures, and claims must be justified.	covered throughout and in <i>Writing in Mathematics, RM, and Critical Thinking</i>	covered throughout and in <i>Writing in Mathematics, RM, and Critical Thinking</i>
4.5.12D2 Use reasoning to support their mathematical conclusions and problem solutions.	covered throughout	covered throughout
4.5.12D3 Select and use various types of reasoning and methods of proof.	covered throughout and in 1-4, 1-7, 1-8, 3-4, 3-6, 5-3P	covered throughout and in 2-1, 2-2, 2-4, 2-5, 2-6, 2-7, 2-8 , 3-2, 3-5, 3-6, 4-1, 4-2, 4-3, 4-4, 4-5, 4-5F, 4-6, 4-7, Ch 5, 6-3, 6-4, 7-7F, 8-3, 8-4, 8-5, 8-6, 8-7
4.5.12D4 Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions.	covered throughout	covered throughout
4.5.12D5 Make and investigate mathematical conjectures. <ul style="list-style-type: none"> Counterexamples as a means of disproving conjectures Verifying conjectures using informal reasoning or proofs. 	covered throughout	covered throughout
4.5.12D6 Evaluate examples of mathematical reasoning and determine whether they are valid.	1-7, 3-4	2-2, 2-3, 2-4, 2-5, 2-6, 4-4
E. Representations		
4.5.12E1 Create and use representations to organize, record, and communicate mathematical ideas. <ul style="list-style-type: none"> Concrete representations (e.g., base-ten blocks or algebra tiles) Pictorial representations (e.g., diagrams, charts, or tables) Symbolic representations (e.g., a formula) Graphical representations (e.g., a line graph) 	covered throughout; examples include 1-2, 1-3, 1-8, 1-9, 2-5, 3-1, 3-2P, 3-4P, 3-9, 4-4, 5-3P, 5-7, 5-7F, 6-2P, 8-4P, 8-5P, 8-7P, 9-2P, 9-3P, 12-5, WQ	covered throughout; examples include 4-1, 4-3, 4-5F, 4-7 , 6-2, 6-6, 7-4, 7-5, 7-6, 7-7, 10-2, 10-8, 11-4, 12-2, 12-3, 12-4, 12-5, 12-6, 12-7, Ch 13, WQ
4.5.12E2 Select, apply, and translate among mathematical representations to solve problems.	covered throughout; examples include 3-9, 4-5, 5-3P, 5-4, WQ	covered throughout; examples include 1-1, 2-1, 2-3, 3-1, 3-3, 4-1, 6-1, 6-2, 7-1, 7-2, 8-2, AA, pp. 230, 240, 308

Strands and Cumulative Progress Indicators	Student Edition Lesson(s)		
	Algebra 1	Geometry	Algebra 2
4.5.12E3 Use representations to model and interpret physical, social, and mathematical phenomena.	1-8, 4-5, 5-3P, WQ	7, Ch. 13, WQ 6-6P, 7-4, 7-5, 7-6, 7-7, 8-3, 8-4, 8-5, 8-6, 8-7, 10-5, 12-2, 12-3, 12-4, 12-5, 12-6, 12-7, WQ	covered throughout in <i>USA Today Snapshots</i> ; 12-3, 12-4A
F. Technology			
4.5.12F1 Use technology to gather, analyze, and communicate mathematical information.	3-9F, 4-5F, 4-7P, 5-3F, 5-7F, 6-3, 6-6F, 10-1F, 10-3F, 10-4F, 11-3F, WQ	3-6P, 6-1F, WQ	WQ 1-5
4.5.12F2 Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information.	3-9F, 4-7P, 7-1P, WQ	1-3, 8-1F, 13-1, WQ	4-1F, 6-2F, 7-2F, 9-3F, 10-2F, 11-6P, 13-1P
4.5.12F3 Use graphing calculators and computer software to investigate properties of functions and their graphs.	WQ; 4-3P, 4-5F, 5-3F, 7-1P, 7-1F, 10-1F, 10-3F, 10-4F, 11-3F, 12-2F	3-6P, WQ	GCI, pp. 74, 91, 396, 530
4.5.12F4 Use calculators as problem-solving tools (e.g., to explore patterns, to validate solutions).	4-3P, 4-5F, 5-3F, 5-7F, 6-3, 6-6F, 7-1F, 7-5, 8-2, 10-1F, 10-3F, 10-4F 11-3F, 12-2F, WQ	3-6P, WQ	6-2F, 7-2F, 9-3F, 10-2F
4.5.12F5 Use computer software to make and verify conjectures about geometric objects.		1-6F, 2-7, 3-2P, 7-6F, 8-1F, 10-5, 13-1, 13-4, WQ	
4.5.12F6 Use computer-based laboratory technology for mathematical applications in the sciences.	Beyond the scope of this textbook	Beyond the scope of this textbook	Beyond the scope of this textbook

P = Preview Lesson, F = Follow-Up Lesson, RM = Reading Math, PS = Prerequisite Skill, AA = Algebra Activity, WQ = WebQuests, GCI = Graphing Calculator Investigation