

Algebra II

Time on Task: 3.5 hours per week

Course Philosophy

Mathematics demonstrates God’s order even in an abstract world, gradually building a base of knowledge and skills beginning with the simplest concepts to the more complex. In mathematics, the student will see the order and truth that God created. Just as the Bible says, “precept upon precept, line upon line....” (Isaiah 23:10) The sequential mastery of mathematical concepts is the primary objective.

Course Description

Foundation concepts for high school mathematics. As presented in Grades K-8, the basic understandings of number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry; measurement; and probability and statistics are essential foundations for all work in high school mathematics. Students will continue to build on this foundation as they expand their understanding through other mathematical experiences.

Goals and Objectives Texas Essential Knowledge and Skills (TEKS)	Scope and Sequence	Spiritual Goals
<p>§111.33. Algebra II (One-Half to One Credit).</p> <p>(a) Basic understandings.</p> <p>(1) Foundation concepts for high school mathematics. As presented in Grades K-8, the basic understandings of number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry; measurement; and probability and statistics are essential foundations for all work in high school mathematics. Students continue to build on this foundation as they expand their understanding through other mathematical experiences.</p> <p>(2) Algebraic thinking and symbolic reasoning. Symbolic reasoning plays a critical role in algebra; symbols provide powerful ways to represent mathematical situations and to express generalizations. Students study algebraic concepts and the relationships among them to better understand the structure of algebra.</p> <p>(3) Functions, equations, and their relationship. The study of functions, equations, and their relationship is central to all of</p>	<p>Arithmetic</p> <p>Decimal Numbers</p> <ul style="list-style-type: none">• Understand decimal numbers<ul style="list-style-type: none">• Round repeating decimal numbers• Understand and use scientific notation<ul style="list-style-type: none">• For large and small numbers• With addition of exponents• In multiplication• In division• In approximating• On a scientific calculator• In ideal gas law problems <p>Graphs</p> <p>Graphs on the</p>	<p>God’s intended purpose for mathematics:</p> <ol style="list-style-type: none">1. To teach the child that there is logic and order in arithmetic and that there is logic and order in God’s plan.2. To teach that God cares for numbers and has recorded many for our information.3. To teach that God commanded men to count, measure, and record information.4. To teach the child that God is concerned that we be accurate and orderly in our use of weights, measure, and numbers.5. To teach the child not to place too much confidence in the size.6. To teach the child the concept of measurement to express men’s failure and His plans for man.7. To develop skills in reasoning which

<p>mathematics. Students perceive functions and equations as means for analyzing and understanding a broad variety of relationships and as a useful tool for expressing generalizations.</p> <p>(4) Relationship between algebra and geometry. Equations and functions are algebraic tools that can be used to represent geometric curves and figures; similarly, geometric figures can illustrate algebraic relationships. Students perceive the connections between algebra and geometry and use the tools of one to help solve problems in the other.</p> <p>(5) Tools for algebraic thinking. Techniques for working with functions and equations are essential in understanding underlying relationships. Students use a variety of representations (concrete, pictorial, numerical, symbolic, graphical, and verbal), tools, and technology (including, but not limited to, calculators with graphing capabilities, data collection devices, and computers) to model mathematical situations to solve meaningful problems.</p> <p>(6) Underlying mathematical processes. Many processes underlie all content areas in mathematics. As they do mathematics, students continually use problem-solving, language and communication, and reasoning (justification and proof) to make connections within and outside mathematics. Students also use multiple representations, technology, applications and modeling, and numerical fluency in problem-solving contexts.</p>	<p>Coordinate Plane</p> <ul style="list-style-type: none"> • Graph linear equations <ul style="list-style-type: none"> • Equation of a line • To solve systems of equations • Finding slopes • Slope formula • y-intercept • Parallel lines • Perpendicular lines • Using slope-intercept form • Given two ordered pairs • Given slope • Given experimental data • Consistent, inconsistent, and dependent • Graph circles, ellipses, hyperbolas, and parabolas <p>Number Sets</p> <p>Sets</p> <ul style="list-style-type: none"> • Use set notation • Represent subsets of the real numbers symbolically • Find intersections and unions of sets • Use Venn diagrams <p>Real Numbers</p> <ul style="list-style-type: none"> • Classify the real numbers <ul style="list-style-type: none"> • Natural (counting) numbers and whole numbers 	<p>reveal truth.</p> <ol style="list-style-type: none"> 8. To understand that God has given man the ability to observe reality. 9. To understand that God has given man the ability to explore and to formulate relationships. 10. To understand that human reasoning is a reflection of the divine. 11. To appreciate the structure, form, and beauty of God’s creation. 12. To appreciate the complexity and precision of God’s creation 13. To improve the student’s reasoning skills to help hi think less like the world and more like God. 14. To cultivate preciseness in Calculations and reasoning powers. 15. To develop an appreciation for correctness of procedure and accuracy in dealing with facts. 16. To make him aware of his own limitations and need to depend upon the Lord for understanding. 17. To develop skills in thrift and good stewardship to prepare him for successful living in the world. <p>Biblical Integration Truth Statements</p> <ol style="list-style-type: none"> 1. <i>What is prime reality, the really real?</i> God exists and is the ultimate reality. (Psalm 90:2, Revelation 22:13) <ol style="list-style-type: none"> a. God designed, created, and sustains His creation. (Genesis 1:1-31) b. God is good, holy, and loving.
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	<ul style="list-style-type: none"> • Integers, rational numbers, and irrational numbers • Prime and composite numbers • On the number line • Perform operations with integers <ul style="list-style-type: none"> • Addition • Subtraction • Multiplication • Division • Symbols of inclusion <ul style="list-style-type: none"> • Absolute value • Within order of operations • Parentheses • Parentheses, braces, and brackets • Find reciprocals • Know the properties of real numbers <ul style="list-style-type: none"> • Commutative property of addition and multiplication • Distributive property • Multiplicative property <ul style="list-style-type: none"> • Of equality • Additive Property <ul style="list-style-type: none"> • Of equality Complex Numbers <ul style="list-style-type: none"> • Understand imaginary numbers • Use the standard form for complex numbers • Add complex numbers • Multiply complex numbers 	<p>(Luke 18:19, 1 John 4:16, 1 Peter 1:16, Psalm 145:12)</p> <ul style="list-style-type: none"> c. God is omniscient – all knowing. (Romans 11:33-36, Psalm 147:5) d. God is sovereign – nothing is beyond His ultimate interest, control, and authority. (Daniel 4:25) e. God is personal and also triune- He is coequally and coeternally God the Father, God the Son, Jesus, and God the Holy Spirit. (Hebrews 1:3) <p>2. <i>What is the nature of external reality, that is, the world around us?</i></p> <ul style="list-style-type: none"> a. God is the source of everything and created the universe out of nothing. (Genesis 1:1) b. The universe was created by God to be orderly. (Isaiah 45:18, Psalm 147:4) c. God is constantly involved in the unfolding pattern of the ongoing operation of the universe. (Psalm 24:1-2, Psalm 32:13-15) d. The universe reflects His glory. (Psalm 8:1, Psalm 19:1) <p>3. <i>What is a human being?</i></p> <ul style="list-style-type: none"> a. God created humans to know Him intimately and to have a loving relationship with Him. (Psalm 100:3) b. Human beings are created in the image of God with the capacity to choose. (Genesis 1:27, Proverbs 8:10) c. Adam and Eve chose
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	<ul style="list-style-type: none"> • Divide complex numbers • Multiply complex conjugates • Find complex roots of quadratic equations <p>Measurement</p> <p>Metric Measurement</p> <ul style="list-style-type: none"> • Know the metric units of length <p>Conversion by Unit Multipliers</p> <ul style="list-style-type: none"> • Convert within English system <ul style="list-style-type: none"> • In./ft, ft/yd, ft/mi • Multiple unit multipliers • Volume • Area • Rate • Convert within metric system <ul style="list-style-type: none"> • Cm/m, km/m • Multiple unit multipliers • Volume • Convert between English and metric units <ul style="list-style-type: none"> • Length <p>Ratio, Proportion, Percent, and Rate</p> <p>Ratio</p> <ul style="list-style-type: none"> • Solve ratio word problems • Solve advanced ratio problems involving totals • Use the ideal gas laws 	<p>disobedience and brought death to themselves and sin entered the world. (Romans 5:12)</p> <ul style="list-style-type: none"> d. All human beings have a choice and all have chosen sin that brings separation from God. (Romans 3:23) e. Sin is rebellion against God's wishes and ways and this destroys our relationship with God. (Romans 8:7-8) f. God provides a way back to Himself through the death of His son Jesus (the second person of the Trinity), on the cross. (John 3:16, Romans 6:23) g. Human beings must respond to God with repentance of our sins, receiving forgiveness, and accepting Jesus as our Savior. (Romans 10:9-10) <p>4. What happens to a person at death?</p> <ul style="list-style-type: none"> a. For each person death is either the gate to life with God and His people or the gate to eternal separation from God. (1 Corinthians 50:52) b. After death, your soul will continue to exist in an eternal way and there is a final judgment by God. (Revelation 20:12) c. Everyone chooses to honor and love Him by accepting Jesus as our Lord and Savior or makes a choice to reject Jesus and grasp for self-fulfillment and personal glory. (Romans 6:23) d. Those who received Jesus as
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	<p>Proportion</p> <ul style="list-style-type: none"> • Use scale factors on geometric shapes • Use proportions with chemical compounds <p>Percent</p> <ul style="list-style-type: none"> • Find percents of numbers • Use the percent equation • Solve percent word problems • Use percents in chemical weight problems • Visualize percents using diagrams • Use percents greater than one hundred • Solve percent increase/decrease problems <p>Rate</p> <ul style="list-style-type: none"> • Change rates using multipliers • Solve uniform motion problems • Solve boat-in-the-river problems <p>Exponents</p> <ul style="list-style-type: none"> • Know order of operations with exponents • Evaluate expressions with exponents • Simplify powers of fractions • Simplify powers of signed numbers • Know the product 	<p>Savior will spend eternity in Heaven with God. (Philippians 4:10-21)</p> <p>e. Those who rejected Jesus as Savior will spend eternity in Hell without God. (Hebrews 10:26-27)</p> <p>5. <i>Why is it possible to know anything at all?</i></p> <p>a. Human beings can both know the world around them and God Himself because God has built within them the capacity to do so and because He takes an active role in communicating with them. (John 16:13)</p> <p>b. God's own intelligence is the basis of human intelligence. Knowledge is possible because there is something to be known (God and His creation) and someone to know (God and human beings made in His image). (Genesis 1:27)</p> <p>c. God reveals, Himself to us in two basic ways: by general revelation and by special revelation. (Exodus 3:2, Psalm 19:1-4)</p> <p>d. In general revelation, God speaks through the creation of the universe and through His word, the Bible. (2 Samuel 22:31, Psalm 19:1)</p> <ul style="list-style-type: none"> ➤ The Bible is internally consistent and unified in its principles and claims. ➤ There is tremendous
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	<p>theorem for exponents</p> <ul style="list-style-type: none"> • Evaluate powers of negative bases • Use negative exponents • Solve equations with exponents • Know the power theorem for exponents • Understand exponential increase and decrease • Understand and use fractional exponents • Simplify a sum raised to a power • Use exponents on a scientific calculator • Use variables as exponents • Factor expressions with exponents <p>Roots</p> <ul style="list-style-type: none"> • Take roots of negative numbers • Know the product of square roots rule • Add radical expressions • Multiply radical expressions • Solve radical equations • Know the quotient theorem for roots • Rationalize denominators • Simplify roots of roots • Convert roots to fractional exponents • Use Euler's notation • Evaluate roots with a 	<p>coherence across the many authors and centuries during which the various books were written and in which its stories unfold.</p> <ul style="list-style-type: none"> ➤ It is relevant to all the cultures of the world <p>e. Special revelation is God revealing Himself through supernatural ways. Jesus Christ is the ultimate special revelation. He showed us what God is like more fully than any other form of revelation can. Because Jesus was also completely human, he spoke more clearly to us than any other form of revelation can. (John 14:7)</p> <p>6. <i>How do we know what is right and wrong?</i></p> <ul style="list-style-type: none"> a. Ethics or the knowledge of right and wrong is based on the character of God as good (holy and loving). (Psalm 33:4) b. There is an absolute standard by which all moral judgments are measured and God Himself – His character of goodness (holiness and love) – is the standard. (1 Samuel 2:3) c. As a result of sin, morally, we have become less able to discern good and evil and less able to know God as He truly is. (Proverbs 1:7) d. God has revealed His standard in the various laws and principles
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	<p>scientific calculator</p> <p>Statistics and Probability</p> <p>Probability</p> <ul style="list-style-type: none"> • Use counting techniques to compute probability <ul style="list-style-type: none"> • Simple probability • Independent events • Product of probabilities • Find permutations <p>Statistics</p> <ul style="list-style-type: none"> • Use and construct stem-and-leaf plots • Compute measures of central tendency • Understand normal curves • Compute standard deviation <p>Expressions</p> <p>Simplifying Expressions</p> <ul style="list-style-type: none"> • Combine like terms <ul style="list-style-type: none"> • Simple • With exponents • With negative exponents • Simplify exponential expressions <ul style="list-style-type: none"> • With exponentials and radicals/power rule • With fractional exponents • With variable exponents • With signed numbers <ul style="list-style-type: none"> • Explanation • Evaluation with signed numbers 	<p>expressed in the Bible. (Psalm 111:10)</p> <ul style="list-style-type: none"> ➤ He has dictated absolute moral truth to us. ➤ Every truth must conform to Biblical principles. ➤ Every choice must reflect God’s moral truth. ➤ We must promote, defend, and teach these truths to others. <p>7. <i>What is the meaning of human history?</i></p> <ol style="list-style-type: none"> a. History is a meaningful sequence of events leading to the fulfillment of God’s purposes for humanity. (Psalm 22:27-28, Psalm 47:3) b. History is going somewhere, directed toward a known end. (Matthew 25:34) c. History is a form of revelation, not only does God reveal Himself in history, but the very sequence of events is revelation. (Psalm 33:13-14, Psalm 47:9) d. History has meaning because God is behind all events, not only sustaining all things by His powerful word but also in all things working for the good of those who love Him. (Psalm 40:5, Romans 8:28) <p><i>What should our response be to God?</i></p> <p><i>What were we made for?</i></p> <p>We were made to</p> <p>Love – Matthew 22:37,</p> <p>Worship – Romans 12:1,</p>
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	<ul style="list-style-type: none">• Multiplication and division• With negative signs/positive or negative exponents• Evaluate expressions with substitution<ul style="list-style-type: none">• For variables• With symbols of inclusion• With signed numbers• With signed numbers and symbols of inclusion• Simplify expressions using<ul style="list-style-type: none">• Distributive property• Reduce expressions by common factor• Find the least common multiple of expressions• Simplify radical expressions<ul style="list-style-type: none">• Addition• Multiplication• Using conjugates• Fractional exponents• Simplify polynomial expressions<ul style="list-style-type: none">• Monomials• Binomials<ul style="list-style-type: none">• Difference of two squares• Sum and difference of two cubes• Trinomials<ul style="list-style-type: none">• Simple factoring• Common factors	<p>Obey – 2 John 6, and Give Glory – Psalm 96:3.</p>
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	<ul style="list-style-type: none"> • Lead coefficients greater than one • Degrees of polynomials • Addition of polynomials • Multiplication of polynomials • Division of polynomials <ul style="list-style-type: none"> • Simple • Missing term in dividend • With two variables • Simplify rational expressions <ul style="list-style-type: none"> • Multiplication • Addition • Factoring <ul style="list-style-type: none"> • Before multiplication • Before addition • Division • Denominators <ul style="list-style-type: none"> • Factoring • Rationalizing <ul style="list-style-type: none"> • By multiplication by radical • Using conjugates • Simplify complex fractions <ul style="list-style-type: none"> • Denominator-numerator same-quality rule • Multiplicative property of equality • Advanced • Simplify complex 	
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- numbers
- Addition of like terms
- Euler's notation
- Using conjugate of the denominator
- Multiple step
- Multiplication
- Division

Equations

Simplifying and Solving Equations

- Define equations and basic rules
 - Simple
 - Conditional
 - Equivalent
 - Addition and subtraction rules
 - Multiplication and division rules
- Use the fractional-part-of-a-number equation
- Solve abstract equations
- Use the decimal-part-of-a-number equation
- Solve equations with mixed numbers
- Solve equations using least common multiple
- Use the percent equation
- Solve multiple-step equations
 - Using two rules
 - Format
 - Variables on each side of equals sign
 - Two-step
 - Multiple terms

- Multivariable abstract
- Advanced
- Solve equations using distributive property
- Translate word phrases into algebraic expressions
- Translate word sentences into algebraic equations
- Solve equations involving variation
 - Direct and inverse
 - As ratio
 - Joint and combined
- Solve rational equations
- Solve radical equations
- Linear Equations**
- Find linear equations to fit experimental data
- Find equations of lines
 - Using slope-intercept form
 - Given two points
 - Parallel to given lines
 - With given slopes
 - Finding slopes
 - Perpendicular to given lines
 - Horizontal and vertical lines
 - Slope formula
 - Distance formula
- Graph linear equations
 - Simple
 - Rearranging before graphing
 - For solution

- Slope-intercept method
- Solve two equations in two unknowns
 - Substituting
 - For variable
 - One variable for another variable
 - Advanced
 - Subscripted variables
- With fractions and decimal numbers
- Using linear combination (elimination)
 - With angular relationship
 - Elimination of a variable
 - Subscripted variables
 - With fractions and decimal numbers
- By graphing
 - Simple
 - With fractions and decimals numbers
- Consistent, inconsistent, and dependent equation
- Solve three equations in three unknowns
- Quadratic Equations**
 - Solve by factoring
 - Use difference of two squares theorem
 - Complete the square

- Use the quadratic formula
- Identify lead coefficients
- Use discriminants

Other Types of Equations

- Solve logarithmic equations
- Solve exponential equations
- Solve exponential growth problems
- Find compound interest with calculator
- Find roots of equations
 - Lead coefficients of completing the square
 - Complex roots
 - Using quadratic formula
 - Irrational roots
 - Discriminants
- Solve equations with applications
 - Simple and compound interest
 - Markup and markdown
 - Coin problems
 - Chemical mixture problems
 - Age problems
- Explore nonlinear equations
 - Circles and ellipses
 - Parabolas
 - Hyperbolas

- Solve systems of equations
 - Using elimination and substitution
 - By completing the square

Algebraic Skills
Understanding Functions

- Define *domain*, *range*, *independent variable*, and *dependent variable*
- Use function notation
- Use the vertical line test
- Represent functions as ordered pairs

Manipulating and Evaluation Functions

- Multiply functions
- Add functions
- Graph and evaluate exponential functions
- Evaluate trigonometric functions

Trigonometry and Logarithms

Trigonometry

- Define and use *sine*, *cosine*, and *tangent*
- Evaluate trigonometric and inverse trigonometric functions with a scientific calculator
- Solve right triangles
- Use trigonometry to

	<p>work with vectors</p> <ul style="list-style-type: none"> • Addition • Negative • Force vectors at a point <p>Logarithms</p> <ul style="list-style-type: none"> • Solve logarithmic equations • Know the laws of logarithms • Find logarithms with a scientific calculator • Find antilogarithms with a scientific calculator <p>Lines, Points, Segments, and Planes</p> <ul style="list-style-type: none"> • Identify lines <ul style="list-style-type: none"> • Intersecting • Parallel • Transversals • In space • Skew • Perpendicular bisectors • Identify points and find distances between points • Identify segments <ul style="list-style-type: none"> • Proportional • Bisectors • Identify planes and planes in space <p>Angles</p> <ul style="list-style-type: none"> • Identify vertices of angles • Identify kinds of angles <ul style="list-style-type: none"> • Right, acute, straight, and obtuse angles • Complementary and 	
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- supplementary angles
- Adjacent angles
- Vertical angles
- Reflex angles
- Corresponding interior and exterior angles
- Alternate interior and exterior angles
- Remote interior angles
- Use inscribed angles
- Find the sum of the angles in a polygon
- Use angles with vectors
 - To find rectangular coordinates
 - To change from rectangular to polar form
- Addition
- Negative
- Force at point
- Define negative angles on the coordinate plane
- Use angles in circles to form major and minor arcs
- Polygons**
- Classify polygons
 - Convex and concave
 - Equilateral and equiangular
 - By number of sides
 - Triangles
 - Quadrilaterals
 - Inscribed
 - Squares
 - Trapezoids
 - Parallelograms

	<ul style="list-style-type: none">• Rhombuses• Rectangles• Pentagons• Hexagons• Understand congruence of polygons• Understand regularity of polygons• Translate, rotate, and reflect polygons• Identify vertices of polygons• Draw diagonals of polygons <p>Circles</p> <ul style="list-style-type: none">• Identify parts of circles<ul style="list-style-type: none">• Radii and diameters• Chords• Arcs, sectors, and central angles• Secants and tangents• Draw circumscribed and inscribed circles• Use degree measures <p>Triangles</p> <ul style="list-style-type: none">• Classify triangles<ul style="list-style-type: none">• Right, obtuse, acute, scalene, isosceles, and equilateral• 30°-60°-90°• 45°-45°-90°• Prove congruence of triangles• Find measures of angles• Solve similar triangle problems<ul style="list-style-type: none">• Two triangles	
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	<ul style="list-style-type: none">• Overlapping triangles <p>Perimeter and Circumference</p> <ul style="list-style-type: none">• Compute perimeters of shapes• Define π• Compute circumferences<ul style="list-style-type: none">• Circles• Semicircles <p>Area</p> <ul style="list-style-type: none">• Find areas of polygons<ul style="list-style-type: none">• Triangles• Parallelograms and trapezoids• Find areas of complex shapes<ul style="list-style-type: none">• Made of two or more polygons• Made of polygons and semicircles• Find areas of circles, sectors, and semicircles <p>Surface Area and Volume</p> <ul style="list-style-type: none">• Find surface areas of geometric solids<ul style="list-style-type: none">• Right circular cylinders• Triangular prisms and rectangular pyramids• Circular cones• Spheres• Complex shapes as the base• Find volumes of geometric solids<ul style="list-style-type: none">• Right cylinders and	
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	<p>prisms</p> <ul style="list-style-type: none">• Cones, pyramids, and spheres <p>Constructions</p> <ul style="list-style-type: none">• Copy angles using compass and straight edge• Construct perpendicular bisectors• Construct triangles and rectangles• Construct angle bisectors• Copy line segments <p>Postulates</p> <ul style="list-style-type: none">• Understand Euclid's postulates <p>Pythagorean Theorem</p> <ul style="list-style-type: none">• Find side lengths• Graph points to find distance• Prove the Pythagorean theorem <p>Proofs</p> <ul style="list-style-type: none">• Prove theorems about lines• Prove theorems about angles• Prove theorems about circles• Prove theorems about parallelograms• Prove theorems about rhombuses• Prove theorems about isosceles trapezoids• Prove theorems about triangles	
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<p>solve problems;</p> <p>(B) use algebraic methods, graphs, tables, or matrices, to solve systems of equations or inequalities; and</p> <p>(C) interpret and determine the reasonableness of solutions to systems of equations or inequalities for given contexts.</p> <p>(4) Algebra and geometry. The student connects algebraic and geometric representations of functions. <i>The student is expected to:</i></p> <p>(A) identify and sketch graphs of parent functions, including linear ($f(x) = x$), quadratic ($f(x) = x^2$), exponential ($f(x) = ax$), and logarithmic ($f(x) = \log ax$) functions, absolute value of x ($f(x) = x$), square root of x ($f(x) = \sqrt{x}$), and reciprocal of x ($f(x) = 1/x$);</p> <p>(B) extend parent functions with parameters such as a in $f(x) = a/x$ and describe the effects of the parameter changes on the graph of parent functions; and</p> <p>(C) describe and analyze the relationship between a function and its inverse.</p> <p>(5) Algebra and geometry. The student knows the relationship between the geometric and algebraic descriptions of conic sections. <i>The student is expected to:</i></p> <p>(A) describe a conic section as the intersection of a plane and a cone;</p> <p>(B) sketch graphs of conic sections to relate simple parameter changes in the equation to corresponding changes in the graph;</p> <p>(C) identify symmetries from graphs of conic sections;</p> <p>(D) identify the conic section from a given equation; and</p> <p>(E) use the method of completing the square.</p> <p>(6) Quadratic and square root functions. The student understands that quadratic functions can be represented in different ways and translates among their various representations. <i>The student is expected to:</i></p> <p>(A) determine the reasonable domain and range values of</p>	<p>Lessons 76, 90, 106, 13, 23, 97, 17, 29, 22, 64, 91 Lessons 76, 90, 106, 13, 23, 97, 17, 29, 22, 64, 91</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 85, 99, 8, 23, 115, 100, 122, 118, 113, 114</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 85, 99, 8, 23, 115, 100, 122, 118, 113, 114</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 99, 8, 23, 115, 100, 122, 118, 113</p> <p>Lessons 85, 72 Plus: supplement with worksheets Worksheets</p> <p>Worksheets Worksheets Lessons 50, 58, 100</p> <p>Lessons 50, 58, 62, 84, 93,</p>	
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<p>quadratic functions, as well as interpret and determine the reasonableness of solutions to quadratic equations and inequalities;</p> <p>(B) relate representations of quadratic functions, such as algebraic, tabular, graphical, and verbal descriptions; and</p> <p>(C) determine a quadratic function from its roots (real and complex) or a graph.</p> <p>(7) Quadratic and square root functions. The student interprets and describes the effects of changes in the parameters of quadratic functions in applied and mathematical situations. <i>The student is expected to:</i></p> <p>(A) use characteristics of the quadratic parent function to sketch the related graphs and connect between the $y = ax^2 + bx + c$ and the $y = a(x - h)^2 + k$ symbolic representations of quadratic functions; and</p> <p>(B) use the parent function to investigate, describe, and predict the effects of changes in a, h, and k on the graphs of $y = a(x - h)^2 + k$ form of a function in applied and purely mathematical situations.</p> <p>(8) Quadratic and square root functions. The student formulates equations and inequalities based on quadratic functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. <i>The student is expected to:</i></p> <p>(A) analyze situations involving quadratic functions and formulate quadratic equations or inequalities to solve problems;</p> <p>(B) analyze and interpret the solutions of quadratic equations using discriminants and solve quadratic equations using the quadratic formula;</p> <p>(C) compare and translate between algebraic and graphical solutions of quadratic equations; and</p>	<p>86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 8, 23, 85, 115, 100, 122, 99</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 8, 23, 85, 115, 100, 122, 99</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 50, 58, 62, 84,</p>	
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<p>(D) solve quadratic equations and inequalities using graphs, tables, and algebraic methods.</p> <p>(9) Quadratic and square root functions. The student formulates equations and inequalities based on square root functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. <i>The student is expected to:</i></p> <p>(A) use the parent function to investigate, describe, and predict the effects of parameter changes on the graphs of square root functions and describe limitations on the domains and ranges;</p> <p>(B) relate representations of square root functions, such as algebraic, tabular, graphical, and verbal descriptions;</p> <p>(C) determine the reasonable domain and range values of square root functions, as well as interpret and determine the reasonableness of solutions to square root equations and inequalities;</p> <p>(D) determine solutions of square root equations using graphs, tables, and algebraic methods;</p> <p>(E) determine solutions of square root inequalities using graphs and tables;</p> <p>(F) analyze situations modeled by square root functions, formulate equations or inequalities, select a method, and</p>	<p>93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112 Covered extensively in Saxon Algebra I Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Covered extensively in Saxon Algebra I Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p>	
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<p>solve problems; and</p> <p>(G) connect inverses of square root functions with quadratic functions.</p> <p>(10) Rational functions. The student formulates equations and inequalities based on rational functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. <i>The student is expected to:</i></p> <p>(A) use quotients of polynomials to describe the graphs of rational functions, predict the effects of parameter changes, describe limitations on the domains and ranges, and examine asymptotic behavior;</p> <p>(B) analyze various representations of rational functions with respect to problem situations;</p> <p>(C) determine the reasonable domain and range values of rational functions, as well as interpret and determine the reasonableness of solutions to rational equations and inequalities;</p> <p>(D) determine the solutions of rational equations using graphs, tables, and algebraic methods;</p> <p>(E) determine solutions of rational inequalities using graphs and tables;</p> <p>(F) analyze a situation modeled by a rational function, formulate an equation or inequality composed of a linear or quadratic function, and solve the problem; and</p> <p>(G) use functions to model and make predictions in problem situations involving direct and inverse variation.</p> <p>(11) Exponential and logarithmic functions. The student formulates equations and inequalities based on exponential and logarithmic functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. <i>The student is expected to:</i></p> <p>(A) develop the definition of logarithms by exploring and describing the relationship between exponential functions and their inverses;</p>	<p>Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Covered extensively in Saxon Algebra I</p> <p>Plus: Lessons 50, 58, 62, 84, 93, 86, 96, 100, 38, 39, 55, 71, 87, 110, 112</p> <p>Lessons 8, 14, 84, 16, 103</p> <p>Lessons 8, 14, 84, 16, 103</p> <p>Covered extensively in Saxon Algebra I</p> <p>Plus: Lessons 86, 94, 103</p> <p>Lesson 27</p> <p>Lessons 86, 27, 99, 91</p> <p>Lessons 24, 34, 22, 19, 37, 47, 61, 60, 74, 72</p> <p>Lesson 60, 80</p> <p>Lessons 113, 122, 115</p>	
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<p>(B) use the parent functions to investigate, describe, and predict the effects of parameter changes on the graphs of exponential and logarithmic functions, describe limitations on the domains and ranges, and examine asymptotic behavior;</p> <p>(C) determine the reasonable domain and range values of exponential and logarithmic functions, as well as interpret and determine the reasonableness of solutions to exponential and logarithmic equations and inequalities;</p> <p>(D) determine solutions of exponential and logarithmic equations using graphs, tables, and algebraic methods;</p> <p>(E) determine solutions of exponential and logarithmic inequalities using graphs and tables; and</p> <p>(F) analyze a situation modeled by an exponential function, formulate an equation or inequality, and solve the problem.</p>	<p>Lessons 113, 122, 115</p> <p>Lessons 113, 122, 115</p> <p>Lessons 113, 122, 115</p> <p>Lessons 113, 122, 115</p> <p>Lessons 113, 122, 115</p>	
	<p>Student Activities Cooperative Learning Graphic Organizers Small Groups Drawing Manipulatives</p> <p>Teaching Strategies Direct Instruction Open-ended Questions Discussion Demonstration Brainstorming Problem Solving Read Aloud Facilitating Cooperative Learning</p> <p>Evaluation Procedures Observation Class Participation Quizzes/Tests</p>	

	Other Resources and Bibliography None	
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