SALES The following are the slopes of lines representing annual sales *y* in terms of time *x* in years. Use the slopes to interpret any change in annual sales for a one-year increase in time.
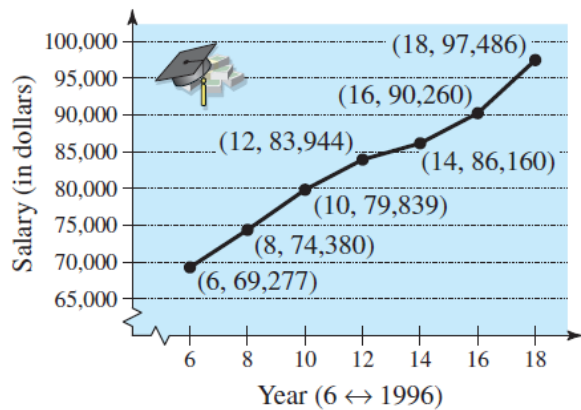
(a) The line has a slope of $m = 135$.

(b) The line has a slope of $m = 0$.

(c) The line has a slope of $m = -40$.

a.

b.

c.

AVERAGE SALARY The graph shows the average salaries for senior high school principals from 1996 through 2008. (Source: Educational Research Service)
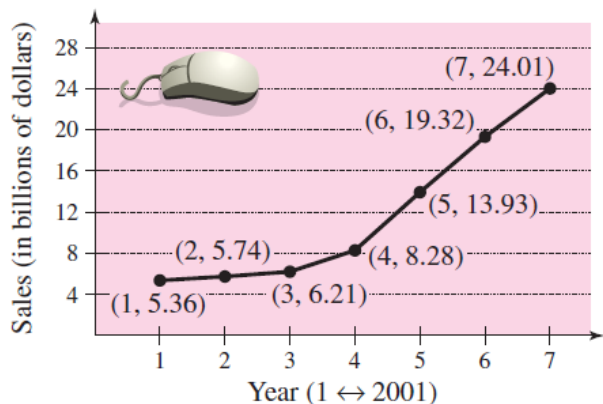

(a) Use the slopes of the line segments to determine the time periods in which the average salary increased the greatest and the least.

(b) Find the slope of the line segment connecting the points for the years 1996 and 2008.

(c) Interpret the meaning of the slope in part (b) in the context of the problem.

a.

b.

c.

SALES The graph shows the sales (in billions of dollars) for Apple Inc. for the years 2001 through 2007. (Source: Apple Inc.)

Sales (in billions of dollars)

(1, 5.36)
(2, 5.74)
(3, 6.21)
(4, 8.28)
(5, 13.93)
(6, 19.32)
(7, 24.01)

Year (1 ↔ 2001)

(a) Use the slopes of the line segments to determine the years in which the sales showed the greatest increase and the least increase.

(b) Find the slope of the line segment connecting the points for the years 2001 and 2007.

(c) Interpret the meaning of the slope in part (b) in the context of the problem.

ROAD GRADE You are driving on a road that has a 6% uphill grade (see figure). This means that the slope of the road is $\frac{6}{100}$. Approximate the amount of vertical change in your position if you drive 200 feet.


a.

b.

c.

116. ROAD GRADE From the top of a mountain road, a surveyor takes several horizontal measurements x and several vertical measurements y, as shown in the table (x and y are measured in feet).

x	300	600	900	1200	1500	1800	2100
y	-25	-50	-75	-100	-125	-150	-175

(a) Sketch a scatter plot of the data.

(b) Use a straightedge to sketch the line that you think best fits the data.

(c) Find an equation for the line you sketched in part (b).

(d) Interpret the meaning of the slope of the line in part (c) in the context of the problem.

(e) The surveyor needs to put up a road sign that indicates the steepness of the road. For instance, a surveyor would put up a sign that states "8% grade" on a road with a downhill grade that has a slope of $-\frac{8}{100}$. What should the sign state for the road in this problem?

a & b
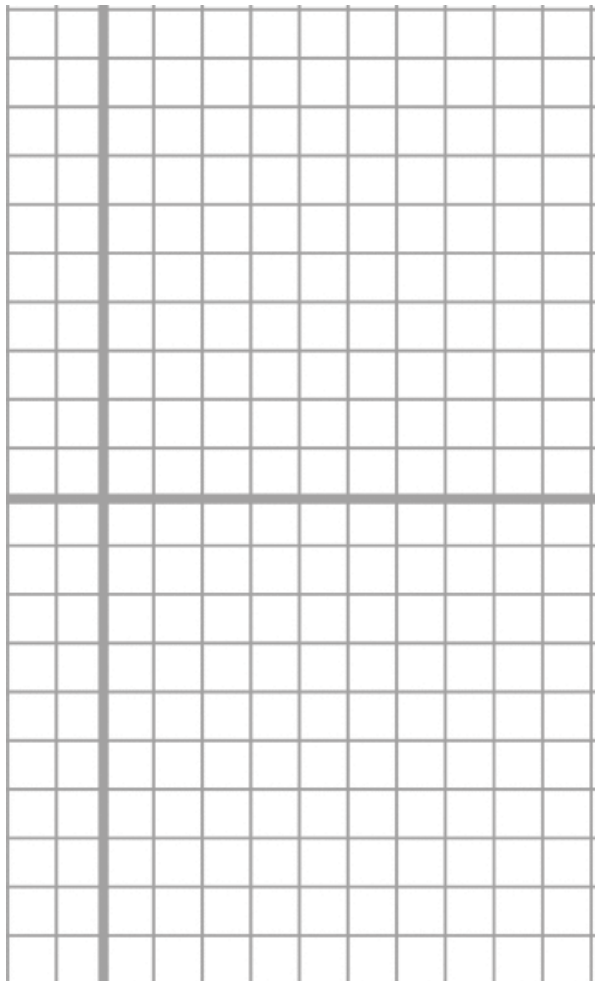
c.

d.

e.

HOURLY WAGE A microchip manufacturer pays its assembly line workers $12.25 per hour. In addition, workers receive a piecework rate of $0.75 per unit produced. Write a linear equation for the hourly wage W in terms of the number of units x produced per hour.

MONTHLY SALARY A pharmaceutical salesperson receives a monthly salary of $2500 plus a commission of 7% of sales. Write a linear equation for the sales-person's monthly wage W in terms of monthly sales S.

NUMBER OF STORES In 2003 there were 1078 J.C. Penney stores and in 2007 there were 1067 stores. Write a linear equation that gives the number of stores in terms of the year. Let $t = 3$ represent 2003. Then predict the numbers of stores for the years 2012 and 2014. Are your answers reasonable? Explain.