

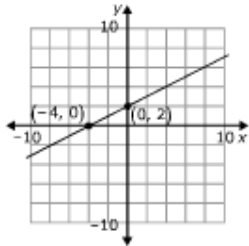
## Objective 67

Compare a linear function represented in a table to a linear function represented in a graph

**PROBLEM**

1 OF 2

The graph and the table each represent a linear function. Which function has the greater rate of change? If the functions have equal rates of change, state so.



$x$	-2	-1	0	1	2
$y$	$2\frac{3}{5}$	$2\frac{4}{5}$	3	$3\frac{1}{5}$	$3\frac{2}{5}$

**STEP 1**

Recall the meaning of *rate of change* of a linear function.

The rate of change of a linear function is the ratio of the change in the output value to the change in the input value of a function. It is the slope of the graphed line of a linear function.

**STEP 2**

Recall the formula for finding the slope of a line.

The slope  $m$  of a line through the points  $(x_1, y_1)$  and  $(x_2, y_2)$  is  $m = \frac{y_2 - y_1}{x_2 - x_1}$ .

The slope formula can be used to find the rate of change of a linear function.

**STEP 3**

Determine the rate of change of the graphed line. Use the coordinates of the two points on the line.

$$(x_1, y_1) = (-4, 0) \quad (x_2, y_2) = (0, 2)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - 0}{0 - (-4)} = \frac{2}{4} = \frac{1}{2}$$

The rate of change of the linear function on the graph is  $\frac{1}{2}$ .

**STEP 4**

Determine the rate of change from the table. Use any two points.

$$(x_1, y_1) = (0, 3) \quad (x_2, y_2) = \left(1, 3\frac{1}{5}\right)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3\frac{1}{5} - 3}{1 - 0} = \frac{\frac{1}{5}}{1} = \frac{1}{5}$$

The rate of change of the linear function from the table is  $\frac{1}{5}$ .

**STEP 5**

Compare the rate of change of the graphed line and the table.

$$\frac{1}{2} > \frac{1}{5}$$

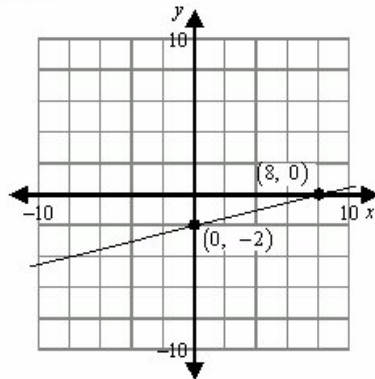
The function represented in the graph has the greater rate of change.

**ANSWER**

The function represented in the graph has the greater rate of change.

**Guided Practice:**

1. The graph and the table each represent a linear function. Which function has the greater rate of change?

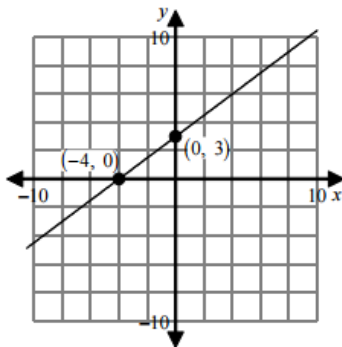


$x$	-2	-1	0	1	2
$y$	$-5\frac{1}{2}$	$-5\frac{1}{4}$	-5	$-4\frac{3}{4}$	$-4\frac{1}{2}$

- [A] The function represented in the graph has the greater rate of change.  
 [B] The function represented in the table has the greater rate of change.  
 [C] The two functions represented in the table and in the graph have equal rates of change.

**Independent Practice:**

The graph and the table each represent a linear function. Which function has the greater rate of change?



$x$	-2	-1	0	1	2
$y$	$3\frac{2}{3}$	$4\frac{1}{3}$	5	$5\frac{2}{3}$	$6\frac{1}{3}$

- [A] The function represented in the table has the greater rate of change.  
 [B] The function represented in the graph has the greater rate of change.  
 [C] The two functions represented in the table and in the graph have equal rates of change.