



# **Algebra I Assessment**

## **Eligible Texas Essential Knowledge and Skills**

# STAAR Algebra I Assessment

## Reporting Category 1: Functional Relationships

**The student will describe functional relationships in a variety of ways.**

- (A.1) **Foundations for functions.** The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways. The student is expected to
- (A) describe independent and dependent quantities in functional relationships; **Supporting Standard**
  - (B) gather and record data and use data sets to determine functional relationships between quantities; **Supporting Standard**
  - (C) describe functional relationships for given problem situations and write equations or inequalities to answer questions arising from the situations; **Supporting Standard**
  - (D) represent relationships among quantities using [concrete] models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities; and **Readiness Standard**
  - (E) interpret and make decisions, predictions, and critical judgments from functional relationships. **Readiness Standard**

## Reporting Category 2: Properties and Attributes of Functions

The student will demonstrate an understanding of the properties and attributes of functions.

- (A.2) **Foundations for functions.** The student uses the properties and attributes of functions. The student is expected to
- (A) identify and sketch the general forms of linear ( $y = x$ ) and quadratic ( $y = x^2$ ) parent functions; **Supporting Standard**
  - (B) identify mathematical domains and ranges and determine reasonable domain and range values for given situations, both continuous and discrete; **Readiness Standard**
  - (C) interpret situations in terms of given graphs or create situations that fit given graphs; and **Supporting Standard**
  - (D) collect and organize data, make and interpret scatterplots (including recognizing positive, negative, or no correlation for data approximating linear situations), and model, predict, and make decisions and critical judgments in problem situations. **Readiness Standard**
- (A.3) **Foundations for functions.** The student understands how algebra can be used to express generalizations and recognizes and uses the power of symbols to represent situations. The student is expected to
- (A) use symbols to represent unknowns and variables; and **Supporting Standard**
  - (B) look for patterns and represent generalizations algebraically. **Supporting Standard**
- (A.4) **Foundations for functions.** The student understands the importance of the skills required to manipulate symbols in order to solve problems and uses the necessary algebraic skills required to simplify algebraic expressions and solve equations and inequalities in problem situations. The student is expected to
- (A) find specific function values, simplify polynomial expressions, transform and solve equations, and factor as necessary in problem situations; **Readiness Standard**
  - (B) use the commutative, associative, and distributive properties to simplify algebraic expressions; and **Supporting Standard**
  - (C) connect equation notation with function notation, such as  $y = x + 1$  and  $f(x) = x + 1$ . **Supporting Standard**

## Reporting Category 3: Linear Functions

**The student will demonstrate an understanding of linear functions.**

- (A.5) **Linear functions.** The student understands that linear functions can be represented in different ways and translates among their various representations. The student is expected to
- (A) determine whether or not given situations can be represented by linear functions; **Supporting Standard**
  - (B) determine the domain and range for linear functions in given situations; and **Supporting Standard**
  - (C) use, translate, and make connections among algebraic, tabular, graphical, or verbal descriptions of linear functions.  
**Readiness Standard**
- (A.6) **Linear functions.** The student understands the meaning of the slope and intercepts of the graphs of linear functions and zeros of linear functions and interprets and describes the effects of changes in parameters of linear functions in real-world and mathematical situations. The student is expected to
- (A) develop the concept of slope as rate of change and determine slopes from graphs, tables, and algebraic representations;  
**Supporting Standard**
  - (B) interpret the meaning of slope and intercepts in situations using data, symbolic representations, or graphs; **Readiness Standard**
  - (C) investigate, describe, and predict the effects of changes in  $m$  and  $b$  on the graph of  $y = mx + b$ ; **Readiness Standard**
  - (D) graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and  $y$ -intercept;  
**Supporting Standard**
  - (E) determine the intercepts of the graphs of linear functions and zeros of linear functions from graphs, tables, and algebraic representations; **Supporting Standard**
  - (F) interpret and predict the effects of changing slope and  $y$ -intercept in applied situations; and **Readiness Standard**
  - (G) relate direct variation to linear functions and solve problems involving proportional change. **Supporting Standard**

## Reporting Category 4: Linear Equations and Inequalities

**The student will formulate and use linear equations and inequalities.**

- (A.7) **Linear functions.** The student formulates equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. The student is expected to
- (A) analyze situations involving linear functions and formulate linear equations or inequalities to solve problems; **Supporting Standard**
  - (B) investigate methods for solving linear equations and inequalities using [concrete] models, graphs, and the properties of equality, select a method, and solve the equations and inequalities; and **Readiness Standard**
  - (C) interpret and determine the reasonableness of solutions to linear equations and inequalities. **Supporting Standard**
- (A.8) **Linear functions.** The student formulates systems of linear equations from problem situations, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. The student is expected to
- (A) analyze situations and formulate systems of linear equations in two unknowns to solve problems; **Supporting Standard**
  - (B) solve systems of linear equations using [concrete] models, graphs, tables, and algebraic methods; and **Readiness Standard**
  - (C) interpret and determine the reasonableness of solutions to systems of linear equations. **Supporting Standard**

## Reporting Category 5: Quadratic and Other Nonlinear Functions

The student will demonstrate an understanding of quadratic and other nonlinear functions.

- (A.9) **Quadratic and other nonlinear functions.** The student understands that the graphs of quadratic functions are affected by the parameters of the function and can interpret and describe the effects of changes in the parameters of quadratic functions. The student is expected to
- (A) determine the domain and range for quadratic functions in given situations; **Supporting Standard**
  - (B) investigate, describe, and predict the effects of changes in  $a$  on the graph of  $y = ax^2 + c$ ; **Supporting Standard**
  - (C) investigate, describe, and predict the effects of changes in  $c$  on the graph of  $y = ax^2 + c$ ; and **Supporting Standard**
  - (D) analyze graphs of quadratic functions and draw conclusions. **Readiness Standard**
- (A.10) **Quadratic and other nonlinear functions.** The student understands there is more than one way to solve a quadratic equation and solves them using appropriate methods. The student is expected to
- (A) solve quadratic equations using [concrete] models, tables, graphs, and algebraic methods; and **Readiness Standard**
  - (B) make connections among the solutions (roots) of quadratic equations, the zeros of their related functions, and the horizontal intercepts ( $x$ -intercepts) of the graph of the function. **Supporting Standard**
- (A.11) **Quadratic and other nonlinear functions.** The student understands there are situations modeled by functions that are neither linear nor quadratic and models the situations. The student is expected to
- (A) use patterns to generate the laws of exponents and apply them in problem-solving situations; **Supporting Standard**
  - (B) analyze data and represent situations involving inverse variation using [concrete] models, tables, graphs, or algebraic methods; and **Supporting Standard**
  - (C) analyze data and represent situations involving exponential growth and decay using [concrete] models, tables, graphs, or algebraic methods. **Supporting Standard**