

LESSON
6-3

Comparing Functions

Practice and Problem Solving: C

Find the slopes and y -intercepts of the linear functions f and g . Then compare the graphs. Tell whether the lines are parallel, perpendicular, or neither. If they intersect, name the point of intersection.

1. $f(x) = -3x + 5$

x	-1	0	1	2	3
$g(x)$	4	1	-2	-5	-8

slope of $f =$ _____

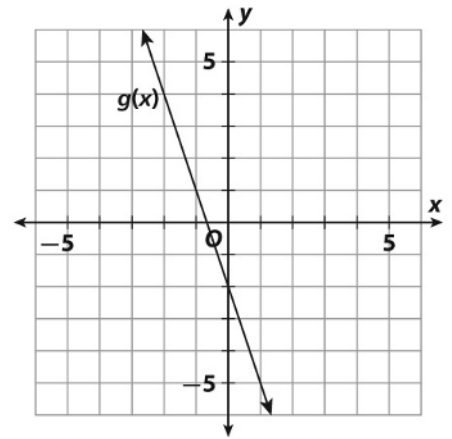
slope of $g =$ _____

y -intercept of f : _____

y -intercept of g : _____

The function $f(x)$ has a slope of $\frac{1}{3}$ and a y -intercept of -2 . The function $g(x)$ is shown at right.

2. Compare the rates of change and the initial values of the functions. Tell whether the lines are parallel, perpendicular, or neither. If the lines intersect, name the point of intersection.



Jing just got a new job. She started at a pay rate of \$12.50 per hour and will get a \$0.50 raise each year. Max started a job where his salary is found by the equation: $f(x) = x + 10$, where x is the number of years.

3. Interpret the rates of change and initial values of the linear functions in terms of the situations they model. Compare the results and what they mean. How many years must they both work for Max to earn more per hour than Jing?

Jing

Max

Initial value: _____

Initial value: _____

Rate of change: _____

Rate of change: _____

LESSON 6-3

Practice and Problem Solving: A/B

1. 5; 2; The slope of $f(x)$ is greater than the slope of $g(x)$.
2. $-3, -1$; The y -intercept of $f(x)$ is 2 less than the y -intercept of $g(x)$.
3. Connor: 200 ft; -10 ft/min; Pilar: 242 ft; -8 ft/min; Sample answer: Pilar started higher than Connor and climbed down more slowly than Connor did. It will take Pilar longer to get down the canyon wall.

Practice and Problem Solving: C

1. f slope: -3 , f y -intercept: 5; g slope: -3 , g y -intercept: 1; The graphs of the two functions are parallel lines with $f(x)$ 4 units above $g(x)$.
2. The slope of $f(x)$ is $\frac{1}{3}$, and the slope of $g(x)$ is -3 . Both y -intercepts are -2 . The graphs are perpendicular and intersect at $(0, -2)$.
3. Jing: \$12.50, \$0.50/year; Max: \$10, \$1/year; Sample answer: Jing starts at a higher wage, but gets a smaller raise each year. They both must work 6 years for Max to make more than Jing.

Practice and Problem Solving: D

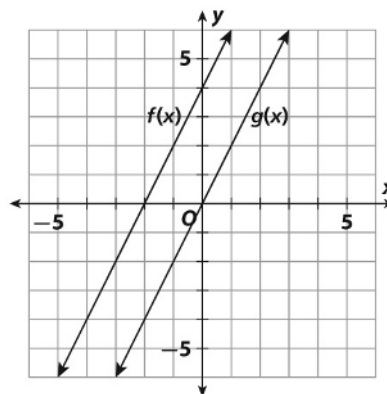
1. f slope = 1; g slope = 2; f y -intercept = -1 ; g y -intercept = 4; The slope of $f(x)$ is less steep than the slope of $g(x)$. Both slopes are positive. There are 5 units between the y -intercepts.
2. f slope = -2 ; g slope = -2 ; f y -intercept = 2; g y -intercept = 0; The slope of both functions is the same and is negative. The lines are parallel. There are 2 units unit between the y -intercepts.
3. f slope = -1 ; g slope = 3; f y -intercept = 4; g y -intercept = 0; The slope of $f(x)$ is less than the slope of $g(x)$. One slope is negative and one slope is positive, so the lines intersect. There are 4 units between the y -intercepts.

Reteach

1. f slope = $-\frac{1}{2}$; g slope = $-\frac{3}{2}$;
 f y -intercept = -2 ; g y -intercept = 1; The slope of $f(x)$ is less steep than the slope of $g(x)$. Both slopes are negative. There are 3 units between the y -intercepts.
2. f slope = 6; g slope = -3 ; f y -intercept = -1 ; g y -intercept = 0; The slope of $f(x)$ is greater than the slope of $g(x)$. There is 1 unit between the y -intercepts.

Reading Strategies

1.



2. The slopes of $f(x)$ and $g(x)$ are the same. Both slopes are positive.
3. There are 4 units difference in the y -intercepts.

Success for English Learners

1. Choose two ordered pairs. Substitute the values into the slope formula:
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
2. Answers will vary. Discuss with students that their choice of which representation to use may depend on what information they are asked to find.

LESSON 6-4

Practice and Problem Solving: A/B

1. The oven would be at room temperature, not zero.
2. The oven has reached the desired temperature and is maintaining that temperature.
3. Graph 1
4. Graph 3