

Algebra I Checklist

This document contains a list of Algebra I objectives arranged by points. The standard is referenced beside each objective. Remember that the EOC assessment will also incorporate the SC Mathematical Process Standards; therefore, it is important to also review these topics through processes such as problem solving.

Please double check for accuracy and correct any possible errors.

21 – 25 points

___ Operations with polynomials; limit to linear and quadratic (A1.AAPR.1)

- a. Add polynomials
- b. Subtract polynomials
- c. Multiply polynomials

___ Create and solve equations in one variable to model real world problems; limit to linear and quadratics with integer exponents (A1.ACE.1)

___ Create and solve inequalities in one variable to model real world problems; limit to linear and quadratics with integer exponents (A1.ACE.1)

___ Create equations in two or more variables to represent relationships between quantities (A1.ACE.2)

- a. Linear
- b. Exponential with integer exponents
- c. Quadratic
- d. Direct variation
- e. Indirect variation

___ Graph equations on a coordinate axes with appropriate labels (A1.ACE.2)

- a. Linear
- b. Exponential with integer exponents
- c. Quadratic
- d. Direct variation
- e. Indirect variation

___ Solve literal equations and formulas for a specified variable (A1.ACE.4)

___ Understand that the steps taken to solve an equation create new equations that have the same solution as the original (A1.ARE1.1)

___ Justify the steps taken to solve an equation (A1.ARE1.1)

___ Solve linear equations in one variable including equations with coefficients represented by letters (A1.ARE1.3)

___ Solve linear inequalities in one variable including equations with coefficients represented by letters (A1.ARE1.3)

___ Use completing the square to transform any quadratic equation into the form $(x - h)^2 = k$ (A1.ARE1.4a)

___ Derive the quadratic formula from the form $(x - h)^2 = k$ (A1.ARE1.4)

___ Solve quadratic equations (A1.ARE1.4b)

- a. By inspection
- b. Taking the square root
- c. Completing the square
- d. Quadratic formula
- e. Factoring

___ Recognize that the quadratic formula can result in complex solutions (A1.ARE1.4b)

___ Write complex solutions in the form $a + bi$ for real numbers a and b (A1.ARE1.4b)

___ Justify that the solution to a systems of linear equations does not change because one of the equations is changed or replaced by the other equations (A1.ARE1.5)

___ Solve a system of linear equations

- a. Graphically (A1.ARE.6)
- b. Substitution method (A1.ARE.6a)
- c. Linear combination (A1.ARE.6b)

___ Understand that the solution to an equation in two variables is all of the points on the graph of the equation (A1.ARE1.10 and A1.FIF.1c)

___ Solve equation in the form $f(x) = g(x)$ graphically by identifying the point of intersection; limit to linear and quadratic (A1.AREI.11)

___ Graph a linear inequality in two variables (A1.AREI.12)

___ Interpret the meaning of the following in real world situations; limit to linear, quadratic and exponential (A1.ASE.1)

- a. Coefficients
- b. Factors
- c. Terms
- d. Expressions

___ Understand that complicated expressions are made of simpler expressions (A1.ASE.1)

___ Rewrite the following in an equivalent form (expression) (A1.ASE.2)

- a. Binomial
- b. Trinomial
- c. Other polynomials

___ Find the zeros of a quadratic function by rewriting it in equivalent factored form (A1.ASE.3a)

___ Explain the connection among the following for a quadratic function (A1.ASE.3a)

- a. Zeros of a function
- b. Its linear factors
- c. The x – intercepts of the graph
- d. Solutions to the equation

18 – 22 points

___ Describe the effects of the following transformation on $f(x)$; limit to linear, quadratic, exponential with integer exponents, vertical shift and vertical stretch (A1.FBF.3)

- a. $k f(x)$
- b. $f(x) + k$
- c. $f(x + k)$

___ Given a graph, find the value of k then write the equation of the transformed graph; limit to linear, quadratic, exponential with integer exponents, vertical shift and vertical stretch (A1.FBF.3)

___ Understand the definition of a function (A1.FIF.1a)

___ Represent a function using function notation (A1.FIF.1b)

___ Explain the $f(x)$ denotes the output of the function f with an input of x (A1.FIF.1b)

___ Understand that the solution to a function $f(x)$ is the set of ordered pairs (x,y) that satisfy the equations (A1.FIF.1c and A1.AREI.10)

___ Evaluate a function involving function notation when the function describes a real world situation (A1.FIF.2)

___ Interpret the meaning of expressions involving function notation when the function describes are real world situation (A1.FIF.2)

___ Graph and interpret the following key features of function that models the relationship between two quantities when given in table or graph form; limit to linear, quadratic and exponential (A1.FIF.4 and A1.FIF.7)

- a. Intercepts
- b. Intervals of increasing/decreasing/constant
- c. Relative maximums/minimums
- d. Symmetries
- e. End behavior

___ Sketch the graph of a function given the key features (A1.FIF.4)

___ Graph simple cases by hand and use technology; limit to linear, quadratic and exponential in the form $y = a^x + k$ (A1.FIF.7)

___ Find the domain and range from a graph; limit to linear, quadratic and exponential (A1.FIF.5)

___ Find the average rate of change over a specified interval for a function in the following forms; limit to linear, quadratic and exponential (A1.FIF.6)

- a. Graph
- b. Equation
- c. Table

___ Interpret the meaning of the average rate of change in the context of a situation (A1.FIF.6)

___ Translate a quadratic function to equivalent forms using factoring and completing the square (A1.FIF.8a)

___ Translate a quadratic function to an equivalent form to reveal the following and interpret their meaning in context (A1.FIF.8)

- a. Zeros
- b. Maximim/minimum
- c. Symmetry

___ Compare the features of two function given in different representations; limit to linear, quadratic and exponential (A1.FIF.9)

- a. Graph form
- b. Table form
- c. Verbal form
- d. Verbal form

___ Distinguish between situations that can be modeled by a linear function and those that can be modeled by an exponential function (A1.FLQE.1)

___ Prove that linear functions grow by equal difference over equal intervals (A1.FLQE.1)

___ Prove that exponential functions grow by equal factors over equal intervals (A1.FLQE.1)

___ Create a symbolic representation of a linear function from an arithmetic sequence given (A1.FLQE.2)

- a. Graph
- b. Verbal Description
- c. Table

___ Create a symbolic representation of an exponential function from an geometric sequence given (A1.FLQE.2)

- a. Graph
- b. Verbal Description
- c. Table

___ Understand that a graph increasing exponentially eventually exceeds a quantity that is increasing (A1.FLQE.3)

- a. Linearly
- b. Quadratically
- c. At some rate for other polynomial functions

___ Understand that the values in a table increasing exponentially eventually exceeds a quantity that is increasing (A1.FLQE.3)

- a. Linearly
- b. Quadratically
- c. At some rate for other polynomial functions

___ Interpret the parameter of a linear function in terms of the situation (A1.FLQE.5)

___ Interpret the parameter of a exponential function in terms of the situation (A1.FLQE.5)

5 – 9 points

___ Use the units of measure to guide the solution to a multi – step task (A1.NQ.1)

___ When constructing a graph, choose and interpret appropriate labels, units and scales (A1.NQ.1)

___ Label and define appropriate quantities in descriptive context (A1.NQ.2)

___ Choose the level of accuracy appropriate to reporting a quantity in context (A1.NQ.3)

___ Rewrite expressions involving (A1.NRNS.1)

- a. Simple radicals
- b. Rational exponents

___ Translate between radical form and rational exponents (A1.NRNS.2)

___ Explain why the sum or product of rational numbers is rational (A1.NRNS.3)

___ Explain why the sum of a rational number and an irrational number is irrational (A1.NRNS.3)

___ Explain why the product of nonzero rational number and an irrational number is irrational (A1.NRNS.3)

___ Use technology to create and analyze a scatter plot (A1.SPID.6)

___ Analyze scatter plots to decide which of the following is the best fit for the given data (A1.SPID.6)

- a. Linear
- b. Quadratic
- c. Exponential

___ After selecting the best model for a function, (A1.SPID.6)

- a. Fit the function to the set
- b. Solve problems using the equation for the function

___ Create a linear function to graphically model data (A1.SPID.7)

___ Interpret the meaning of slope and y – intercept in the context of a problem (A1.SPID.7)

___ Use technology to compute the correlation coefficient of linear fit (A1.SPID.7)

___ Interpret the correlation coefficient of a linear fit (A1.SPID.8)