

Academic Systems Algebra Scope and Sequence

	Lesson	Concept	Objectives	Hours
Topic F1: Whole Numbers				
F1.1	Whole Numbers I	Adding and Subtracting <i>(2 hours)</i>	a) Ordering Whole Numbers. b) Place value. c) Reading Large Numbers. d) Adding Whole Numbers. e) Subtracting Whole Numbers. f) Solving an Equation.	6-8 hours
		Multiplying and Dividing <i>(2 hours)</i>	a) Multiplying by a Power of Ten. b) Dividing whole numbers. c) Solving an Equation. d) Factors and Factoring. e) Prime Numbers. f) Prime Factorization.	
		Rounding and Divisibility <i>(4 hours)</i>	a) Rounding a Number to the Nearest Ten. b) Rounding a Number to the Nearest Hundred. c) Rounding a Number to the Nearest Thousand. d) Divisibility by 2. e) Divisibility by 5 and 10 f) Divisibility by 3. g) Applications.	
F1.2	Whole Numbers II	Exponential Notation <i>(4 hours)</i>	a) Exponential Notation. b) Identifying Exponential Notation. c) The Value of an Exponential Notation. d) Special Examples of Exponential Notation. e) Powers of 10. f) Square Numbers. g) Square Roots. h) Estimating Square Roots. i) Cube and Cube Roots. j) Applications.	4-6 hours
		Order of Operations <i>(2 hours)</i>	a) Grouping symbols. b) Order of operations. c) Properties of whole numbers.	

			d) Working with Variables. e) Applications.	
Topic F2: Proportional Reasoning I				
F2.1	Fractions I	Equivalent Fractions (3 hours)	a) Fraction notation. b) Equivalent fractions (with larger or smaller denominators) c) Simplify fractions (reducing to lowest terms) d) Greatest common factor (GCF) e) Applications.	4-6 hours
		Multiplying and Dividing (2 hours)	a) Converting a Mixed numeral to an Improper Fraction. b) Converting an Improper Fraction to a Mixed Numeral. c) Multiplying Fractions. d) Finding the Reciprocal of a Fraction. e) Dividing Fractions. f) Solving for an Unknown. g) Applications.	
		Explore (1 hour)	a) Daily Fractions. b) Fractions and Triangles.	
F2.2	Fractions II	Common Denominators (2 hours)	a) Least common multiple (LCM). b) Common denominators. c) Least common denominator (LCD). d) Ordering fractions. e) Applications.	4-6 hours
		Adding and Subtracting (3 hours)	a) Fractions with the same denominators. b) Fractions with different denominators. c) Mixed numerals. d) Order of operations. e) Properties of rational numbers. f) Combining similar terms. g) Solving $x \pm p = q$. h) Applications.	
		Explore (1 hour)	a) Stock Prices. b) A Survey.	
F2.3	Decimals I	Notation (2 hours)	a) Introduction to Decimals. b) Notation. c) Place Value. d) Reading and Writing Decimals.	4-6 hours

			e) Ordering Decimal Numbers. f) Rounding Decimals. Applications.	
		Converting (3 hours)	a) Decimals and Fractions on a Number Line. b) Converting Decimals to Fractions. c) Converting Fractions to Decimals.	
		Explore (1 hour)	a) Using Decimals to Compare Data. b) The Dewey Decimal System.	
F 2.4	Decimals II	Adding and Subtracting (2 hours)	a) Adding Decimal Numbers. b) Subtracting Decimal Numbers. c) Working with Variables. d) Solving for an Unknown. e) Applications.	4-6 hours
		Multiplying and Dividing (3 hours)	a) Multiplying Decimal Numbers. b) Dividing Decimal Numbers. c) Multiplying or Dividing a Decimal Number by a Power of Ten. d) Solving for an Unknown. e) Converting Fractions to Decimals. f) Properties of Real Numbers. g) Order of Operations. h) Applications.	
		Explore (1 hour)	a) A Calculator Game. b) A Target Game.	
Topic F3: Proportional Reasoning II				
F 3.1	Ratio and Proportion	Ratios (2 hours)	a) Writing a Ration. b) Equivalent Ratios. c) Rates. d) Applications.	4-6 hours
		Proportions (3 hours)	a) Solving a Proportion. b) Solving a Proportion that Contains a Decimal. c) Solving a Proportion that Contains a Fraction. d) How to solve a Proportion with Similar Triangles. e) Applications.	
		Explore (1 hour)	a) Inverting Ratios. b) Similar Figures.	

F 3.2	Percent	Definition (2 hours)	a) Introduction to Percent. b) Definition of Percent. c) Picturing Percent on a 100-square Grid. d) Picturing Percent on a Number Line. e) Applications.	7-9 hours
		Converting (3 hours)	a) Writing a Percent as a Decimal. b) Writing a Decimal as a Percent. c) Writing a Percent as a Fraction. d) Writing a Fraction as a Percent. e) Finding a Percent of Decrease. f) Finding a Percent of Increase. g) Applications.	
		Solving Percent Problems (3 hours)	a) Applications.	
		Explore (1 hour)	a) A Survey. b) Computing Tips. c) A Percent Question.	
Topic F4: Signed Numbers				
F 4.1	Signed Numbers I	Adding (2 hours)	a) The opposite of a number. b) Subtracting signed numbers. c) Subtracting more than one signed number. d) Solving an Equation. e) Applications.	4-6 hours
		Subtracting (3 hours)	a) The opposite of a number. b) Subtracting signed numbers. c) Subtracting more than one signed number. d) Solving an Equation. e) Applications.	
		Explore (1 hour)	a) Tracking Temperatures. b) Efficient Calculating.	
F4.2	Signed Numbers II	Multiplying and Dividing (2 hours)	a) Multiplying Two Numbers with Different Signs. b) Multiplying Two Numbers with the Same Sign. c) Dividing Signed Numbers. d) Solving an Equation.	4-6 hours
		Combining Operations (3 hours)	a) Exponential Notation. b) Grouping Symbols. c) Order of Operations.	

			<ul style="list-style-type: none"> d) Properties of Signed Numbers. e) Working with variables. f) Applications. 	
		Explore <i>(1 hour)</i>	<ul style="list-style-type: none"> a) Up's and Down's. b) 2's and 4's. 	
F5.1	Geometry I	Geometric Figures <i>(3 hours)</i>	<ul style="list-style-type: none"> a) Basic Geometric figures. b) Polygons. c) Angles. d) Measuring an Angle. e) Using a Protractor. f) Comparing Angles. g) Pairs of Angles. h) More Pairs of Angles. i) Applications. 	4 hours
		Explore <i>(1 hour)</i>	<ul style="list-style-type: none"> a) Tiling with Polygons. b) What's the Sum? 	
F5.2	Geometry II	Perimeter and Area <i>(2 hours)</i>	<ul style="list-style-type: none"> a) Perimeter of a Polygon. b) Area of a Polygon. c) Area of a Rectangle. d) Parallelograms. e) Area of Parallelograms. f) Triangles. g) Trapezoids. h) Circles. i) Circumference of a Circle. j) Area of a Circle. k) Application. 	4-6 hours
		Surface Area and Volume <i>(3 hours)</i>	<ul style="list-style-type: none"> a) Surface Area and Volume. b) Surface Area of a Rectangular Prism. c) Volume of a Rectangular Prism. d) Surface Area of a Cylinder. e) Volume of a Cylinder. f) Cones. g) Spheres. 	
		Explore <i>(1 hour)</i>	<ul style="list-style-type: none"> a) Don't Fence Me In. b) Packaging Products. c) Why pi? 	
F5.3	Geometry III	Triangles and Parallelograms <i>(2 hours)</i>	<ul style="list-style-type: none"> a) Angle Sum of a Triangle. b) Congruent Figures. c) Isosceles Triangles. d) Equilateral Triangles. e) Right Triangles. f) The Pythagorean Theorem. g) Using the Pythagorean 	4-6 hours

			<p>Theorem.</p> <p>h) Special Pairs of Angles.</p> <p>i) Parallel Lines and Pairs of Angles.</p> <p>j) Parallelograms.</p> <p>k) Applications.</p>	
		<p>Similar Polygons (3 hours)</p>	<p>a) Similar Polygons.</p> <p>b) Similar Triangles.</p> <p>c) Shortcuts for Identifying Similar Triangles.</p> <p>d) Recognizing Similar Triangles in the Same Figure.</p> <p>e) Finding Missing Parts of Similar Triangles in the Same Figure.</p> <p>f) Applications.</p>	
		<p>Explore (1 hour)</p>	<p>a) Congruent Triangles.</p> <p>b) Door to Door.</p>	
Topic F6: Interpreting Data				
F6.1	Units of Measurement	<p>US/English Units (2 hours)</p>	<p>a) Measuring Length.</p> <p>b) Changing Units of Length.</p> <p>c) Time.</p> <p>d) Weight.</p> <p>e) Volume.</p> <p>f) Length and time.</p> <p>g) Volume and Time.</p> <p>h) Operations with units.</p> <p>i) Applications.</p>	4-6 hours
		<p>The Metric System (3 hours)</p>	<p>a) Introduction to the Metric system.</p> <p>b) Some Metric Prefixes.</p> <p>c) Changing metric Units Using a Unit Ratio.</p> <p>d) More Metric Prefixes.</p> <p>e) Changing Units Using a 'Prefix Table'.</p> <p>f) Temperature.</p> <p>g) Celsius to Fahrenheit.</p> <p>h) Fahrenheit to Celsius.</p> <p>i) Changing between US and Metric Units.</p> <p>j) Applications.</p>	
		<p>Explore (1 hour)</p>	<p>a) Sizing it Up.</p> <p>b) Choosing Units.</p>	
F6.2	Interpreting Graphs	<p>Data and Graphs (2 hours)</p>	<p>a) Applications.</p>	3 hours

		Explore (1 hour)	a) Collecting and Picturing Data. b) Graphs in the News.	
F6.3	Introduction to Statistics	Statistical Measures (2 hours)	a) Finding the Center: The Mean. b) Finding the Center: The Median. c) Finding the Center: The Mode. d) Finding the Spread: The Range. e) Finding the Spread: The Upper and Lower Quartiles. f) Making a Box – Whisker – Plot. g) Applications.	3 hours
		Explore (1 hour)	a) Collecting Data. b) Where's the Middle? c) Age Problems.	
Topic E1: Essentials — Preparing for Algebra				
E1.A	Fractions (reviews F2.1, F2.2)	Multiplying and Dividing (2 hours)	a) Equivalent fractions. b) Prime factorization. c) Reducing to lowest terms. d) The greatest common factor (GCF). e) Reduce Fractions. f) Multiplying Fractions. g) Finding reciprocals. h) Divide Fractions.	4 hours
		Adding and Subtracting (2 hours)	a) Add and Subtract Fractions. b) The least common multiple (LCM). c) The least common denominator (LCD). d) Add or Subtract Fractions with different denominators.	
E1.B	Signed Numbers (reviews F4.1, F4.2)	Adding and Subtracting (2 hours)	a) Adding two numbers with same sign. b) Adding two numbers with different signs. c) Subtracting signed numbers.	4 hours
		Multiplying and Dividing (2 hours)	a) Multiplying and dividing signed numbers. b) Exponential notation. c) Distributive property and other properties of real numbers. d) Order of operations.	
Topic 1: Real Numbers				
1.1	The Real Numbers	Number Line and Notation (2 hours)	a) Sets. b) Subsets of real numbers: natural numbers, integers, rationals,	2 hours

			<ul style="list-style-type: none"> irrationals. c) Graphing real numbers on a number line. d) Ordering symbols: =, <, >, ≤, ≥. e) The absolute value of a real number. f) Grouping symbols. g) Exponents. 	
1.2	Factoring and	The GCF and LCM (1 hour)	<ul style="list-style-type: none"> a) Prime factors. b) Greatest common factor. c) Least common multiple. 	3 hours
		Fractions (1 hour)	<ul style="list-style-type: none"> a) Reducing to lowest terms. b) Multiplication and division. c) Addition and subtraction. 	
		Explore (1 hour)	<ul style="list-style-type: none"> a) Concept – Explore. b) Summary – Explore. 	
1.3	Arithmetic of Numbers	Operations on Numbers (1 hour)	<ul style="list-style-type: none"> a) Addition. b) Subtraction. c) Multiplication. d) Division. e) Order of operations. f) Commutative law. g) Associative law. h) Distributive law. i) Additive and multiplicative identities. j) Inverses. 	2 hours
		Explore (1 hour)	<ul style="list-style-type: none"> a) Concept – Explore. b) Summary – Explore. 	
Topic 2: Solving Linear Equations and Inequalities				
2.1	Algebraic Expressions	Simplifying Expressions (2 hours)	<ul style="list-style-type: none"> a) Constants and variables. b) Terms and coefficients. c) Parentheses. d) Evaluating expressions. e) Formulas: Substitution. 	2 hours
2.2	Solving Linear Equations	Solving Equations (2 hours)	<ul style="list-style-type: none"> a) Recognizing a linear equation. b) The addition and subtraction principles for solving a linear equation. c) The multiplication and division principles for solving a linear equation. d) Combining the principles. 	3 hours

		Solving Equations II (1 hour)	<ul style="list-style-type: none"> a) Equations with fractions as coefficients. b) Equations with no solutions. c) Equation with or many solutions. d) Formulas: Solving for a particular unknown. 	
2.3	Problem Solving	Number and Age (2 hours)	<ul style="list-style-type: none"> a) Translating words into algebraic Expressions. b) Number problems. c) Age problems. 	4 hours
		Geometry (2 hours)	<ul style="list-style-type: none"> a) Geometry problems. 	
2.4	Linear Inequalities	Solving Inequalities (2 hours)	<ul style="list-style-type: none"> a) Recognizing solutions of linear inequalities. b) Graphing solutions of inequalities in one variable. c) The addition and subtraction principles for solving a linear inequality. d) The multiplication and division principles for solving a linear inequality. e) Combining the addition, subtraction, multiplication, and division principles. f) Solving problems using inequalities. 	2 hours
Topic 3: Introduction to Graphing				
3.1	Introduction to Graphing	Plotting Points (1 hour)	<ul style="list-style-type: none"> a) The xy-plane. b) The x-axis and y-axis. c) The origin. d) Ordered pairs. e) The x-coordinate (abscissa), the y-coordinate (ordinate). f) Plotting ordered pairs of numbers. g) Labeling the four quadrants. h) Determining the quadrant in which a point lies. i) The signs of the coordinates in each quadrant. 	2.5 hours
		Rise and Run (1 hour)	<ul style="list-style-type: none"> a) Subscript notation. b) Geometric interpretation of rise and run. c) Algebraic definition of rise and run. 	

		The Distance Formula (0.5 hours)	g) Pythagorean Theorem. h) The distance formula. i) The equation of a circle.	
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Topic 4: Graphing Linear Equations and Inequalities				
4.1	Graphing Equations	Graphing Lines I (2 hours)	a) Definition of a linear equation in two variables. b) Recognizing linear equations in two variables. c) Solutions of linear equations. d) Graphing a linear equation by plotting ordered pairs.	3-4 hours
		Graphing Lines II (1 hour)	a) Equations and graphs of horizontal and vertical lines. b) The intercepts of a line. c) Graphing a linear equation by finding the intercepts.	
		Slope of a Line (2 hours)	a) Definition of the slope of a line. b) Positive slope, negative slope, zero slope, undefined slope. c) Graphing a line given a point and the slope. d) Parallel and perpendicular lines.	
4.2	The Equation of a Line	Finding the Equation I (1 hour)	a) Finding the equation of a line given a point on the line and the slope of the line. b) The point-slope form of the equation of a line. c) Finding the equation of a line given two points on the line.	3 hours
		Finding the Equation II (2 hours)	a) The slope-intercept form of the equation of a line. b) Finding the equation of a horizontal line. c) Finding the equation of a vertical line. d) Finding the equation of a line parallel or perpendicular to a given line.	
4.3	Graphing Inequalities	Linear Inequalities (2 hours)	a) Ordered pairs as solutions of linear inequalities. b) Graphing inequalities.	2 hours

Topic 5: Solving Linear Systems				
5.1	Solving Linear Systems	Solution by Graphing (2 hours)	a) The solution of a linear system. b) Graphing linear systems. c) Systems with a unique solution. d) Systems with no solutions. e) Systems with an infinite number of solutions.	3 hours
		Solution by Algebra (0.5 hours)	a) Solving linear systems by the substitution method: one solution, no solution, and an infinite number of solutions. b) Solving linear systems by the elimination method: one solution, no solution, and an infinite number of solutions.	
		Explore (0.5 hours)	a) Concept – Explore. b) Summary – Explore.	
5.2	Problem Solving	Using Linear Systems (2 hours)	a) Number problems. b) Interest problems. c) Coin problems. d) Mixture problems.	2 hours
5.3	Systems of Inequalities	Solving Linear Systems (1 hour)	a) Solving systems of linear inequalities by graphing.	2 hours
		Explore (1 hour)	a) Concept – Explore. b) Summary – Explore.	
Topic 6: Exponents and Polynomials				
6.1	Exponents	Properties of Exponents (2 hours)	a) Definition of exponent, power, and base. b) Multiplication property. c) Division property. d) Powers raised to powers. e) Products raised to powers. f) Quotients raised to powers The zero exponent.	2 hours
6.2	Polynomial Operations I	Adding and Subtracting (2 hours)	a) Definition of polynomial, term, and coefficient. b) Evaluating a polynomial. c) The degree of a term and a polynomial. d) Writing the terms of a polynomial in descending order. e) Definition of a monomial, binomial, and trinomial.	4 hours

		Multiplying and Dividing (2 hours)	<ul style="list-style-type: none"> a) Multiplying a monomial by a monomial. b) Multiplying a polynomial by a monomial. c) Dividing a monomial by a monomial. d) Dividing a polynomial by a monomial. 	
6.3	Polynomial Operations II	Multiplying Binomials (1.5 hours)	<ul style="list-style-type: none"> a) Multiplying binomials by the "FOIL" method. b) Perfect squares, product of the sum and difference of two terms. 	4 hours
		Multiplying and Dividing (1.5 hours)	<ul style="list-style-type: none"> a) Multiplying a polynomial by a polynomial. b) Dividing a polynomial by a polynomial. 	
		Explore (1 hour)	<ul style="list-style-type: none"> a) Concept – Explore. b) Summary – Explore. 	
Topic 7: Factoring				
7.1	Factoring Polynomials I	Greatest Common Factor (2 hours)	<ul style="list-style-type: none"> a) Finding the greatest common factor (GCF) of a set of monomials. b) Factoring a polynomial by finding the GCF when the GCF is a monomial. 	4 hours
		Grouping (2 hours)	<ul style="list-style-type: none"> a) Factoring a polynomial by finding the GCF when the GCF is a binomial. b) Factoring a polynomial with four terms by grouping. 	
7.2	Factoring Polynomials II	Trinomials I (1 hour)	a) Factoring trinomials of the form $x^2 + bx + c$; $x^2 + bxy + cy^2$.	4 hours
		Trinomials II (2 hours)	<ul style="list-style-type: none"> a) Factoring trinomials of the form $ax^2 + bx + c$, $a \neq 1$, by trial-and-error. b) Factoring trinomials of the form $ax^2 + bx + c$, $a \neq 1$, by grouping. c) Solving quadratic equations by factoring. 	
		Explore (1 hour)	<ul style="list-style-type: none"> a) Concept – Explore. b) Summary – Explore. 	

7.3	Factoring by Patterns	Recognizing Patterns (2 hours)	<ul style="list-style-type: none"> a) Factoring a perfect square trinomial. b) Factoring a difference of two squares. c) Factoring a sum and difference of two cubes. d) Factoring using a combination of methods 	2 hours
8.1	Rational Expressions I	Multiplying and Dividing (1 hour)	<ul style="list-style-type: none"> a) Determining when a rational expression is undefined. b) Writing a rational expression in lowest terms. c) Multiplying rational expressions. d) Dividing rational expressions. e) Simplifying a complex fraction. 	2 hours
		Adding and Subtracting (1 hour)	<ul style="list-style-type: none"> a) Adding rational expressions with the same denominator. b) Subtracting rational expressions with the same denominator. 	
8.2	Rational Expressions II	Negative Exponents (1 hour)	<ul style="list-style-type: none"> a) Notation. b) Scientific notation. 	3 hours
		Multiplying and Dividing (1 hour)	<ul style="list-style-type: none"> a) Reducing a rational expression of the form $(a - b)/(b - a)$. b) Multiplying rational expressions. c) Dividing rational expressions. d) Simplifying a complex fraction. 	
		Adding and Subtracting (1 hour)	<ul style="list-style-type: none"> a) Finding the least common denominator of two or more rational expressions. b) Adding rational expressions with different denominators. c) Subtracting rational expressions with different denominators. d) Simplifying a complex fraction. 	
8.3	Equations with Fractions	Solving Equations (2 hours)	<ul style="list-style-type: none"> a) Solving equations with rational Expressions. b) Solving for an unknown in a formula. c) Involving a rational expression. 	2 hours
8.4	Problem Solving	Rational Expressions (2 hours)	<ul style="list-style-type: none"> a) Ratio and proportion. b) Distance problems. c) Work problems. d) Variation. 	2 hours

Topic EII: Essentials of Algebra				
EII.A	Real Numbers and Exponents <i>(reviews 1.1, 1.3, 6.1)</i>	Real Numbers and Notation <i>(1 hour)</i>	<ul style="list-style-type: none"> a) Number line and notation: sets, ordering symbols, grouping symbols, exponents, and absolute value. b) Operations on signed numbers. c) Properties of real numbers: commutative law, associative law, distributive law, additive and multiplicative identities, inverses. 	2 hours
		Integer Exponents <i>(1 hour)</i>	<ul style="list-style-type: none"> a) Nonnegative integer exponents. b) Properties of exponents. 	
EII.B	Polynomials <i>(reviews 2.1, 6.2, 7.1, 7.2)</i>	Polynomial Operations <i>(1 hour)</i>	<ul style="list-style-type: none"> a) Algebra building blocks: constants, variables, terms and coefficients. b) Evaluating polynomials. c) Adding and subtracting polynomials. d) Multiplying and dividing polynomials. 	2 hours
		Factoring Polynomials <i>(1 hour)</i>	<ul style="list-style-type: none"> a) Factoring out the greatest common factor. b) Factoring by grouping. c) Factoring trinomials. d) Factoring a difference of 2 squares. e) Factoring sums and differences of 2 cubes. f) Factoring using a combination of methods. 	
EII.C	Equations and Inequalities <i>(reviews 2.2, 2.4)</i>	Linear <i>(2 hours)</i>	<ul style="list-style-type: none"> a) Solving linear equations. b) Solving linear inequalities. 	2 hours
EII.D	Rational Expressions <i>(reviews 8.1, 8.2)</i>	Rational Expressions <i>(1 hour)</i>	<ul style="list-style-type: none"> a) Negative integer exponents. b) Writing rational expressions in lowest terms. c) Multiplying and dividing rational expressions. d) Adding and subtracting rational expressions. 	2 hours
		Rational Equations <i>(1 hour)</i>	<ul style="list-style-type: none"> a) Find the LCD of Rational Expressions. b) Solving equations that contain rational expressions. 	

			c) How to check for Extraneous Solutions.	
EII.E	Graphing Lines (reviews 3.1, 4.1, 4.2)	Graphing Lines (1 hour)	a) The coordinate system. b) Graphing lines.	2 hours
		Finding Equations (1 hour)	a) Slope and intercepts. b) Finding the equation of a line.	
EII.F	Absolute Value (new material)	Solving Equations (2 hours)	a) Solving $ x = a$. b) Solving $ Ax + B = a$. c) Solving $ Ax + B = Cx + D$.	3 hours
		Solving Inequalities (1 hour)	a) Solving absolute value inequalities.	
Topic 9: Rational Exponents and Radicals				
9.1	Roots and Radicals	Square Roots and Cube Roots (1 hour)	a) Definition of square root and cube root. b) Radicand, radical. c) Principal square root. d) Multiplication and division properties. e) Simplifying a square root or a cube root of a whole number. f) Simplifying a square root or a cube root of simple monomial expression.	3 hours
		Radical Expressions (2 hours)	a) Simplifying radical expressions. b) Like radical terms. c) Simplifying a sum or difference of radical expressions. d) Multiplying radical expressions. e) Conjugates. f) Rationalizing the denominator. g) Solving radical equations..	
9.2	Rational Exponents	Roots and Exponents (1 hour)	a) The n th root of a number. b) Definition of $a^{1/n}$ and $a^{m/n}$. c) Properties of rational exponents.	4 hours
		Simplifying Radicals (1 hour)	a) Simplifying radicals.	
		Operations on Radicals (2 hours)	a) Multiplying radical expressions. b) Dividing radical expressions. c) Adding and subtracting radical Expressions.	

Topic 10: Quadratic Equations				
10.1	Quadratic Equations I	Solving by Factoring (1 hour)	<ul style="list-style-type: none"> a) The standard form of a quadratic. b) Equation. c) Putting a quadratic equation into standard form $ax^2 + bx + c = 0$; $a \neq 0$. d) Solving quadratic equations of the form $ax^2 + bx = 0$ by factoring. e) Solving quadratic equations of the form $ax^2 + bx + c = 0$ by factoring. 	2 hours
		Solving by Square Roots (1 hour)	<ul style="list-style-type: none"> a) Finding square roots. b) Solving quadratic equations of the form $ax^2 = b$. c) Solving quadratic equations of the form $(ax + b)^2 = c$. 	
10.2	Quadratic Equations II	Completing the Square (1 hour)	<ul style="list-style-type: none"> a) Solving quadratic equations of the form $x^2 + bx + c = 0$ by completing the square. b) Solving quadratic equations of the form $ax^2 + bx + c = 0$, $a \neq 1$, by completing the square root. 	2 hours
		The Quadratic Formula (1 hour)	<ul style="list-style-type: none"> a) Introducing the quadratic formula. b) Using the quadratic formula to solve quadratic equations of the form $ax^2 + bx + c = 0$. c) Using the discriminant of a quadratic equations to determine the nature of the solutions of the equation. 	
10.3	Complex Numbers	Complex Number System (2 hours)	<ul style="list-style-type: none"> a) Definition of complex numbers. b) Powers of i. c) Operations on complex numbers. 	2 hours
Topic 11: Functions and Graphing				
11.1	Functions	Functions and Graphs (1 hour)	<ul style="list-style-type: none"> a) Definition of a function. b) Function as an ordered pair of numbers. c) Finding function values given a formula d) Function notation: $y = f(x)$. d) Graphing simple functions. e) Domain and range of a 	4 hours

			function. f) The vertical line test.	
		Linear Functions (1 hour)	a) Graphs of linear functions. b) Graphs of absolute value functions.	
		Quadratic Functions (1 hour)	a) Graphs of quadratic functions. b) Intercepts of quadratic functions.	
		Explore (1 hour)	a) Explore	
11.2	The Algebra of Functions	The Algebra of Functions (2 hours)	a) The sum and difference of functions. b) The product and quotient of functions. c) The composition of functions.	4 hours
		Inverse Functions (2 hours)	a) Finding the inverse and the equation of the inverse. b) Defining one-to-one and checking whether a function has an inverse that is a function. c) Graphing inverse functions.	
Topic 12: The Exponential and Logarithmic Functions				
12.1	Exponential Functions	The Exponential Function (2 hours)	a) Recognizing and graphing an exponential function. b) Applications of the exponential function. c) The algebra of exponential functions.	2 hours
12.2	Logs and Their Properties	The Logarithmic Function (1 hour)	a) Converting from exponents to logarithms and from logarithms to exponents. b) Recognizing and graphing a logarithmic function.	2 hours
		Logarithmic Properties (0.5 hours)	a) The algebra of logarithmic functions.	
		Explore (0.5 hours)	a) Concept – Explore. b) Summary – Explore.	
12.3	Applications of Logs	Natural and Common Logs (1 hour)	a) Base e and natural logarithms. b) Finding logs in base 10 and finding powers of 10, using a calculator. c) Finding logs in base e and powers of e, using a calculator.	2 hours

			d) Change of base formula.	
		Solving Equations (1 hour)	a) Solving exponential equations. b) Solving logarithmic equations.	
Topic 13: More Nonlinear Equations and Inequalities				
13.1	Nonlinear Equations	Solving Equations (1 hour)	a) Solving polynomial equations by factoring. b) Solving quadratic-type equations by factoring or by substitution.	3 hours
		Radical Equations (1 hour)	a) Solving $ax + b = cx + d$. b) Solving $ax^2 + b^2 = cx + d$. c) Solving $ax^2 + b^2 = cx + d$. d) Solving equations that contain rational exponents.	
		Explore (1 hour)	a) Explore	
13.2	Nonlinear Systems	Solving Systems (1 hour)	a) The solution of a nonlinear system. b) Solving nonlinear systems by graphing. c) Solving nonlinear systems by the addition method. d) Solving nonlinear systems by the substitution method.	2 hours
		Explore (1 hour)	a) Explore	
13.3	Inequalities	Quadratic Inequalities (2 hours)	a) Solving quadratic inequalities.	4 hours
		Rational Inequalities (1 hour)	a) Solving rational inequalities.	
		Explore (1 hour)	a) Explore	