

**PA Core Standards For Mathematics
Curriculum Framework
Algebra 2**

Grade	Big Idea	Essential Questions	Concepts	Competencies	Standard	Eligible Content	Vocabulary
ALG 2	<p>Mathematical relationships among numbers can be represented, compared, and communicated.</p> <p>Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.</p> <p>Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.</p>	<p>How is mathematics used to quantify, compare, represent, and model numbers?</p> <p>How can mathematics support effective communication?</p> <p>How are relationships represented mathematically?</p> <p>How can expressions, equations and inequalities be used to quantify, solve, model and/or analyze mathematical situations?</p> <p>What does it mean to estimate or analyze numerical quantities?</p> <p>What makes a tool and/or strategy appropriate for a given task?</p>	Complex Number System	<p>Represent and/or use imaginary numbers in equivalent forms.</p> <p>Simplify/evaluate expressions involving imaginary numbers.</p> <p>Perform arithmetic operations and apply to complex numbers.</p>	<p>CC.2.1.HS.F.6</p> <p>CC.2.1.HS.F.7</p>	<p>A2.1.1.1.1</p> <p>A2.1.1.1.2</p> <p>A2.1.1.2.1</p> <p>A2.1.1.2.2</p>	<p>Asymptote</p> <p>Binomial</p> <p>Combination</p> <p>Common Logarithm</p> <p>Complex Number System</p> <p>Compound Events</p> <p>Dependent/Independent Events</p> <p>Dilation</p> <p>Exponential</p> <p>Exponential Decay</p> <p>Exponential Function</p> <p>Exponential Growth</p> <p>Expression</p> <p>Extrema</p> <p>Geometric Sequence</p> <p>Imaginary Number</p> <p>Increasing/Decreasing</p> <p>Intervals</p> <p>Intercept</p> <p>Inverse of a Function</p> <p>Logarithm</p> <p>Natural Logarithm</p> <p>Negative Exponents</p> <p>Observational Study</p> <p>Outcomes</p> <p>Perfect Square</p> <p>Trinomial</p> <p>Permutation</p> <p>Polynomial</p> <p>Polynomial Identity</p> <p>Probability</p> <p>Quadratic Formula</p> <p>Quadratic Function</p> <p>Radical Functions</p> <p>Rational Functions</p> <p>Reflection</p>

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							Regression Models Root Functions Sample Survey Scatterplot Standard Deviation Statistical Experiment Transformation Translations Trinomial Unit Circle
ALG 2	<p>Mathematical relationships among numbers can be represented, compared, and communicated.</p> <p>Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.</p> <p>Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.</p>	<p>How is mathematics used to quantify, compare, represent, and model numbers?</p> <p>How can mathematics support effective communication?</p> <p>How are relationships represented mathematically?</p> <p>How can expressions, equations and inequalities be used to quantify, solve, model and/or analyze mathematical situations?</p> <p>What makes a tool and/or strategy appropriate for a given task?</p>	Polynomial and Rational Expressions	<p>Perform arithmetic operations on polynomials.</p> <p>Understand the relationship between zeros and factors of polynomials.</p> <p>Rewrite rational expressions.</p> <p>Simplify/factor expressions involving polynomials.</p>	<p>CC.2.1.HS.F.1</p> <p>CC.2.1.HS.D.1</p> <p>CC.2.1.HS.D.2</p> <p>CC.2.1.HS.D.3</p> <p>CC.2.1.HS.D.4</p> <p>CC.2.1.HS.D.5</p> <p>CC.2.1.HS.D.6</p>	<p>A2.1.2.1.2</p> <p>A2.1.3.1.2</p> <p>A2.1.2.2.1</p> <p>A2.1.2.2.2</p>	
ALG 2	<p>Mathematical relationships among numbers can be represented, compared, and communicated.</p> <p>Mathematical relationships can be represented as expressions, equations and inequalities in mathematical</p>	<p>How is mathematics used to quantify, compare, represent, and model numbers?</p> <p>How can mathematics support effective communication?</p> <p>How are relationships represented mathematically?</p>	Equations and Inequalities	<p>Create and/or solve equations (including literal, polynomial, rational, radical, exponential, and logarithmic) both algebraically and graphically.</p> <p>Use and/or explain reasoning while solving equations, and justify the solution method.</p>	<p>CC.2.1.HS.F.1</p> <p>CC.2.1.HS.D.1</p> <p>CC.2.1.HS.D.2</p>	<p>A2.1.2.1.3</p> <p>A2.1.2.1.4</p> <p>A2.1.2.2.2</p> <p>A2.1.3.1.1</p> <p>A2.1.3.1.3</p> <p>A2.1.3.1.4</p> <p>A2.1.3.2.1</p> <p>A2.1.3.2.2</p> <p>A2.2.2.1.2</p>	

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	<p>situations.</p> <p>Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.</p>	<p>How can expressions, equations and inequalities be used to quantify, solve, model and/or analyze mathematical situations?</p> <p>What makes a tool and/or strategy appropriate for a given task?</p>		<p>Determine how a change in one variable relates to a change in a second variable.</p> <p>Use exponents, roots, and/or absolute values to represent equivalent forms or to solve problems.</p>		A2.2.2.1.3	
ALG 2	<p>Mathematical relationships among numbers can be represented, compared, and communicated.</p> <p>Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.</p>	<p>How is mathematics used to quantify, compare, represent, and model numbers?</p> <p>How can mathematics support effective communication?</p> <p>How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?</p>	Equations and Inequalities	<p>Create and/or solve equations (including literal, polynomial, rational, radical, exponential, and logarithmic) both algebraically and graphically.</p> <p>Use exponents, roots, and/or absolute values to represent equivalent forms or to solve problems.</p> <p>Use and/or explain reasoning while solving equations, and justify the solution method.</p> <p>Determine how a change in one variable relates to a change in a second variable.</p>	<p>CC.2.2.HS.D.7</p> <p>CC.2.2.HS.D.8</p> <p>CC.2.2.HS.D.9</p> <p>CC.2.2.HS.D.10</p>	<p>A2.1.2.1.3</p> <p>A2.1.2.1.4</p> <p>A2.1.2.2.2</p> <p>A2.1.3.1.1</p> <p>A2.1.3.1.3</p> <p>A2.1.3.1.4</p> <p>A2.1.3.2.1</p> <p>A2.1.3.2.2</p> <p>A2.2.2.1.2</p> <p>A2.2.2.1.3</p>	
ALG 2	<p>Mathematical relationships among numbers can be represented, compared, and communicated.</p> <p>Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.</p>	<p>How is mathematics used to quantify, compare, represent, and model numbers?</p> <p>How are relationships represented mathematically?</p> <p>How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?</p>	Functions	<p>Use the concept and notation of function to interpret and apply them in terms of their context.</p> <p>Using the unit circle, extend the domain of trigonometric functions to all real numbers.</p> <p>Interpret functions in terms of the situations they model.</p>	<p>CC.2.2.HS.C.1</p> <p>CC.2.2.HS.C.2</p> <p>CC.2.2.HS.C.3</p> <p>CC.2.2.HS.C.4</p> <p>CC.2.2.HS.C.5</p> <p>CC.2.2.HS.C.6</p> <p>CC.2.2.HS.C.7</p> <p>CC.2.2.HS.C.8</p> <p>CC.2.2.HS.C.9</p>	<p>A2.2.1.1.3</p> <p>A2.2.1.1.4</p> <p>A2.2.2.1.1</p> <p>A2.2.2.1.2</p> <p>A2.2.2.1.3</p> <p>A2.2.2.1.4</p> <p>A2.2.2.2.1</p>	

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	<p>Patterns exhibit relationships that can be extended, described, and generalized.</p> <p>Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.</p> <p>Data can be modeled and used to make inferences.</p>	<p>How can recognizing repetition or regularity assist in solving problems more efficiently?</p> <p>How can patterns be used to describe relationships in mathematical situations?</p> <p>How can data be organized and represented to provide insight into the relationship between quantities?</p> <p>How does the type of data influence the choice of display?</p> <p>How can probability and data analysis be used to make predictions?</p>		<p>Use trigonometric functions to model periodic phenomena.</p> <p>Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p>Create and/or analyze functions using multiple representations (graph, table, and equation).</p> <p>Create a function and/or sequence that model a relationship between two quantities.</p> <p>Create new functions from existing functions (transformations and/or inverses of functions).</p> <p>Construct and compare linear, quadratic, exponential, and logarithmic models to solve problems.</p>			
ALG 2	<p>Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.</p> <p>Measurement attributes can be quantified, and estimated using customary</p>	<p>What makes a tool and/or strategy appropriate for a given task?</p> <p>In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?</p> <p>How precise do measurements</p>	Data	<p>Analyze a set of data for a pattern, and represent the pattern with an algebraic rule and/or a graph.</p> <p>Summarize, represent, and interpret single-variable data (including standard deviation) and two-variable data.</p>	<p>CC.2.3.HS.B.1 CC.2.4.HS.B.2 CC.2.4.HS.B.3 CC.2.4.HS.B.4 CC.2.4.HS.B.5 CC.2.4.HS.B.6 CC.2.4.HS.B.7</p>	<p>A2.2.1.1.1 A2.2.1.1.2 A2.2.3.1.1 A2.2.3.1.2</p>	

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	<p>and non-customary units of measure.</p> <p>Patterns exhibit relationships that can be extended, described, and generalized.</p> <p>Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.</p> <p>Data can be modeled and used to make inferences.</p>	<p>and calculations need to be?</p> <p>How can patterns be used to describe relationships in mathematical situations?</p> <p>How can recognizing repetition or regularity assist in solving problems more efficiently?</p> <p>How can data be organized and represented to provide insight into the relationship between quantities?</p> <p>How does the type of data influence the choice of display?</p> <p>How can probability and data analysis be used to make predictions?</p>		<p>Analyze and/or interpret data on a scatter plot and/or use it to make predictions (e.g., regression).</p> <p>Recognize and evaluate random processes underlying statistical experiments.</p> <p>Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.</p> <p>Use the concepts of independence and conditional probability to interpret data.</p>			
ALG 2	<p>Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.</p> <p>Measurement attributes can be quantified, and estimated using customary and non-customary units of measure.</p>	<p>What makes a tool and/or strategy appropriate for a given task?</p> <p>In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?</p> <p>How precise do measurements and calculations need to be?</p>	Probability	<p>Apply the rules of probability to compute probabilities of compound events.</p> <p>Calculate probability and/or odds.</p> <p>Use combinations, permutations, and the fundamental counting principle to solve problems involving probability.</p>	<p>CC.2.4.HS.F.3</p> <p>CC.2.4.HS.F.5</p>	<p>A2.2.3.2.1</p> <p>A2.2.3.2.2</p> <p>A2.2.3.2.3</p>	

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	<p>Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.</p> <p>Data can be modeled and used to make inferences.</p>	<p>How can data be organized and represented to provide insight into the relationship between quantities?</p> <p>How does the type of data influence the choice of display?</p> <p>How can probability and data analysis be used to make predictions?</p>					

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