

## 2

## CHAPTER TEST

In Exercises 1 and 2, tell whether the relation is a function. *Explain.*

1.  $(1, -5), (0, 4), (2, 3), (-1, 2), (2, 7), (1, 2)$       2.  $(-3, 4), (2, 5), (1, 0), (0, 4), (-2, -3), (3, 6)$   
 3. Evaluate  $f(x) = 3x^2 - 2x + 11$  when  $x = -6$ .

Find the slope of the line passing through the given points. Then tell whether the line rises, falls, is horizontal, or is vertical.

4.  $(3, -2), (5, 4)$       5.  $(6, -7), (13, -7)$       6.  $(-2, 1), (1, -4)$       7.  $(-4, 9), (-4, 8)$

Graph the equation.

8.  $x = 4$       9.  $y = \frac{3}{2}x + 3$       10.  $x + 2y = 6$       11.  $3y = 2x - 12$

Write an equation of the line that passes through the given point and satisfies the given condition.

12.  $(9, -1)$ ; parallel to  $y = -\frac{1}{3}x - 8$       13.  $(10, 2)$ ; perpendicular to  $y = -5x + 7$

The variables  $x$  and  $y$  vary directly. Write an equation that relates  $x$  and  $y$ . Then find  $x$  when  $y = 6$ .

14.  $x = 4, y = -8$       15.  $x = -2, y = -1$       16.  $x = 8, y = 18$       17.  $x = 16, y = -6$

In Exercises 18 and 19, (a) draw a scatter plot of the data, (b) approximate the best-fitting line for the data, and (c) estimate the value of  $y$  when  $x = 10$ .

18. 

$x$	1	2	3	4	5
$y$	18	40	55	73	91

19. 

$x$	1	2	3	4	5
$y$	97	91	87	81	75

20. Graph  $y = -3|x + 1| + 3$ . Compare the graph with the graph of  $y = |x|$ .

Graph the inequality in a coordinate plane.

21.  $y \geq -2x + 4$       22.  $2x - 4y \leq 16$       23.  $y < |x - 3| + 1$       24.  $y > -2|x| - 3$

25. **TIRE WEAR** A new set of car tires has a tread depth of 8 millimeters. The tread depth decreases 0.12 millimeter per thousand miles driven. Write an equation that gives the tread depth as a function of the distance driven. Then predict at what distance the tread depth will be 2 millimeters.

26. **PAINTING** The amount of paint an electric paint sprayer applies varies directly with time. A sprayer is set to apply 0.5 gallon in 2.5 minutes. Write an equation that gives the amount  $p$  of paint as a function of the time  $t$ . How much paint is applied if the sprayer is operated for 20 minutes?

27. **COMPUTER CHIPS** The table shows the number  $x$  of transistors (in millions) and the speed  $y$  (in gigahertz) for several computer processors. Approximate the best-fitting line for the data.

$x$	3.1	9.5	28	37	42	55	106	125
$y$	0.06	0.45	0.5	1.5	1.5	2	2.4	3.6