HPISD Curriculum: Algebra I

Title	Estimated Duration	6 Weeks					
Unit 3: Functions	2 weeks	1	**2**	3	4	5	6

Unit Overview

Students write and evaluate expressions, equations, and inequalities. They learn to apply the order of operations and to use a problem solving plan to solve real-world problems. Students learn about functional relationships including domain, range, input variables, and output variables. Also, they will represent functions as rules and as tables. They graph functions given a rules or table of values.

Enduring Understandings

The student will understand that:	• A function can be represented as a graph, numerically, verbally, with concrete models, pictorially, or symbolically. • Independent and dependent variables can be identified in graphs, tables, equations, and real world situations and will be able to read a qualitative graph. • Real life situations can be represented as functions and used to predict independent and dependent values. • Graphs can be used to represent the way the dependent variable changes compared to the independent variable.

Concepts	Guiding/Essential Questions
• relationships	• How do you evaluate algebraic expressions and powers? • How do you use the order of operations to evaluate an expression? • How do you write an expression to represent a real-world situation • How do you write equations and inequalities? • What is a function? • What are the different ways to represent functions?

Learning Targets

The student will be able to describe functional relationships in a variety of ways and demonstrate an understanding of the properties and attributes of functions.

Formative Assessments	Summative Assessments
homework, quizzes	test

TEKS: Readiness Standards	TEKS: Related Supporting Standards
A.2.B Identify mathematical domains and ranges and determine reasonable domain and range values for given situations, both continuous and discrete **A.6.B** Interpret the meaning of slope and intercepts in situations using data, symbolic representations, or graphs **A.6.C** Investigate, describe, and predict the effects of changes in m and b on the graph of y = mx + b **A.6.F** Interpret and predict the effects of changing slope and y-intercept in applied situations **A.1.D** Represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities **A.1.E** Interpret and make decisions, predictions, and critical judgments from functional relationships	**A.2.A** Identify and sketch the general forms of linear (y = x) and quadratic (y = x2) parent functions **A.2.C** Interpret situations in terms of given graphs or creates situations that fit given graphs **A.6.A** Develop the concept of slope as rate of change and determine slopes from graphs, tables, and algebraic representations **A.6.D** Graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and y-intercept **A.6.E** Determine the intercepts of the graphs of linear functions and zeros of linear functions from graphs, tables, and algebraic representations **A.6.G** Relate direct variation to linear functions and solve problems involving proportional change **A.1.A** Describe independent and dependent quantities in functional relationships **A.1.C** Describe functional relationships for given problem situations and write equations or inequalities to answer questions arising from the situations **A.3.A** Use symbols to represent unknowns and variables **A.3.B** Look for patterns and represent generalizations algebraically

Processes and Skills: **What students should be able to DO**	**Facts:** **What students should KNOW**
• Evaluate expressions by substituting values for the variables in an expression and then performing operations. • Simplify expressions by using a series of steps (PEMDAS) • Translate sentences into equations and inequalities. • Describe relationships between domain and range, between input and output, and between independent and dependent variables. • Use the functions independent and dependent variables and a table of values to show a functional relationship on a graph. • Graph a real world situation between to variables. • Recognize and interpreting patterns from a graph. • Describe functional relationships in a variety of ways. • Demonstrate an understanding of the properties and attributes of functions.	• Independent and dependent variables can be identified in graphs, tables, equations, and real world situations. • A function can be represented in a variety of ways including verbal rules, equations, tables, graphs, models, or symbolically. • Expressions are used to create equations and inequalities. Variables are used to in expressions, equations, and inequalities to represent unknown quantities. The order of operations is used to evaluate expressions. • Math language that expresses relationships which can be represented symbolically in equations or inequalities. • Graphs can be used to represent the way the dependent variable changes compared to the independent variable. • Qualitative graphs represent real life situations as functions and are used to predict independent and dependent values.

Topics		
Evaluating Expressions	Writing Expressions and Equations	Functions
Order of Operations	Relationships	

Language of Instruction		
Dependent variable	Independent variable	PEMDAS Range
Domain	Interpret graphs	Scatterplots
Function	Like Terms	Vertical line test
Functional relationship	Patterns	Qualitative

State Assessment Connections	**National Assessment Connections**

Resources
McDougal Littell - Chapter 1 Teacher-made worksheets