

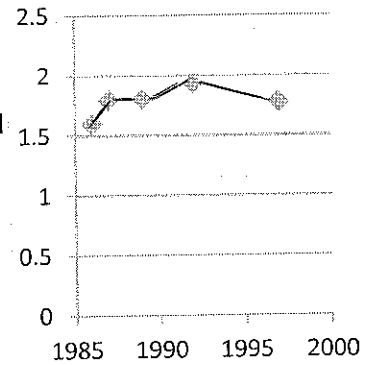
LESSON
5-3

Reteach
Rate of Change and Slope

A **rate of change** is a ratio that compares the amount of change in a dependent variable to the amount of change in an independent variable.

The table shows the average retail price of peanut butter from 1986 to 1997. Find the rate of change in cost for each time interval. During which time interval did the cost increase at the greatest rate?

Year	1986	1987	1989	1992	1997
Cost per lb (\$)	1.60	1.80	1.81	1.94	1.78



Step 1: Identify independent and dependent variables.
Year is independent. *Cost* is dependent.

Step 2: Find the rates of change.

1986 to 1987 $\frac{\text{change in cost}}{\text{change in years}} = \frac{1.80 - 1.60}{1987 - 1986} = \frac{0.20}{1} = 0.2$ greatest rate of change

1987 to 1989 $\frac{\text{change in cost}}{\text{change in years}} = \frac{1.81 - 1.80}{1989 - 1987} = \frac{0.01}{2} = 0.005$

1989 to 1992 $\frac{\text{change in cost}}{\text{change in years}} = \frac{1.94 - 1.81}{1992 - 1989} = \frac{0.13}{3} \approx 0.043$

1992 to 1997 $\frac{\text{change in cost}}{\text{change in years}} = \frac{1.78 - 1.94}{1997 - 1992} = \frac{-0.16}{5} = -0.032$ This rate of change is negative. The price went down during this time period.

The cost increased at the greatest rate from 1986 to 1987.

The table shows the average retail price of cherries from 1986 to 1991. Find the rate of change in cost for each time interval.

Year	1986	1988	1989	1991
Cost per lb (\$)	1.27	1.63	1.15	2.26

1. 1986 to 1988 $\frac{\text{change in cost}}{\text{change in years}} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}} = \boxed{}$

2. 1988 to 1989 $\frac{\text{change in cost}}{\text{change in years}} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}} = \boxed{}$

3. 1989 to 1991 $\frac{\text{change in cost}}{\text{change in years}} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}} = \boxed{}$

4. Which time interval showed the greatest rate of change? _____
5. Was the rate of change ever negative? If so, when? _____

LESSON

Reteach

5-3 Rate of Change and Slope (continued)

When graphing rates of change, if all the segments have the same rate of change (same steepness), they form a straight line. This rate of change is called the **slope**.

Find the slope of the line.

Step 1: First choose any two points on the line.

Step 2: Begin at one of the points.

Step 3: Count vertically until you are even with the second point.

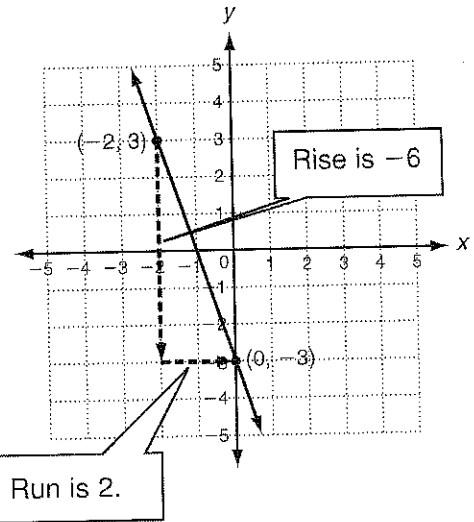
This is the rise. If you go down the rise will be negative. If you go up the rise will be positive.

Step 4: Count over until you are at the second point.

This is the run. If you go left the run will be negative. If you go right the run will be positive.

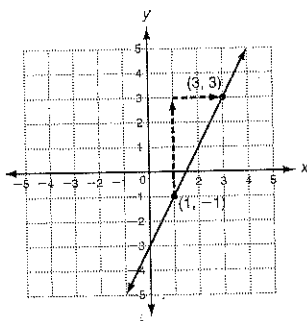
Step 5: Divide to find the slope.

$$\text{slope} = \frac{\text{rise}}{\text{run}} = -\frac{6}{2} = -3$$

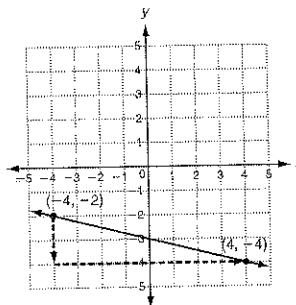


Find the slope of each line.

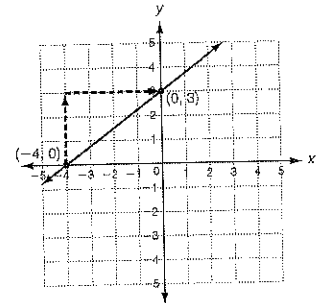
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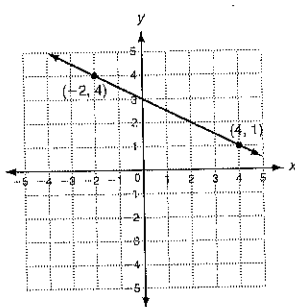
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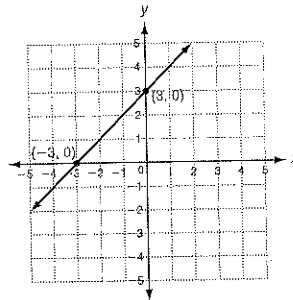
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9.



10.



11.

