

## **Advanced Algebra 2 Learning Goals and Targets**

### **ALG.C.1.FluencyLinEqs**

Maintain fluency and extend skills in analyzing linear equations and inequalities and understand the reasoning associated with creating and solving them in one variable.

- 1-1 Identify sets to which numbers belong
  - 1-2 Use the distributive property
  - 1-3 Evaluate and simplify expressions with variables
  - 1-4 Name polynomials
  - 1-5 Solve basic linear, quadratic, and absolute value equations
  - 1-6 Solve basic linear, compound, and absolute value inequalities
- 

### **FUN.C.1.FluencyFunctions**

Maintain fluency and extend skills in representing equations and inequalities in multiple forms, including function notation and graphing to understand the connections between lines and their equations.

- 2-1, 2-2 Plot the graph of a function given an equation; give the domain and range of a function
  - 2-4 Graph relations and functions using a table, and identify relations that are functions
  - 3-1 Graph linear functions using a table.
  - 3-2 Plot a linear function quickly using the slope and y-intercept.
  - 3-3 Transform linear equations from one form to another--point-slope, y-intercept, and standard forms.
  - 3-4 Write equations of lines given different criteria.
  - 3-5 Use linear functions as mathematical models.
- 

### **ALG.C.2.FluencySystems**

Maintain fluency and extend skills in solving systems of equations and inequalities by graphing, substitution, elimination and apply these methods to solve real-life mathematical problems.

- 4-1 Solve linear systems by graphing.
- 4-2 Solve linear systems using the addition and substitution methods.
- 4-3 Solve linear systems using second order determinants (Cramer's Rule)
- 4-4 Use function notation

- 4-4 Use systems as mathematical models
  - 4-6 Solve linear systems with 3 or more variables.
  - 4-10 Solve systems of linear inequalities
  - 4-11 Solve linear programming problems.
- 

### **FUN.C.2.Quadratics**

Analyze and solve quadratic equations and inequalities by graphing, factoring, completing the square and use of the quadratic formula.

- 5-1 Graph quadratic functions using a table
  - 5-2 Transform quadratic functions to vertex form and find the vertex.
  - 5-3 Use the quadratic formula to find x-intercepts.
  - 5-3 Analyze and graph quadratic functions showing the vertex and all intercepts.
  - 5-4 Use the quadratic formula to find complex (imaginary and real) solutions to quadratic equations.
  - 5-5 Analyze and evaluate quadratic functions (without graphing).
  - 5-6 Write quadratic functions given 3 points or given a vertex and a point on the graph.
  - 5-7 Use quadratic models to solve problems.
- 

### **ALG.C.3.PolynomialsII**

Apply arithmetic operations and the properties of exponents to simplify, factor and solve polynomial and radical expressions and equations over the set of complex numbers.

- 6-1 Graph exponential functions using a table.
  - 6-2 Evaluate expressions with exponents using the definition of exponent.
  - 6-3 Simplify expressions using the properties of positive integer exponents.
  - 6-4 Simplify expressions using the properties of rational exponents.
  - 6-5 Simplify expressions containing radicals and rational exponents without a calculator.
  - 6-6 Transform numbers to and from scientific notation.
-

#### **FUN.C.4.ExponentialLog**

Analyze, solve and graph exponential and logarithmic functions.

- 6-8 Solve exponential equations using base 10 logs.
  - 6-9 Use the definition of logarithm to solve log equations.
  - 6-10 Use properties of logs to solve equations.
  - 6-11 Use the change-of-base property of logs; apply properties of natural logs.
  - 6-12 Find and graph inverses of functions.
  - 6-14 Use exponential functions as models.
- 

#### **ALG.C.4.RationalExpressions**

Simplify rational expressions and solve and graph rational equations including direct and inverse variation.

- 7-1 Graph rational functions using a table of values.
  - 7-2 Simplify and graph rational functions showing discontinuities.
  - 7-3 Factor polynomials completely.
  - 7-4 Factor a sum or difference of cubes, factor by splitting the middle term, and factor mixed polynomials when you are not given the method to use.
  - 7-5 Divide polynomials using long division.
  - 7-6 Factor cubic and higher degree polynomials using the factor theorem.
  - 7-7 Find products and quotients of rational expressions.
  - 7-8 Find sums and differences of rational expressions.
  - 7-9 Graph rational functions showing all asymptotes and discontinuities.
  - 7-10 Solve rational equations.
  - 7-11 Solve variation word problems.
- 

#### **ALG.C.5.Conics**

Understand the relationship between the geometric descriptions, graphs and equations of conics.

- 9-2 Graph circles by completing the square to find the center and radius.
  - 9-3 Graph ellipses by completing the square to find the center and two radii.
  - 9-5 Graph parabolas showing the vertex and intercepts.
-

**NQ.C.2.ComplexNumbers**

Perform basic arithmetic operations on complex numbers.

- 5-4 Use the quadratic formula to find complex (imaginary and real) solutions to quadratic equations.
  - 10-2
- 

**NQ.C.1.ReasonQuantitativelyIII**

Extend skills in reasoning quantitatively, creating expressions and solving equations that model real-life linear, quadratic and exponential problems.

-Mid-Term and Final

---

**STAT.C.1.FluencyDataAnalysis**

Maintain fluency and extend skills in using basic graphical and numerical techniques to analyze data in one and two variables and make inferences to justify conclusions.

-Supplemental Materials