| **Grade** | **Big Idea** | **Essential Questions** | **Concepts** | **Competencies** | **Standard** | **Eligible Content** | **Vocabulary** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ALG 2** | Mathematical relationships among numbers can be represented, compared, and communicated.  Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.  Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools. | How is mathematics used to quantify, compare, represent, and model numbers?  How can mathematics support effective communication?    How are relationships represented mathematically?  How can expressions, equations and inequalities be used to quantify, solve, model and/or analyze mathematical situations?  What does it mean to estimate or analyze numerical quantities?  What makes a tool and/or strategy appropriate for a given task? | Complex Number System | Represent and/or use imaginary numbers in equivalent forms.  Simplify/evaluate expressions involving imaginary numbers.  Perform arithmetic operations and apply to complex numbers. | CC.2.1.HS.F.6 CC.2.1.HS.F.7 | A2.1.1.1.1 A2.1.1.1.2 A2.1.1.2.1 A2.1.1.2.2 | Asymptote  Binomial  Combination  Common Logarithm  Complex Number System  Compound Events  Dependent/Independent Events  Dilation  Exponential  Exponential Decay  Exponential Function  Exponential Growth  Expression  Extrema  Geometric Sequence  Imaginary Number  Increasing/Decreasing Intervals  Intercept  Inverse of a Function  Logarithm  Natural Logarithm  Negative Exponents  Observational Study  Outcomes  Perfect Square Trinomial  Permutation  Polynomial  Polynomial Identity  Probability  Quadratic Formula  Quadratic Function  Radical Functions  Rational Functions  Reflection  Regression Models  Root Functions  Sample Survey  Scatterplot  Standard Deviation  Statistical Experiment  Transformation  Translations  Trinomial  Unit Circle |
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| **ALG 2** | Mathematical relationships among numbers can be represented, compared, and communicated.  Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.  Patterns exhibit relationships that can be extended, described, and generalized.  Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.  Data can be modeled and used to make inferences. | How is mathematics used to quantify, compare, represent, and model numbers?  How are relationships represented mathematically?  How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?  How can recognizing repetition or regularity assist in solving problems more efficiently?  How can patterns be used to describe relationships in mathematical situations?  How can data be organized and represented to provide insight into the relationship between quantities?  How does the type of data influence the choice of display?  How can probability and data analysis be used to make predictions? | Functions | Use the concept and notation of function to interpret and apply them in terms of their context.  Using the unit circle, extend the domain of trigonometric functions to all real numbers.  Interpret functions in terms of the situations they model.  Use trigonometric functions to model periodic phenomena.  Prove the Pythagorean identity and use it to calculate trigonometric ratios.  Create and/or analyze functions using multiple representations (graph, table, and equation).  Create a function and/or sequence that model a relationship between two quantities.  Create new functions from existing functions (transformations and/or inverses of functions).  Construct and compare linear, quadratic, exponential, and logarithmic models to solve problems. | CC.2.2.HS.C.1 CC.2.2.HS.C.2 CC.2.2.HS.C.3 CC.2.2.HS.C.4 CC.2.2.HS.C.5 CC.2.2.HS.C.6 CC.2.2.HS.C.7 CC.2.2.HS.C.8 CC.2.2.HS.C.9 | A2.2.1.1.3 A2.2.1.1.4 A2.2.2.1.1 A2.2.2.1.2 A2.2.2.1.3 A2.2.2.1.4 A2.2.2.2.1 |  |
| **ALG 2** | Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.  Measurement attributes can be quantified, and estimated using customary and non-customary units of measure.  Patterns exhibit relationships that can be extended, described, and generalized.  Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.  Data can be modeled and used to make inferences. | What makes a tool and/or strategy appropriate for a given task?  In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?  How precise do measurements and calculations need to be?  How can patterns be used to describe relationships in mathematical situations?  How can recognizing repetition or regularity assist in solving problems more efficiently?  How can data be organized and represented to provide insight into the relationship between quantities?  How does the type of data influence the choice of display?  How can probability and data analysis be used to make predictions? | Data | Analyze a set of data for a pattern, and represent the pattern with an algebraic rule and/or a graph.  Summarize, represent, and interpret single-variable data (including standard deviation) and two-variable data.  Analyze and/or interpret data on a scatter plot and/or use it to make predictions (e.g., regression).  Recognize and evaluate random processes underlying statistical experiments.  Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.  Use the concepts of independence and conditional probability to interpret data. | 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 | A2.2.1.1.1 A2.2.1.1.2 A2.2.3.1.1 A2.2.3.1.2 |  |
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