

# Algebra 1 Core and Indicator Standards

The following Core and Indicator standards are specifically addressed in the Desert Garden Project of the Global Warming Survival Program. See the Academic Standards in the Indiana Department of Education for a complete list of Core and Indicator standards.

## Core Standard 2: Relations and Functions

Determine whether a relation is a function or not a function. Identify the domain and range of a given relation. Sketch and interpret linear and non-linear graphs representing given situations.

A1.3.1 Sketch a reasonable graph for a given relationship.

A1.3.2 Interpret a graph representing a given situation.

Example: Jessica is riding a bicycle. The graph below shows her speed as it relates to the time she has spent riding. Describe what might have happened to account for such a graph.

A1.3.3 Understand the concept of a function, decide if a given relation is a function, and link equations to functions.

Example: Use either paper or a spreadsheet to generate a list of values for  $x$  and  $y$  in  $y = x^2$ . Based on your data, make a conjecture about whether or not this relation is a function.

## Core Standard 3: Writing Linear Equations

Graph linear functions and determine their slopes and  $x$ - and  $y$ -intercepts from their graphs and equations. Write a linear function in slope-intercept form. Determine the equation of a line given two points on the line, or its slope and one point on the line. Show the connection between the slopes of lines that are parallel or perpendicular. Find equations of lines containing a particular point parallel or perpendicular to a given line.

A1.4.1 Graph a linear equation.

A1.4.2 Find the slope,  $x$ -intercept, and  $y$ -intercept of a line given its graph, its equation, or two points on the line.

A1.4.3 Write the equation of a line in slope-intercept form. Understand how the slope and  $y$ -intercept of the graph are related to the equation.

Example: Write the equation of the line  $4x + 6y = 12$  in slope-intercept form. What is the slope of this line? Explain your answer.

A1.4.4 Write the equation of a line given appropriate information.

Example: Find an equation of the line through the points  $(1, 4)$  and  $(3, 10)$ , then find an equation of the line through the point  $(1, 4)$  perpendicular to the first line.

**A1.4.5 Write the equation of a line that models a data set and use the equation (or the graph of the equation) to make predictions. Describe the slope of the line in terms of the data, recognizing that the slope is the rate of change.**

**Core Standard 4: Linear Functions**

Represent linear functions in different ways. Translate between verbal descriptions, table, graphs, and equations.

A1.3.1 Sketch a reasonable graph for a given relationship.

A1.3.2 Interpret a graph representing a given situation.

A1.4.1 Graph a linear equation.

**Core Standard 9: Data Analysis:** Identify, describe, plan, and conduct surveys. Use sampling to find characteristics of a population.

Indicator standards are in process at the Indiana Department of Education.

**Other Algebra 1 Standards Pertinent to Global Warming****Operations With Real Numbers**

A1.1.5 Use dimensional (unit) analysis to organize conversions and computations.

**Linear Equations and Inequalities**

A1.2.2 Solve equations and formulas for a specified variable.

A1.2.6 Solve word problems that involve linear equations, formulas, and inequalities.

**Mathematical Reasoning and Problem Solving**

A1.9.1 Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, and working backwards.