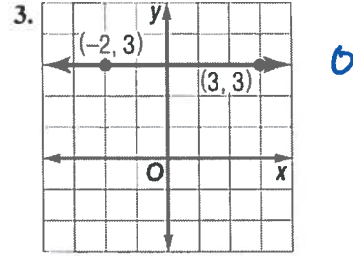
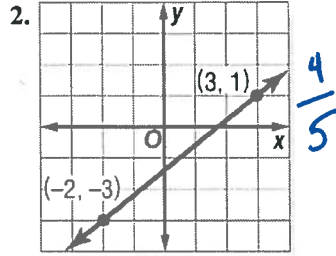
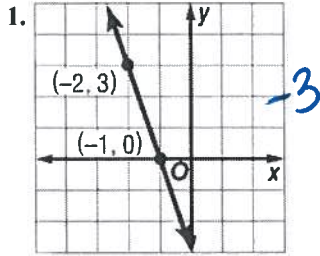


### 3-3 Practice

#### Rate of Change and Slope

Find the slope of the line that passes through each pair of points.



4. (6, 3), (7, -4)  $-7$

5. (-9, -3), (-7, -5)  $-1$

6. (6, -2), (5, -4)  $2$

7. (7, -4), (4, 8)  $-4$

8. (-7, 8), (-7, 5) *undefined*

9. (5, 9), (3, 9)  $0$

10. (15, 2), (-6, 5)  $-\frac{1}{7}$

11. (3, 9), (-2, 8)  $\frac{1}{5}$

12. (-2, -5), (7, 8)  $\frac{13}{9}$

13. (12, 10), (12, 5) *undefined*

14. (0.2, -0.9), (0.5, -0.9)  $0$

15.  $(\frac{7}{3}, \frac{4}{3}), (-\frac{1}{3}, \frac{2}{3})$   $\frac{1}{4}$

Find the value of  $r$  so the line that passes through each pair of points has the given slope.

16. (-2,  $r$ ), (6, 7),  $m = \frac{1}{2}$   $3$

17. (-4, 3), ( $r$ , 5),  $m = \frac{1}{4}$   $4$

18. (-3, -4), (-5,  $r$ ),  $m = -\frac{9}{2}$   $5$

19. (-5,  $r$ ), (1, 3),  $m = \frac{7}{6}$   $-4$

20. (1, 4), ( $r$ , 5),  $m$  undefined  $1$

21. (-7, 2), (-8,  $r$ ),  $m = -5$   $7$

22. ( $r$ , 7), (11, 8),  $m = -\frac{1}{5}$   $16$

23. ( $r$ , 2), (5,  $r$ ),  $m = 0$   $2$

24. **ROOFING** The *pitch* of a roof is the number of feet the roof rises for each 12 feet horizontally. If a roof has a pitch of 8, what is its slope expressed as a positive number?

$$\frac{\text{Rise}}{\text{Run}} = \frac{8}{12} = \left(\frac{2}{3}\right)$$

25. **SALES** A daily newspaper had 12,125 subscribers when it began publication. Five years later it had 10,100 subscribers. What is the average yearly rate of change in the number of subscribers for the five-year period?

$-405$  subscribers per year

# 3-3 Word Problem Practice

## Rate of Change and Slope

1. **CENSUS** The table shows the population density for the state of Texas in various years. Find the average annual rate of change in the population density from 2000 to 2009.

Population Density	
Year	People Per Square Mile
1930	22.1
1960	36.4
1980	54.3
2000	79.6
2009	96.7

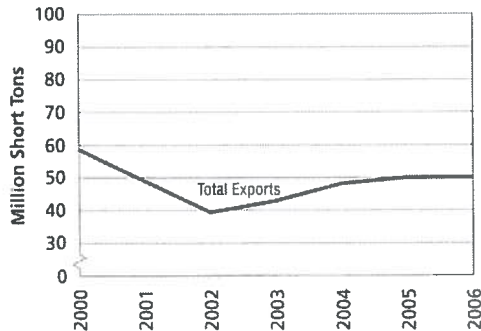
Increased by 1.9 people per sq. mile

Source: Bureau of the Census, U.S. Dept. of Commerce

2. **REAL ESTATE** A realtor estimates the median price of an existing single-family home in Cedar Ridge is \$221,900. Two years ago, the median price was \$195,200. Find the average annual rate of change in median home price in these years.

\$13,350 per year

3. **COAL EXPORTS** The graph shows the annual coal exports from U.S. mines in millions of short tons.



Source: Energy Information Association

a. What was the rate of change in coal exports between 2001 and 2002?

$-\frac{10}{1}$  or -10 million tons per year

b. How does the rate of change in coal exports from 2005 to 2006 compare to that of 2001 to 2002?

2005-2006 the rate was 0 compared to -10 in 2001-2002

c. Explain the meaning of the part of the graph with a slope of zero.

Slope of zero means <sup>22</sup>no change in amount of coal exported.