

Section Overview

Forms of Linear Equations

Lessons 5-6, 5-7

Why? When a linear equation is written in certain forms, relevant information about the line can be gathered from the equation.

Slope-Intercept Form

$$y = mx + b$$

where m represents the slope, and b represents the y -intercept

Point-Slope Form

$$y - y_1 = m(x - x_1)$$

where m represents the slope, and x_1 and y_1 are the coordinates of a point on the line

Standard Form

$$Ax + By = C$$

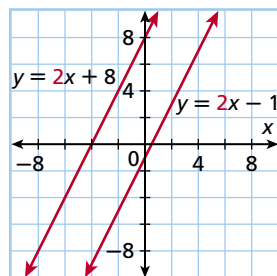
where A , B , and C are real numbers, and A and B are **not both** 0

Slopes of Parallel and Perpendicular Lines

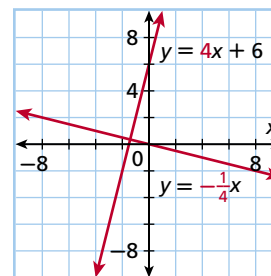
Lesson 5-8

Why? Slope can be used to confirm that geometric figures have parallel sides and right angles.

Parallel lines have the same slope.



The slopes of perpendicular lines have a product of -1 .



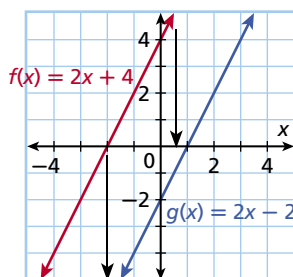
Transforming Linear Functions

Lesson 5-9

Why? Students can use transformations to quickly sketch the graph of any linear function.

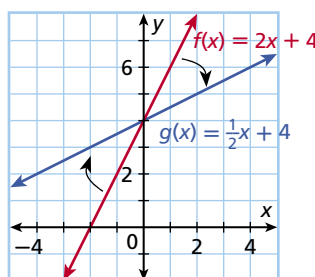
For the function $f(x) = mx + b$:

A change in b results in the graph being translated (slid) up or down.



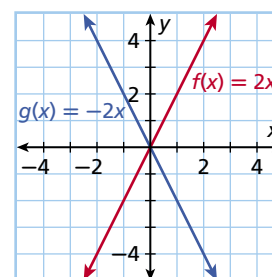
$g(x)$ is the result of translating $f(x)$ 6 units down.

A change in m results in the graph being rotated (turned) about a point.



$g(x)$ is the result of rotating $f(x)$ about $(0, 4)$.

Multiplying m by -1 results in the graph being reflected (flipped) across the y -axis.



$g(x)$ is the result of reflecting $f(x)$ across the y -axis.