Algebraic Systems Curriculum Maps

Grade: 12 **Subject:** Algebraic Systems	**Unit 1: Problem Solving**
Big Idea/Rationale	Big Idea: Extend and apply knowledge of mathematical reasoning, estimation, interpreting graphs, and problem solving strategies. Rationale: The topics covered in this unit of study take a second look at estimation and the interpretation of graphs while refining mathematical reasoning skills and problem solving strategies. Students will work with real world problems to estimate values to a given accuracy. They will also be able to interpret information that is presented in a variety of different graphs such as bar graphs, line graphs, and pie charts. While working with these skills they will be presented with questions and procedures to help them refine their mathematical reasoning skills and apply various problem solving strategies. Students will need these skills to successfully complete their math placement exam and throughout their freshman level mathematics courses.
Enduring Understanding (Mastery Objective)	• Learning to estimate answers gives students the ability to better judge their final answers as being correct or invalid. • What are the four steps to problems solving? • How are the four steps to problems solving helpful?
Essential Questions **(Instructional Objective)**	• What is the difference between inductive and deductive reasoning? • What is a conjecture? And how do I prove it to be false? • How do I know when to round a number up or down when estimating? • Depending on my information, how do I know which type of graph to use? • When I am presented with a math problem that I am not sure how to solve, what steps can I take to walk myself through the problem solving process?
Content (Subject Matter)	*Students will know…..* Key terms- inductive reasoning, deductive reasoning, conjecture, counter example, estimation, line graph, bar graph, pie chart, Polya's four-step problem-solving procedure. *Students will be able to…* • Identify two types of reasoning. • Use inductive reasoning to form conjectures. • Find a counterexample to disprove a conjecture. • Explain the difference between inductive and deductive reasoning. • Use deductive reasoning to prove a conjecture. • Identify some uses for estimation. • Round numbers to a given level of accuracy. • Estimate the answers to real-world problems. • Use estimation to obtain information from graphs. • State the four steps in the basic problem-solving procedure.

	• Solve problems by using a diagram. • Solve problems by using trial and error. • Solve problems involving money. • Solve problems by using calculation.
Skills/ Benchmarks **(Standards)**	N.Q.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. A.REI.1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
Materials and Resources	• Math in Our World Textbook • Document camera • Graphing Calculators
Notes	

Grade: 12 **Subject:** Algebraic Systems	**Unit 2: Sets**
Big Idea/Rationale	Big Idea: Extend and apply knowledge of sets, subsets, set operations, and Venn Diagrams. Rationale: The topics covered in this unit of study show students how to better understand, dissect, and organize relationships between groups or sets. The use of Venn diagrams plays a large role in this process. Students will work their way from using just one circle Venn diagrams to three circle Venn diagrams. They will use vocabulary such as intersection, union, subset, etc., to then describe these Venn diagrams. Students will need these skills to successfully complete their math placement exam and throughout their college freshman level mathematics courses.
Enduring Understanding (Mastery Objective)	• How are subsets of real numbers used? • How can knowledge of words in our language be used to translate verbal expressions into mathematical expressions?
Essential Questions **(Instructional Objective)**	• What are the three ways to write a set? • How are each of the three ways to write a set helpful or important? • What is the difference between a set being finite or infinite? • What is the empty set? • What is the difference between equal and equivalent sets? • What are subsets? • What does a set's cardinality tell me?
Content **(Subject Matter)**	*Students will know…..* Key terms- set, roster method, element, Natural numbers, descriptive method, set-builder notation, variable, finite set, infinite set, cardinal number, null set, equal sets, equivalent sets, one-to-one correspondence, universal set, complement, subset, intersection, union, Venn diagram, infinite set. *Students will be able to…* • Define set. • Write sets in three different ways. • Classify sets as infinite or finite. • Define the empty set. • Find the cardinality of a set. • Decide if two sets are equal or equivalent. • Define the complement of a set. • Determine if a set is a subset of another set. • Use subset notation. • Find intersections and unions of sets. • Illustrate set statements involving two sets with Venn diagrams.

	• Illustrate set statements involving three sets with Venn diagrams. • Use Venn diagrams to decide if two sets are equal. • Solve problems by using Venn diagrams.
Skills/ Benchmarks (Standards)	Mathematical Practice Standard #4: Model with mathematics. *Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.*
Materials and Resources	• Math in Our World Textbook • Document camera • Graphing Calculators • 2.3 Activity Sheets • Large construction paper • Colored pencils
Notes	

Grade: 12 **Subject:** Algebraic Systems	**Unit 3: Logic**
Big Idea/Rationale	Big Idea: Using logical reasoning and conditional statements to solve problems. Rationale: The topics covered in this unit of study provide a basis for logical reasoning. Logical reasoning allows students to draw conclusions in science and social studies courses. Students will also be able to assess the validity of arguments in politics and advertising. Also, they will need these skills to successfully complete their math placement exam and throughout their college freshman level mathematics courses.
Enduring Understanding (Mastery Objective)	• Inductive reasoning is a process where hypotheses are formed by experimentation. • Deductive reasoning is the basis for proof in mathematics as well as applied in the real world. • There is a difference between an argument being logically valid and being correct.
Essential Questions (Instructional Objective)	• What type of clues should I be looking for in order to decide if I should use my inductive or deductive reasoning skills? • What is a conjecture? And how do I prove it to be false? • How do we use inductive and deductive reasoning in our everyday lives? • How do we use symbols to represent conditional statements? • How do you determine the truth value of a statement?
Content (Subject Matter)	*Students will know…..* Key terms- inductive reasoning, deductive reasoning, conjecture, counter example, conclusion, conditional statement, conjecture, converse, definition, hypothesis, inverse, logically equivalent, negation, truth value. *Students will be able to…* • Use inductive reasoning to identify patterns and make conjectures. • Find counter examples to disprove conjectures. • Identify, write, and analyze the truth value of conditional statements. • Write the converse and inverse of a conditional statement. • Apply the Law of Detachment and the Law of Syllogism in logical reasoning.
Skills/ Benchmarks (Standards)	Mathematical Practice Standard 3: Construct viable arguments and critique the reasoning of others. *Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their*

	conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.
Materials and Resources	• Supplemental material from Chapter 2 of the Holt Geometry Textbook and Resource Booklets • Chapter 2 Curriculum Map from Honors Geometry as a reference guide • 2.1, 2.2, and 2.3 Guided Notes from Honors Geometry Curriculum Map • Document camera • Graphing Calculators
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Grade: 12 **Subject:** Algebraic Systems	**Unit 4: The Real Number System**
Big Idea/Rationale	Big Idea: Extend and apply knowledge of the Real Number system, fractions, simplifying radicals, properties of exponents, scientific notation, and arithmetic and geometric sequences. Rationale: The topics covered in this unit of study take a second look at the Real Number System, properties of exponents, scientific notation, and arithmetic and geometric sequences. Students will refine their skills working with particular sets of numbers such as the natural numbers, whole numbers, integers, rational and irrational numbers, and the real numbers. They will also be able to write very large and very small numbers in scientific notation and work with the properties of exponents. While working with arithmetic and geometric sequences the students will be able to define each, find a specific term in each, and add terms in each. Students will need these skills to successfully complete their math placement exam and throughout their freshman level mathematics courses.
Enduring Understanding (Mastery Objective)	• When an expression involved more than one operation, in what order do you perform the operations? • How can you tell that a sequence is arithmetic? Geometric? • How are numbers classified within the real number system? • How can the properties of real numbers assist you with mental math?
Essential Questions **(Instructional Objective)**	• How do you find the greatest common factor and least common multiple of two or more numbers? • What is the difference between a prime and composite number? • How do I use the order of operations? • What makes a fraction improper? • How do you add and subtract fractions that do not have like denominators? • What does it mean to simplify a radical? • What are the properties of exponents? • How is scientific notation used in the real world? • What is the difference between arithmetic and geometric sequences?
Content **(Subject Matter)**	*Students will know…..* Key terms- natural number, factor, divisor, divisible, multiples, prime number, prime factorization, composite number, greatest common factor, least common multiple, whole number, integer, opposite, absolute value, order of operations, rational number, proper fraction, improper fraction, mixed number, lowest terms, reciprocal, least common denominator, irrational number, radical, perfect square, like radicals, rationalizing the denominator, real number, property, identity, exponential notation, base, exponent, scientific notation, sequence, arithmetic sequence, geometric

	sequence, common ratio. *Students will be able to…* • Find the factors of a natural number. • Identify prime and composite numbers. • Find the prime factorization of a number. • Find the greatest common factor of two or more numbers. • Find the least common multiple of two or more numbers. • Define whole numbers and integers. • Find the opposite and absolute value of a number. • Compare numbers using >, <, and =. • Add and subtract integers. • Multiply and divide integers. • Perform calculations using the order of operations. • Define rational numbers. • Convert between improper fractions and mixed numbers. • Reduce fractions to lowest terms. • Multiply and divide fractions. • Add and subtract fractions. • Define irrational numbers. • Simplify radicals. • Multiply and divide square roots. • Add and subtract square roots. • Rationalize denominators. • Define the real numbers. • Identify properties of the real numbers. • Define integer exponents. • Use rules for exponents. • Convert between scientific and decimal notation. • Perform operations with numbers in scientific notation. • Use scientific notation in applied problems. • Define arithmetic sequence. • Find a particular term of an arithmetic sequence. • Add terms of an arithmetic sequence. • Define geometric sequence. • Find a particular term of a geometric sequence. • Add terms of a geometric sequence.

Skills/ Benchmarks (Standards)	N.RN.A.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. F.BF.A.2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* F.LE.A.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
Materials and Resources	• Math in Our World Textbook • One Grain of Rice by Demi • Document camera • Graphing Calculators • Large construction paper • Colored pencils
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Grade: 12 **Subject:** Algebraic Systems	**Unit 5: Topics in Algebra**
Big Idea/Rationale	Big Idea: Extend and apply knowledge of the fundamentals of algebra, solving linear equations and inequalities, applications of linear equations, and solving quadratic equations. Rationale: The topics covered in this unit of study take a second look at basic skills used in Algebra and reintroduce the topics of ratio, proportion, linear and quadratic equations, and solving linear inequalities. This reintroduction helps students to sharpen their skills to dig deeper into these topics in the next section. They will look into real world situations and build a foundation for larger topics. Students will need these skills to successfully complete their math placement exam and throughout their freshman level mathematics courses.
Enduring Understanding (Mastery Objective)	• Solutions to equations can always be verified using substitution. • The rules for solving equations can be extended to inequalities. • Quadratic equations can be solved in a variety of ways each with its own advantages/disadvantages. • The solutions to most inequalities are too numerous to list, so they are graphed. • The procedures for solving inequalities are the same as those for solving equations except when multiplying or dividing by a negative value.
Essential Questions **(Instructional Objective)**	• How do you solve a linear equation? • Where are linear equations used in the real world? • What is the difference between a ratio and a proportion? • What is an inequality? • How do you solve an inequality? • What makes an equation a quadratic? • Where do quadratics exist in the real world?
Content **(Subject Matter)**	*Students will know…..* Key terms- variable, algebraic expression, distributive property, like terms, evaluate, formula, equation, solution, linear equation, solution set, equivalent equations, contradiction, identity, ratio, proportion, cross multiply, direct variation, inverse variation, linear inequality, three-part inequality, quadratic equation, standard form, binomial, FOIL method, trinomial, factoring, quadratic formula *Students will be able to…* • Identify terms and coefficients. • Simplify algebraic expressions. • Evaluate algebraic expressions. • Apply evaluating expressions to real world situations.

	• Decide if a number is a solution of an equation. • Identify linear equations. • Solve general linear equations. • Solve linear equations containing fractions. • Solve formulas for one specific variable. • Determine if an equation is an identity or contradiction. • Translate verbal expressions into mathematical symbols. • Solve real-world problems using linear equations. • Write ratios in fraction form. • Solve proportions. • Solve real-world problems using proportions. • Solve real-world problems using direct variation. • Solve real-world problems using inverse variation. • Graph solution sets for simple inequalities. • Solve linear inequalities in one variable. • Solve three-part linear inequalities. • Solve real-world problems using inequalities. • Identify the standard form of a quadratic equation. • Multiply binomials using FOIL. • Factor trinomials. • Solve quadratic equations using factoring. • Solve quadratic equations using the quadratic formula. • Solve real-world problems using quadratic equations.
Skills/ Benchmarks **(Standards)**	N.RN.A.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. A.REI.B.3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. A.REI.B.4. Solve quadratic equations in one variable. b. Solve quadratic equations by inspection (e.g., for x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. A.CED.A.1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. A.CED.A.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
Materials and Resources	• Math in Our World Textbook • Document camera • Graphing Calculators

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Grade: 12 **Subject:** Algebraic Systems	**Unit 6: Additional Topics in Algebra**
Big Idea/Rationale	Big Idea: Extend and apply knowledge of the fundamentals of algebra, graphing linear, quadratic and exponential equations, solving systems of linear equations and inequalities, matrices, and linear programming. Rationale: The topics covered in this unit of study further dive into the real world application of linear, quadratic, and exponential functions. Students will graph linear equations and inequalities and look deeper into systems of equations using matrices and linear programming. They will then go one step further studying quadratic and exponential functions. Students will need these skills to successfully complete their math placement exam and throughout their freshman level mathematics courses.
Enduring Understanding (Mastery Objective)	• Matrices are a more efficient way to solve systems of equations with two or three variables. • Linear programming connects linear equations with the real world by having students solve problems where profit or production needs to be maximized or minimized. • What is the goal when putting a matrix in row echelon form and how can you be sure your final answer is correct? • There are many ways to tell the difference between linear, quadratic, and exponential functions in their different forms.
Essential Questions **(Instructional Objective)**	• What is the difference between consistent and inconsistent systems? • What is the difference between dependent and independent systems? • How is the use of matrices more efficient than the substitution or addition/subtraction method? • How do I know a matrix is in row echelon form? • Where does linear programming exist in the real world? • How can I use linear programming to minimize or maximize profit or production? • What is function notation and how can I tell if I have a function? • What are the differences between linear, quadratic, and exponential functions?
Content **(Subject Matter)**	*Students will know…..* Key terms- Rectangular coordinate system, Cartesian plane, x-axis, y-axis, origin, quadrants, coordinates, x-intercept, y-intercept, slope, slope-intercept form, system of linear equations, consistent system, independent system, inconsistent system, dependent system, substitution method, addition/subtraction method, matrix, augmented matrix, row operations, row echelon form, Gaussian elimination, linear inequality, test point, system of linear inequalities, linear programming, constraint, polygonal region,

	objective function, maximize, minimize, vertex, relation, function, function notation, evaluate, domain, range, vertical line test, linear function, quadratic function, parabola, vertex, axis of symmetry, exponential function, asymptote. *Students will be able to…* • Plot points and graph linear equations in the rectangular coordinate system. • Find the intercepts of a linear equation. • Find the slope of a line. • Graph horizontal and vertical lines and linear equations in slope-intercept form. • Find linear equations that describe real-world situations. • Solve systems of linear equations graphically. • Identify inconsistent and dependent systems. • Solve systems of linear equations by substitution and addition/subtraction method. • Solve real-world problems using systems of linear equations. • Identify matrices in row echelon form. • Solve systems of two and three linear equations using matrices. • Graph linear inequalities in two variables. • Graph a system of linear inequalities. • Model a real-world situation with a system of linear inequalities. • Use linear programming to solve real-world problems. • Identify functions and write functions in function notation. • Evaluate functions. • Find the domain and range of functions. • Determine if a graph represents a function. • Graph linear, quadratic, and exponential functions. • Apply quadratic and exponential to real-world problems.
Skills/ Benchmarks **(Standards)**	A.CED.A.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. A.CED.A.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods. A.REI.C.9. (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater). A.REI.D.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). F.IF.A.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x)

	denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x). F.IF.A.2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. F.IF.B.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.* F.IF.C.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* a. Graph linear and quadratic functions and show intercepts, maxima, and minima. F.LE.A.1. Distinguish between situations that can be modeled with linear functions and with exponential functions. F.LE.B.5. Interpret the parameters in a linear or exponential function in terms of a context.
Materials and Resources	• Math in Our World Textbook • Document camera • Graphing Calculators
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Grade: 12 **Subject:** Algebraic Systems	**Unit 7: Measurement**
Big Idea/Rationale	Big Idea: Extend and apply knowledge of length. Rationale: The topic covered in this unit of study focuses on the conversion of units of length between the English and Metric systems. Students will convert measurements of length within the English and Metric Systems and then convert between them. Students will need these skills to be successful not only in the next unit of study, Geometry, but also so they can successfully complete their math placement exam and throughout their freshman level mathematics courses.
Enduring Understanding (Mastery Objective)	• Converting within a system of measurement helps to solve real world problems when given more than one unit at a time (i.e. 3 feet 4 inches) • The conversion of units is used in our everyday lives. • Converting between systems of measurements helps to solve real world problems.
Essential Questions **(Instructional Objective)**	• What are the units of length used in the English system? • What are the units of length use in the Metric System? • How do I convert from English units to Metric units or vice versa? • Where is conversion used in the real world?
Content **(Subject Matter)**	*Students will know…..* Key terms- inches, feet, yards, mile, millimeter, centimeter, meter, kilometer. *Students will be able to…* • Convert measurements of length in the English system. • Convert measurements in the metric system. • Convert between English and Metric units of length.
Skills/ Benchmarks (Standards)	Mathematical Practice Standard #2: Reason abstractly and quantitatively. *Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.*
Materials and	• Math in Our World Textbook

Resources	• Document camera • Graphing Calculators • Kuta Software
Notes	

Grade: 12 **Subject:** Algebraic Systems	**Unit 8: Geometry**
Big Idea/Rationale	Big Idea: Extend and apply knowledge of the fundamentals of geometry, triangles, polygons, circles, perimeter, volume, surface area, and right triangle trigonometry. Rationale: The topics covered in this unit of study take a second look at Geometry. Students will work with properties of triangles, polygons, and circles. They will be able to find specific information about these shapes including their areas. While working on triangles, right triangle trigonometry will be revisited. Students will also work in three dimensions finding volume and surface area of common figures. Students will need these skills to successfully complete their math placement exam and throughout their freshman level mathematics courses.
Enduring Understanding (Mastery Objective)	• Knowing the difference between area and surface area helps to distinguish between one and three dimensions. • Volume and surface area help to make three dimensions tangible. • Knowing the difference between regular and irregular polygons helps students to work more efficiently through various geometric problems.
Essential Questions **(Instructional Objective)**	• How are area and surface area related? • How do I find the angle measures of a triangle when I am only given that it is right? • When do you use right triangle trigonometry? How is it used in the real world? • How do you find the volume of solid figures? • How is identifying transversals helpful? • What is the difference between regular and irregular polygons? • Where is trigonometry used in the real world?
Content **(Subject Matter)**	*Students will know…..* Key terms-point, line, plane, line segment, ray, angle, vertex, degree, acute angle, right angle, obtuse angle, straight angle, complementary angles, supplementary angles, vertical angles, parallel line, transversal, alternate interior angles, alternate exterior angles, corresponding angles, triangle, sides, vertices, isosceles triangle, equilateral triangle, scalene triangle, acute triangle, obtuse triangle, right triangle, hypotenuse, legs, Pythagorean Theorem, similar triangles, polygon, quadrilateral, pentagon, hexagon, heptagon, octagon, nonagon, decagon, dodecagon, trapezoid, parallelogram, rectangle, rhombus, square, regular polygon, perimeter, area, circle, center, radius, diameter, circumference, pi, volume, rectangular solid, cube, right circular cylinder, pyramid, cone, sphere, surface area, trigonometry, sine, cosine, tangent, inverse trigonometric functions, angle of elevation, angle of

	depression, tessellations. *Students will be able to…* • Write names for angles. • Use complementary and supplementary angles to find angle measures. • Use vertical angles to find angle measures. • Find measures of angles formed by a transversal. • Identify types of triangles. • Find one missing angle in a triangle. • Use the Pythagorean Theorem to find side lengths. • Use similar triangles to find side lengths. • Find the sum of angle measures of a polygon. • Find the angle measures of a regular polygon. • Find the perimeter of a polygon. • Find areas of rectangles and parallelograms. • Find areas of triangles and trapezoids. • Find circumferences and areas of circles. • Find the volumes of solid figures. • Find the surface areas of solid figures. • Find basic trigonometric ratios. • Use trigonometric ratios to find sides of a right triangle. • Use trigonometric ratios to find angles of a right triangle. • Solve problems using trigonometric ratios.
Skills/ Benchmarks **(Standards)**	G.CO.A.1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc. G.SRT.C.6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles. G.SRT.C.7. Explain and use the relationship between the sine and cosine of complementary angles. G.SRT.C.8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.* G.GMD.A.1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments. G.GMD.A.3. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*
Materials and Resources	• Math in Our World Textbook • Document camera • Graphing Calculators • Kuta Software

Notes	