

# Chapter 1

## Graphing Linear Functions

Dear Family,

Have you ever thought about how much you might weigh on another planet? Or why you would weigh a different amount on another planet?

What is gravity? How does gravity affect your weight on Earth? Is mass different from weight? If so, how is it different? Use the Internet to research these questions before considering how your weight would change if you visited another planet.

Here is an activity for you to complete as a family to determine how much you would weigh on different planets and on the moon. Upon completing the chart below, graph the information in a coordinate plane.

Given the equation  $y = 0.17x$ , where  $y$  represents an object's weight on the moon and  $x$  is an object's weight on Earth, determine how much each member of your family would weigh on the moon. Insert the weight of each member of your family in the chart below, from least to greatest.

$x$						
$y$						

- Is your weight on Earth more or less than your weight on the moon?

Now determine your family's weight on Mercury and Jupiter using the equations below. Complete a chart similar to the one above for each planet. Use a calculator if needed. Graph your weight on the moon, Earth, Mercury, and Jupiter in a coordinate plane, using a different color for each.

- The equation for the weight of an object on Mercury is  $y = 0.38x$ .
- The equation for the weight of an object on Jupiter is  $y = 2.53x$ .

Using your graph, which planet would you weigh the most on? the least? How can you tell?

How about your pet? How much would he or she weigh on the moon? Consider using the equations above to determine the weight of other items if they were on the other planets.

Enjoy exploring outer space together!

# Chapter 1

## Graphing Linear Functions (continued)

	Learning Target	Success Criteria
Chapter 1 Graphing Linear Functions	Understand graphing linear functions.	<ul style="list-style-type: none"> <li>I can identify the graph of a linear function.</li> <li>I can graph linear functions written in different forms.</li> <li>I can describe the characteristics of a function.</li> <li>I can explain how a transformation affects the graph of a linear function.</li> </ul>
1.1 Interval Notation and Set Notation	Use interval notation and set-builder notation.	<ul style="list-style-type: none"> <li>I can represent intervals using interval notation.</li> <li>I can represent intervals using set-builder notation.</li> </ul>
1.2 Functions	Understand the concept of a function.	<ul style="list-style-type: none"> <li>I can determine whether a relation is a function.</li> <li>I can find the domain and range of a function.</li> <li>I can distinguish between independent and dependent variables.</li> </ul>
1.3 Characteristics of Functions	Describe characteristics of functions.	<ul style="list-style-type: none"> <li>I can estimate intercepts of a graph of a function.</li> <li>I can approximate when a function is positive, negative, increasing, or decreasing.</li> <li>I can sketch a graph of a function from a verbal description.</li> </ul>
1.4 Linear Functions	Identify and graph linear functions.	<ul style="list-style-type: none"> <li>I can identify linear functions using graphs, tables, and equations.</li> <li>I can graph linear functions with discrete and continuous domains.</li> <li>I can write real-life problems that correspond to discrete or continuous data.</li> </ul>
1.5 Function Notation	Understand and use function notation.	<ul style="list-style-type: none"> <li>I can evaluate functions using function notation.</li> <li>I can interpret statements that use function notation.</li> <li>I can graph functions represented using function notation.</li> </ul>
1.6 Graphing Linear Equations in Standard Form	Graph and interpret linear equations written in standard form.	<ul style="list-style-type: none"> <li>I can graph equations of horizontal and vertical lines.</li> <li>I can graph linear equations written in standard form using intercepts.</li> <li>I can solve real-life problems using linear equations in standard form.</li> </ul>
1.7 Graphing Linear Equations in Slope-Intercept Form	Find the slope of a line and use slope-intercept form.	<ul style="list-style-type: none"> <li>I can find the slope of a line.</li> <li>I can use the slope-intercept form of a linear equation.</li> <li>I can solve real-life problems using slopes and y-intercepts.</li> </ul>
1.8 Transformations of Linear Functions	Graph transformations of linear functions.	<ul style="list-style-type: none"> <li>I can identify a transformation of a linear graph.</li> <li>I can graph transformations of linear functions.</li> <li>I can explain how translations, reflections, stretches, and shrinks affect graphs of functions.</li> </ul>