

LESSON
6-3

Comparing Functions

Practice and Problem Solving: A/B

Find the slopes of linear functions f and g . Then compare the slopes.

1. $f(x) = 5x - 2$

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

slope of $f =$ _____

slope of $g =$ _____

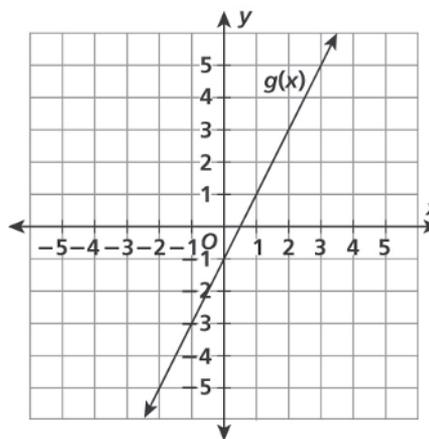
Find the y -intercepts of linear functions f and g . Then compare the two intercepts.

2.

x	0	1	2	3	4
$f(x)$	-3	-1	1	3	5

y -intercept of f : _____

y -intercept of g : _____



Connor and Pilar are in a rock-climbing club. They are climbing down a canyon wall. Connor starts from a cliff that is 200 feet above the canyon floor and climbs down at an average speed of 10 feet per minute. Pilar climbs down the canyon wall as shown in the table.

Time (min)	0	1	2	3
Pilar's height (ft)	242	234	226	218

3. Interpret the rates of change and initial values of the linear functions in terms of the situations that they model. Compare the results and what they mean.

Connor

Pilar

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: $\$12.50$, $\$0.50/\text{year}$; Max: $\$10$, $\$1/\text{year}$; 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.

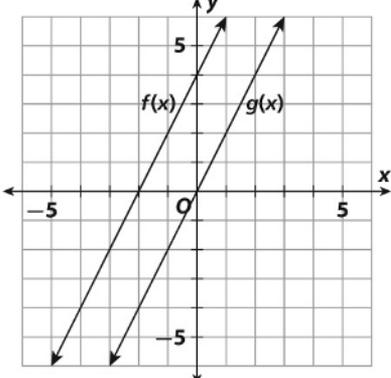
Practice and Problem Solving: D

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