

SC Algebra 1
4.2 Slope and Rate of Change

Warm Up:

Evaluate.

1. $\frac{12-6}{8-2}$

2. $\frac{9-4}{4-6}$

3. $\frac{7-3}{-2-(-2)}$

4. $\frac{8-(-4)}{-3-1}$

Speak Like A Mathematician

rate of change: how a quantity is _____ in relation to another quantity.

slope: the rate of change in the ____-coordinates (_____) to the corresponding change in the ____-coordinates (_____) for points on a _____.

Example 1: Find the Rate of Change

Find the rate of change in the function by using two points from the table.

a)

Amount of flour x (cups)	Pancakes y
2	12
4	24
6	36

b)

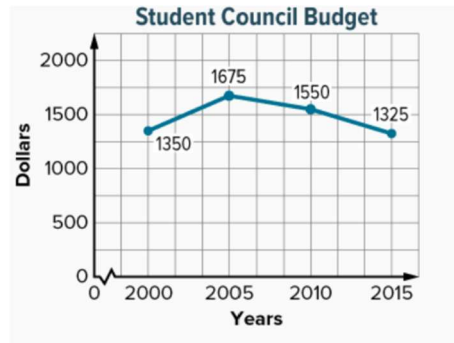
Amount of Gasoline Purchased (gallons)	Cost (dollars)
4.75	15.77
6	19.92
7.25	24.07
8.5	28.22

Example 2: Compare Rates of Change

The School Student Council budget varies based on the fundraising from the previous year.

- a) Find the rate of change for 2000 – 2005 and describe its meaning in the context of the situation.

$$\frac{\text{change in budget}}{\text{change in time}}$$



- b) Find the rate of change for 2010 – 2015 and describe its meaning in the context of the situation.

Example 3: Constant Rate of Change (Linear or Nonlinear?)

Determine whether the function is linear. If so, state its rate of change.

a)

x	y
11	-5
8	-3
5	-1
2	1
-4	5

b)

x	y
22	-4
29	-1
36	1
43	4
50	6

Check:

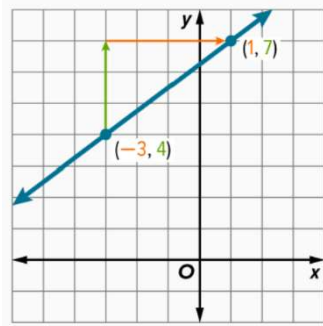
Complete the table so that the function is linear.

x	y
	-2.25
	1
11	
10.5	7.5
10	10.75
9.5	

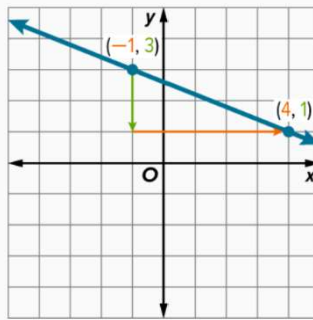
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Example 4: Slope of a Line

- a)** Find the slope of the line that passes through $(-3, 4)$ and $(1, 7)$.

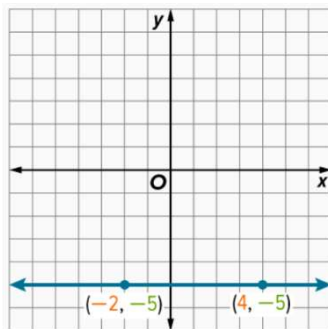


- b)** Find the slope of the line that passes through $(-1, 3)$ and $(4, 1)$.

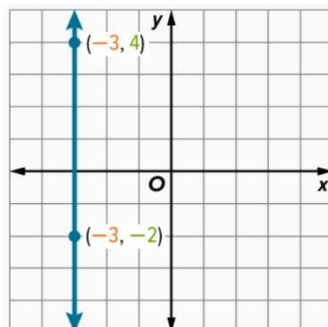


Example 5: Slope of Horizontal and Vertical Lines

- a)** Find the slope of the line that passes through $(-2, -5)$ and $(4, -5)$.



- b)** Find the slope of the line that passes through $(-3, 4)$ and $(-3, -2)$.



Example 6: Find Coordinates Given the Slope

a) Find the value of r so that the line passing through $(-4, 5)$ and $(4, r)$ has a slope of $\frac{3}{4}$.

b) Find the value of r so that the line passing through $(-3, r)$ and $(7, -6)$ has a slope of $\frac{12}{5}$.

Example 7: Use Slope

The continental slope is an often steep oceanic landmass between a continental shelf and the oceanic crust. Near Cape Hatteras, North Carolina, the continental slope is especially steep.

Seventy-five meters from the shoreline of Cape Hatteras, the continental shelf is 65 meters below the ocean surface. At 125 meters from the shoreline, the ocean is 2700 meters deep. What is the slope of the continental slope at Cape Hatteras?

