Mathematics 8 Standards Parent Resource

Unit 3: Functional Relationships

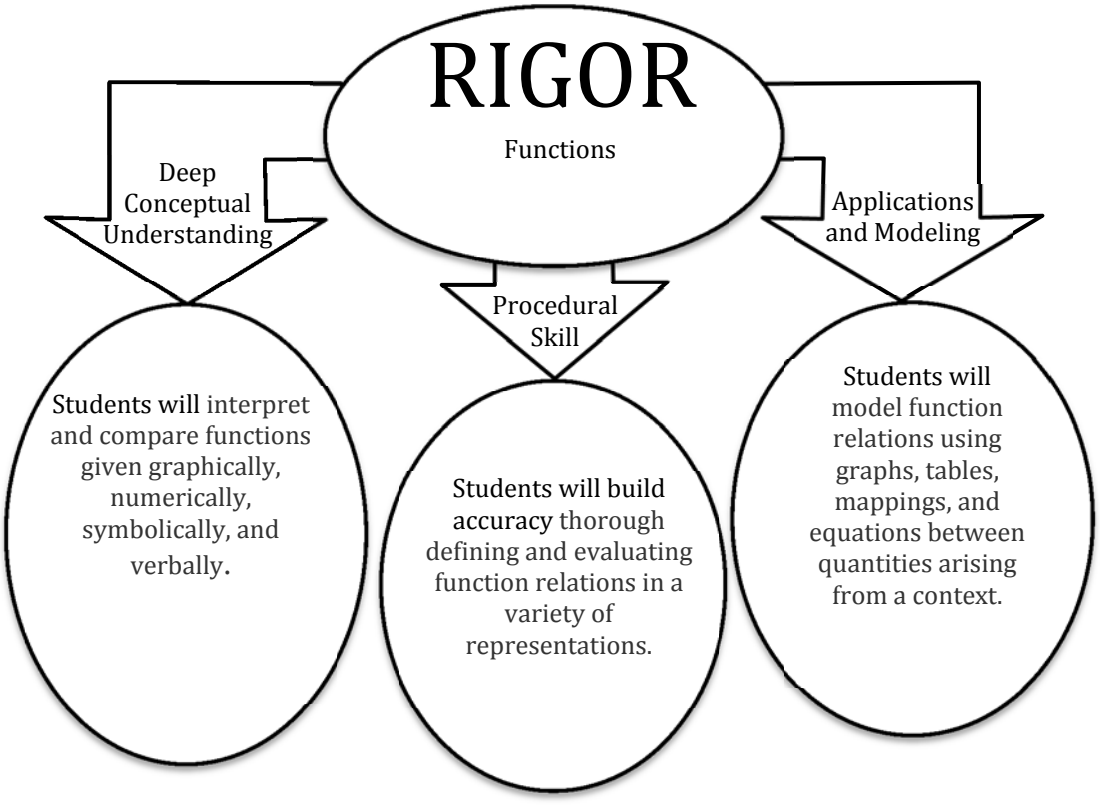
Unit 3 includes 1 topic of study.

Topic 1

Functions

Topic	Learning Goals by Common Core State Standard *Students will be able to...*
Functions	• Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. • Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. • Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. • Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. *Instructional videos in the hyperlinks above are meant to support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.*

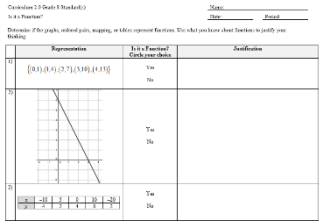
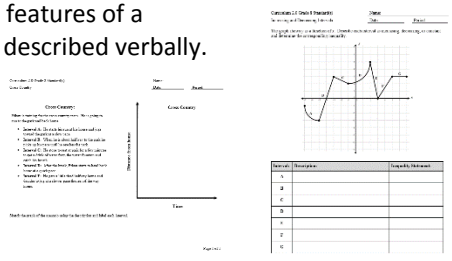
The Common Core State Standards require a balance of three fundamental components that result in rigorous mathematics acquisition: deep conceptual understanding, procedural skill, and mathematical applications and modeling



Mathematics 8 Standards Parent Resource

Unit 3: Functional Relationships | Topic 1: Functions

Learning Experiences by Common Core State Standard

	In school, your child will…	At home, your child can…
Topic 1: Functions	• Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. Look at different models to determine if the representations are functions and justifying their thinking.  • Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. • Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. • Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. Use context to sketch a variety of models that show linear and non-linear relationships of quantities. 	• Talk with you about money as a function of time, temperature as a function of various factors, location as a function of time, etc. You can discuss that location is a function of time, as you can never be in two places at the same time, therefore making the function a relation. • Visit the CK12 PLIX (Play Learn Interact Xplore): o Algebraic Functions: Vertical Line Test The PLIX allows you to experiment testing if graphic representations are functions using the vertical line test. *Additional Resources* • Learn Zillion: Determine Whether a Graph is a Function In this video students will learn how to tell if a line on a graph represents a function by mapping inputs and outputs. (video tutorial) • Learn Zillion: Determine Whether a Set of Ordered Pairs Represents a Function In this video students will learn to tell if a set of ordered pairs represents a function by matching the input (x) values to the output (y) values. (video tutorial) • Learn Zillion: Sketch Nonlinear Graphs by Analyzing Verbal Descriptions In this video, students use the information that they have learned regarding various types of graphs to sketch graphs from verbal descriptions. (video tutorial) • Learn Zillion: Recognize the Characteristics of a Linear Function In this video, students will learn how to recognize a linear function by examining the four representations of a function. (video tutorial) • Khan Academy: Comparing Linear Functions In this video, students are asked to compare functions expressed in different representations to determine which function increases faster. (video tutorial) • Khan Academy: Compare Linear Functions In this online resource, students are able to compare the features of functions expressed in different representations. (online check) *Additional Practice links support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.*