

Section Overview

Functions, Tables, and Graphs

Lesson 4-4

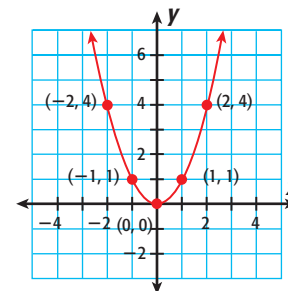
Why? Students must understand how to use function tables to graph functions.

A **function** is a relation, or rule, that assigns a unique y -value to every x -value.

Function: $y = x^2$

Input: x	Output: y
-2	$(-2)^2 = 4$
-1	$(-1)^2 = 1$
0	$(0)^2 = 0$
1	$(1)^2 = 1$
2	$(2)^2 = 4$

Graph of $y = x^2$



Graphing Linear Functions

Lesson 4-5, 4-6

Why? Students should recognize that the rule that describes a number pattern also describes the corresponding function and its graph.

Find the next term in the sequence: **3, 6, 9, 12, ...**

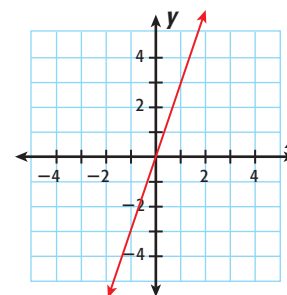
The function $y = 3n$ can be used to describe the sequence.

The next, or fifth, term in the sequence is $3(5)$, or **15**.

The graph of $y = 3x$ is a straight line.

The **range** is all possible values y can assume. The range of $y = 3x$ is the set of real numbers.

The **domain** is all possible values x can assume. The domain of $y = 3x$ is the set of real numbers.



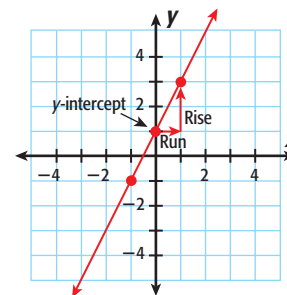
The graphs of linear equations are straight lines.

The slope-intercept form of a linear equation is $y = mx + b$.

The **slope** tells how steep a line is. It is the ratio of the rise over the run. $m = \frac{\text{rise}}{\text{run}}$

The **y-intercept** is the y -value at which the graph crosses the y -axis, $(0, b)$.

$y = 2x + 1$



A **nonlinear** function is a function whose graph is not a straight line.

