

Topic	Lesson	Objective1	Objective2	Objective3
Expressions, Equations and Inequalities				
	Expressions and Formulas	Use the order of operations to evaluate expressions.	Use formulas.	Multiply fractions and mixed numbers.
	Properties of Real Numbers	Classify real numbers.	Use the properties of real numbers to evaluate expressions.	
	Solving Equations	To solve equations.	To solve problems by writing equations.	
	Solving Absolute Value Equations	Evaluate expressions involving absolute values.	Solve absolute value equations.	
	Slope	Find and use the slope of a line.	Graph parallel and perpendicular lines.	
	Writing Linear Equations	Write an equation of a line given the slope and a point on the line.	Write an equation of a line parallel or perpendicular to a given line.	
	Solving Inequalities	To solve and graph inequalities.	To Solve and write compound inequalities.	
	Two Variable Inequalities	To graph linear inequalities.	To graph absolute value inequalities.	
	Solving Compound and Absolute Value Inequalities	Solve compound inequalities	Solve absolute value inequalities.	
Linear Relationships and Functions				
	Relations and Functions	To graph relations.	To identify functions.	
	Linear Equations	To graph linear equations.	To write equations of lines.	
	Direct Variation	Write and interpret direct variation equations.		
	Using Linear Models	Write linear equations that model real-world data.	Make a prediction from linear models.	
	Operations with Functions	Perform operations with functions to write new functions.	Find the composition of two functions.	
	Inverses of Functions	Find the inverse of a relation or function.	Determine whether the inverse of a function is a function.	
	Special Functions	Write, graph, and apply special functions: piecewise, step, and absolute value.		

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	Vertical and Horizontal Translations	Analyze vertical translations.	Analyze horizontal translations.	
Systems of Equations				
	Solving Systems of Equations by Graphing	Solve systems of linear equations by graphing.	Determine whether a system of linear equations is consistent and independent, consistent and dependent, or inconsistent.	
	Solving Systems of Equations Algebraically	Solve systems of linear equations by using substitution.	Solve systems of linear equations by using elimination.	
	Solving Systems of Inequalities by Graphing	Solve systems of inequalities by graphing.	Determine the coordinates of the vertices of a region formed by the graph of a system of inequalities.	
	Linear Programming	Find the maximum and minimum values of a function over a region.	Solve real-world problems using linear programming.	
	Solving Systems of Equations in Three Variables	Solve systems of linear equations in three variables.	Solve real-world problems using systems of linear equations in three variables.	
	Parametric Equations	Graph a pair of parametric equations, and use them to model real-world applications.	Write the function represented by a pair of parametric equations.	
Matrices				
	Organizing Data Into Matrices	Identify matrices and their elements.	Organize data into matrices.	
	Networks	Use matrices to describe finite graphs	Develop mathematical models using matrices	
	Adding and Subtracting Matrices	Add and subtract matrices.	Solve certain matrix equations.	
	Multiplication Matrix	Multiply a matrix by a scalar.	Multiply two matrices.	
	Cramer's Rule	Solve systems of two linear equations by using Cramer's Rule.	Solve systems of three linear equations by using Cramer's Rule.	
	Identity and Inverse Matrices	Determine whether two matrices are inverses.	Find the inverse of a 2 X 2 matrix.	
	Determinants	Evaluate the determinant of a 2 X 2 matrix.	Evaluate the determinant of a 3 X 3 matrix.	

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	Geometric Transformations with Matrices	Represent translations and dilations with matrices.	Represent reflections and rotations with matrices.	
	Solving Systems With Matrix Equations	Use matrices to solve systems of linear equations in mathematical and real-world situations.		
Quadratic Functions				
	Properties of Parabolas	Graph quadratic functions.	Find maximum and minimum values of quadratic functions.	
	Solving Quadratic Equations by Graphing	Solve quadratic equations by graphing.	Estimate solutions of quadratic equations by graphing.	
	Solving Quadratic Equations by Factoring	Solve quadratic equations by factoring.	Write a quadratic equation with given roots.	
	Completing the Square	Solve quadratic equations by using the Square Root Property.	Solve quadratic equations by completing the square.	
	The Quadratic Formula and the Discriminant	Solve quadratic equations by using the Quadratic Formula.	Use the discriminant to determine the number and type of roots of a quadratic equation.	
	Quadratic Equations and Complex Numbers	Classify and find all roots of a quadratic equation.	Graph and perform operations of complex numbers.	
	Analyzing Graphs of Quadratic Functions	Analyze quadratic functions of the form $y = a(x - h)^2 + k$.	Write a quadratic function in the form $y = a(x - h)^2 + k$.	
	Solving Quadratic Inequalities	Write, solve, and graph a quadratic inequality in one variable.	Write, solve, and graph a quadratic inequality in two variables.	
Polynomials				
	Monomials	Multiply and divide monomials.	Use expressions written in scientific notation.	
	Polynomials	Add and subtract polynomials.	Multiply polynomials.	
	Dividing Polynomials	Divide polynomials using long division.	Divide polynomials using synthetic division.	
	Factoring Polynomials	Factor polynomials.	Simplify polynomial quotients by factoring.	
	Roots of Real Numbers	Simplify radicals.	Use a calculator to approximate radicals.	

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Polynomial Functions				
	Graphing Polynomial Functions	Graph polynomial functions and locate their real zeros.	Find the maxima and minima of polynomial functions.	
	Solving Equations Using Quadratic Techniques	Write expressions in quadratic form.	Use quadratic techniques to solve equations.	
	The Remainder and Factor Theorems	Evaluate functions using synthetic substitution.	Determine whether a binomial is a factor of a polynomial by using synthetic substitution.	
	Roots and Zeros	Determine the number and type of roots for a polynomial equation.	Find the zeros of a polynomial function.	
	Rational Zero Theorem	Identify the possible rational zeros of a polynomial function.	Find all the rational zeros of a polynomial function.	
	Inverse Functions and Relations	Find the inverse of a function or relation.	Determine whether two functions or relations are inverse.	
	Inequalities and Square Root Functions	Graph and analyze square root functions.	Graph square root inequalities.	
Exponential and Logarithmic Functions				
	Exponential Functions	Graph exponential functions.	Solve exponential equations and inequalities.	
	Exponential Growth and Decay	Determine the multiplier for exponential growth and decay.	Write and evaluate exponential expressions to model growth and decay situations.	
	Logarithms and Logarithmic Functions	Evaluate logarithmic expressions.	Solve logarithmic equations and inequalities.	
	Properties of Logarithms	Simplify and evaluate expressions using the properties of logarithms.	Solve logarithmic equations using the properties of logarithms.	
	Common Logarithms	Solve exponential equations and inequalities using common logarithms.	Evaluate logarithmic expressions using the Change of Base Formula.	
	Natural and base e Logarithms	Evaluate expressions involving the natural base and natural logarithms.	Solve exponential equations and inequalities using natural logarithms.	

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	Solving Equations and Modeling	Solve logarithmic and exponential equations by using algebra and graphs.	Model and solve real-world problems involving exponential and logarithmic relationships.	
Conic Sections				
	Midpoint and Distance Formulas	Find the midpoint of a segment on the coordinate plane.	Find the distance between two points on the coordinate plane.	
	Parabolas	Write and graph the standard equation of a parabola given sufficient information.	Given an equation of a parabola, graph it and label the vertex, focus, and directrix.	
	Circles	Write equations of circles.	Graph circles.	
	Ellipses	Write the standard equation for an ellipse given sufficient information.	Given an equation of an ellipse, graph it and label the center, vertices, co-vertices, and foci.	
	Hyperbolas	Write equations of hyperbolas.	Graph hyperbolas.	
	Conic Sections	Write equations of conic sections in standard form.	Identify conic sections from their equations.	
	Solving Nonlinear Systems	Solve a system of equations containing first- or second- degree equations in two variables.	Identify a conic section from its equation.	
Rational Functions and Radical Functions				
	Inverse, Joint and Combined Variation	Identify inverse, joint, and combined variations, find the constant of variation, and write an equation for the variation.	Solve real-world problems involving inverse, joint, or combined variation.	
	Multiplying and Dividing Rational Expressions	Simplify rational expressions.	Simplify complex fractions.	
	Adding and Subtracting Rational Expressions	Determine the LCM of polynomials.	Add and subtract rational expressions.	
	Graphing Rational Functions	Determine the vertical asymptotes and the point discontinuity for the graphs of a rational functions.	Graph rational functions.	
	Rational Exponents	Simplify expressions with rational exponents		

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	Solving Rational Equations and Inequalities	Solve rational equations.	Solve rational inequalities.	
	Radical Expressions and Radical Functions	Analyze the graphs of radical functions, and evaluate radical expressions.	Find the inverse of a quadratic function.	
	Simplifying Radical Expressions	Add, subtract, multiply, divide, and simplify radical expressions.	Rationalize a denominator.	
	Solving Radical Equations and Inequalities	Solve radical equations.	Solve radical inequalities.	
Sequences and Series				
	Arithmetic Sequences	Use arithmetic sequences.	Find arithmetic means.	
	Arithmetic Series	Find sums of arithmetic series.	Using sigma notation.	
	Geometric Sequences	Use geometric sequences.	Find geometric means.	
	Geometric Series	Find sums of geometric series.	Find specific terms of geometric series.	
	Infinite Geometric Series	Find the sum of an infinite geometric series.	Write repeating decimals as fractions.	
	Pascal's Triangle	Find entries in Pascal's triangle.	Use Pascal's triangle to find combinations and probabilities.	
	Binomial Theorem	Use the Binomial Theorem to expand $(x + y)^n$.	Use the Binomial Theorem to calculate a probability.	
	Recursions and Special Sequences	Recognize and use special sequences.	Iterate functions.	
	Proof and Mathematical Induction	Prove statements by using mathematical induction.	Disprove statements by finding a counterexample.	
Probability and Statistics				
	The Fundamental Counting Principle	Solve problems involving independent events.	Solving problems involving dependent events.	
	Permutations	Solve problems involving linear permutations of distinct of indistinguishable objects.	Solve problems involving circular permutations.	
	Combinations	Solve problems involving combinations.	Solve problems by distinguishing between permutations and combinations.	

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	Probability	Find the probability and odds of events.	Create and use graphs of probability distributions.	
	Multiplying Probabilities	Find the probability of two independent events.	Find the probability of dependent events.	
	Adding Probabilities	Find the probability of mutually exclusive events.	Find the probability of inclusive events.	
Statistics				
	Measures of Central Tendency	Find the mean, median, and mode of a data set.	Find or estimate the mean from a frequency table of data.	
	Stem-and-Leaf Plots, Histograms and Circle Graphs	Make a stem-and-leaf plot, a histogram, or a circle graph for a data set.	Find and use relative frequencies to solve probability problems.	
	Box-and-Whisker Plots	Find the range, quartiles, and interquartile range for a data set.	Make a box-and-whisker plot for a data set.	
	The Normal Distribution	Determine whether a set of data appears to be normally distributed or skewed.	Solve problems involving normally distributed data.	
	Binomial Distribution	Use binomial expansions to find probabilities.	Find probabilities for binomial experiments.	
	Standard Deviation	Find the standard deviation of a set of values.	Use standard deviation in real-world situations.	
	Sampling and Error	Determine whether a sample is unbiased.	Find margins of sampling error.	
Trigonometric Functions				
	Right -Triangle Trigonometry	Find the trigonometric functions of acute angles.	Solve a right triangle by using trigonometric functions.	
	Angles of Rotation	Find coterminal and reference angles.	Find the trigonometric function values of angles in standard position.	
	Functions of Angles	Find values of trigonometric functions for general angles.	Use reference angles to find values of trigonometric functions.	
	The Sine Function	Identify properties of the sine function.	Graph sine curves.	
	The Cosine Function	Graph and write cosine functions.	Solve trigonometric equations.	

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	The Tangent Function	Graph the tangent function.		
	Radian Measure and Arc Length	Convert from degree measure to radian measure and vice versa.	Find arc length.	
	Inverses of Trigonometric Functions	Evaluate trigonometric expressions involving inverses.		
	Translations of Trigonometric Graphs	Graph horizontal translations of trigonometric graphs and find phase shifts.	Graph vertical translations of trigonometric graphs.	
	Circular Functions	Define and use the trigonometric functions based on the unit circle.	Find the exact values of trigonometric functions of angles.	
Trigonometric Identities				
	Trigonometric Identities	Use identities to find trigonometric values.	Use trigonometric identities to simplify expressions.	
	Verifying Trigonometric Identities	Verify trigonometric identities by transforming one side of an equation into the form of the other side.	Verify trigonometric identities by transforming each side of the equation into the same form.	
	Area and The Law of Sines	Find the area of any triangle.	Use the Law of Sines.	
	The Law of Cosines	Use the Law of Cosines in finding the measure of sides and angles of a triangle.		
	Sum and Difference Identities	Evaluate expressions by using the sum and difference identities.	Use matrix multiplication with sum and difference identities to perform rotations.	
	Double-Angle and Half-Angle Formulas	Find values of sine and cosine involving double-angle formulas.	Find values of sine and cosine involving half-angle formulas.	
	Solving Trigonometric Equations	Solve trigonometric equations algebraically and graphically.	Solve real-world problems by using trigonometric equations.	