ALGEBRA 1

CRITICAL AREAS OF FOCUS

1. Relationships Between Quantities and Reasoning with Equations
2. Linear and Exponential Relationships
3. Descriptive Statistics
4. Expressions and Equations
5. Quadratic Functions and Modeling

OVERVIEW

ALGEBRA

Quantities

- Reason quantitatively and use units to solve problems.

Seeing Structure In Expressions

- Perform arithmetic operations on polynomials

Creating Equations

- Create equations that describe numbers or relationships

Reasoning with equations and inequalities

- Understand solving equations as a process of reasoning and explain the reasoning.
- Solve equations and inequalities in one variable.
- Solve systems of equations.
- Represent and solve equations and inequalities graphically.

FUNCTIONS

Interpreting Functions

- Understand the concept of a function, and use function notation.
- Interpret functions that arise in applications in terms of the context.
- Analyze functions using different representations.

Building Functions

- Build a function that models a relationship between two quantities.
- Build new functions from existing functions.

Linear, Quadratic, and Exponential Models

- Contrast and compare linear, quadratic, and exponential models, and solve problems.
- Interpret expressions for functions in terms of the situation they model.

STATISTICS AND PROBABILITY

Interpreting Categorical and Quantitative Data

- Summarize, represent, and interpret data on a single count or measurement variable.
- Summarize, represent, and interpret data on two categorical and quantitative variables.
- Interpret linear models.

GEOMETRY

CRITICAL AREAS OF FOCUS

1. Applications of Probability
2. Congruence, Proof and Construction
3. Similarity, Proof, and Trigonometry
4. Connecting Algebra and Geometry Through Coordinates
5. Circles With and Without Coordinates
6. Extending to Three Dimensions

OVERVIEW

GEOMETRY

Congruence

- Experiment with transformations in the plane.
- Understand congruence in terms of rigid motions.
- Prove geometric theorems both formally and informally using a variety of methods.
- Make geometric constructions.
- Classify and analyze geometric figures.

Similarity, Right Triangles, and Trigonometry

- Understand similarity in terms of similarity transformations.
- Prove and apply theorems involving similarity both formally and informally using a variety of methods.
- Define trigonometric ratios, and solve problems involving right triangles.

Circles

- Understand and apply theorems about circles.
- Find arc lengths and areas of sectors or circles.

Modeling In Geometry

- Apply geometric concepts in modeling situations.

Expressing Geometric Properties with Equations

- Translate between the geometric description and the equation for a conic section.
- Use coordinates to prove simple geometric theorems algebraically and to verify specific geometric statements.

Geometric Measurement and Dimension

- Explain volume formulas, and use them to solve problems.
- Visualize relationships between two-dimensional and three-dimensional objects.
- Understand the relationships between lengths, area, and volumes.

STATISTICS AND PROBABILTY

Conditional Probability and the Rules of Probability

- Understand independence and conditional probability, and use them to interpret data.
- Use the rules of probability to compute probabilities of compound events in a uniform probability model.

ALGEBRA 2

CRITICAL AREAS OF FOCUS

1. Inferences and Conclusions from Data
2. Polynomials, Rational and Radical Relationships
3. Trigonometry of General Triangles and Trigonometric Functions
4. Modeling with Functions

OVERVIEW

NUMBER AND QUANTITY

The Real Number System

- Extend the properties of exponents to rational exponents.
- Use properties of rational and irrational numbers.

The Complex Number System

- Perform arithmetic operations with complex numbers.
- Use complex numbers in polynomial identities and equations.

ALGEBRA

Seeing Structure in Expressions

- Interpret the structure of expressions.
- Write expressions in equivalent forms to solve problems.

Arithmetic with Polynomials and Rational Expressions

- Perform arithmetic operations on polynomials.
- Understand the relationship zeros and factors of polynomials.
- Use polynomial identities to solve problems.
- Rewrite rational expressions.

Creating Equations

- Create equations that describe numbers or relationships.

Reasoning with Equations and Inequalities

- Understand solving equations as a process of reasoning and explain the reasoning.
- Solve systems of equations.
- Represent and solve equations in inequalities graphically.
- Interpret the structure of expressions.
- Write expressions in equivalent forms to solve problems.

FUNCTIONS

Building Functions

- Build a function that models a relationship between two quantities.
- Build new functions from existing functions.

Linear, Quadratic, and Exponential Models

- Construct and compare linear, quadratic, and exponential models, and solve problems.

Trigonometric Functions

- Extend the domain of trigonometric functions using the unit circle.

ALGEBRA 2 CONTINUED

FUNCTIONS

Trigonometric Functions

- Model periodic phenomena with trigonometric functions.
- Prove and apply trigonometric identities.

GEOMETRY

Similarity, Right Triangles, and Trigonometry

- Define trigonometric ratios, and solve problems involving right triangles.
- Apply trigonometry to general triangles.

Circles

- Find arc lengths and areas of sectors or circles.

STATISTICS AND PROBABILITY

Interpreting Categorical and Quantitative Data

- Summarize, represent, and interpret data on a single count or measurement variable.
- Summarize, represent, and interpret data on two categorical and quantitative variables.
- Interpret linear models.

Making Inferences and Justifying Conclusions

- Understand and evaluate random processes underlying statistical experiments.
- Make inferences and justify conclusions from sample surveys, experiments and observational studies.