HPISD Curriculum: Algebra I

Title	Estimated Duration	6 Weeks					
Unit 5: Graphing Functions in Standard Form (with Applications)	1-2 weeks	1	2	**3**	4	5	6

Unit Overview

Students will use their skills of plotting points in a coordinate plane and learn to use tables, x- and y- intercepts, and the slope and y-intercept to graph linear equations and functions in standard form. They will interpret slope as a rate of change in real-world situations and explore how changing the slope and y-intercept changes to graph. Students will also learn about the linear parent function and family of lines. They will learn how to use function notation and solve functions for specific values.

Enduring Understandings

The student will understand that:

- Standard form of a function
- Functions have three parts:
  - a domain, which is the set of inputs to the function
  - a range, which is the set of output
  - a rule or statement of correspondence indicating how each input determines a unique output.
- The domain and rule of correspondence determine the range.
- Graphs are geometric representations of functions.
- Function notation provides an efficient way to talk about functions, but notation is just that, an efficient way to talk about functions.

Concepts	Guiding/Essential Questions
• change • relationships	• What is standard form of a linear function? • What is slope? • What is domain and range? • What are the slopes of vertical and horizontal lines? • How to use intercepts to graph an equation? • What do the intercepts tell you about the function? • What is a family of lines? • How can a graphing calculator be used to find equations of lines? • How do you graph linear equations given in standard form? • What is function notation?

Learning Targets	
Students will represent linear functions algebraically, symbolically, verbally, and in tabular form. They will identify features of linear functions from standard form (slope, x- and y-intercepts), of functions presented in graphic, tabular, or symbolic form. Students will graph linear equations using the intercepts and identify domain and range. Students will understand how to write equations and graph them in standard form of real world application problems.	
Formative Assessments	**Summative Assessments**
homework, quizzes	test
TEKS: Readiness Standards	**TEKS: Related Supporting Standards**
A.2B Identify mathematical domains and ranges and determine reasonable domain and range values for given situations, both continuous and discrete. **A.2D** 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. **A.6B** Interpret the meaning of slope and intercepts in situations using data, symbolic representations, or graphs. **A.6F** Interpret and predict the effects of changing slope and y-intercept in applied situations.	**A.1A** Describe independent and dependent quantities in functional relationships. **A.1B** Gather and record data, and use data sets to determine functional relationships between quantities. **A.2C** Interpret situations in terms of given graphs or creates situations that fit given graphs. **A.5B** Determine the domain and range for linear functions in given situations. **A.6A** Develop the concept of slope as rate of change and determine slopes from graphs, tables, and algebraic representations. **A.6D** Graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and y intercept. **A.6E** Determine the intercepts of the graphs of linear functions and zeros of linear functions from graphs, tables, and algebraic representations.
Processes and Skills: **What students should be able to DO**	**Facts:** **What students should KNOW**
• Identify an equations in standard form • Manipulate an equation so it ends in standard form. • Interpret what the x and y intercepts represent. • Graph x and y intercepts of a line. • Graph the linear parent function. • Use a graphing calculator to graph lines.	• Slope is a rate of change. • A table is another representation of an equation. • Changes in linear equations and function affect their graphs. • Linear relationships are characterized by a constant rate of change • Linear functions can be represented verbally, graphically, in tabular form, and symbolically

Topics

Quadrants, Domain and Range
Slope and Rate of Change
Graphing Linear Equations using T-table
Graphing Linear Equations using Intercepts
Graphing Linear Equations using Slope Intercept Form
Function Composition
Graph Linear Functions
Parent Function, Family of lines

Language of Instruction

Change in y over change in x
Coordinates
Dependent variable
Domain
Family of lines
Standard form
Cover up Method
Horizontal Lines (HOY)
Independent variable
Interpret graphs
Line
Ordered pairs
Parent Function
Patterns
Rate of Change
Range
Slope intercept form y = mx +b
Slope
Table
Vertical Lines (VUX)
x-intercept
y-intercept

State Assessment Connections

National Assessment Connections

Resources

McDougall Littell Chapter 4, Chapter 1 (Function Composition), and
Chapter 5.1 Calculator Activity (Family of Lines)
Teacher-made supplemental resources