TEST BANK

TENTH EDITION

Intermediate
ALGEBRA

MARVIN L. BITTINGER

NAME_____

CLASS_____SCORE_____GRADE_____
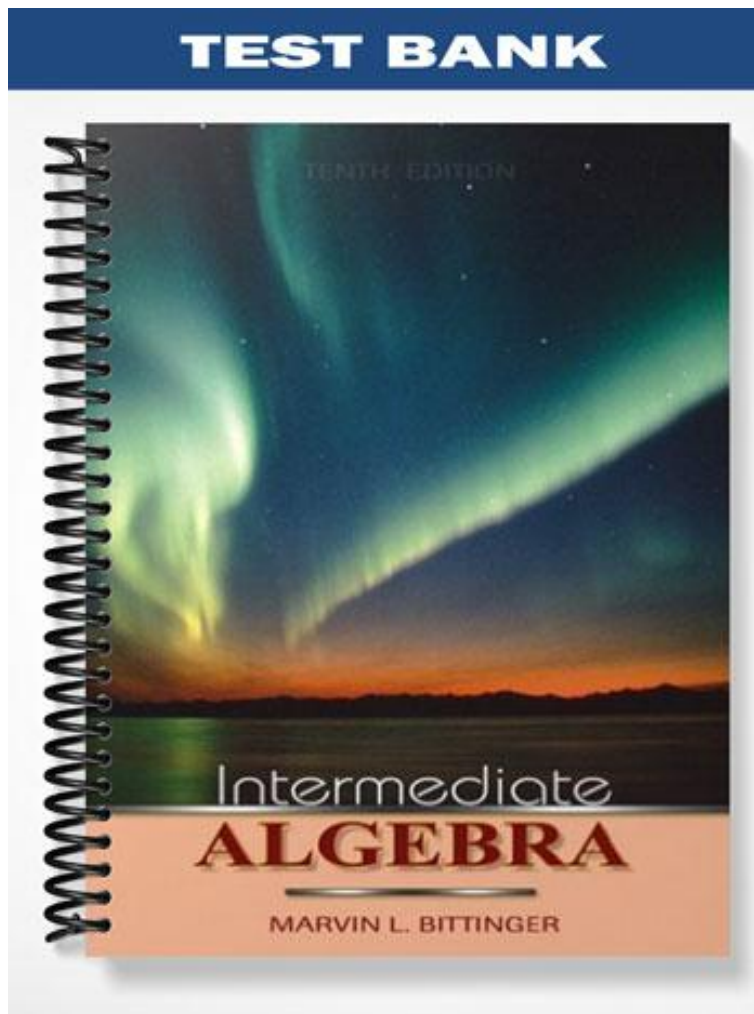
Determine whether the given points are solutions of the equation.

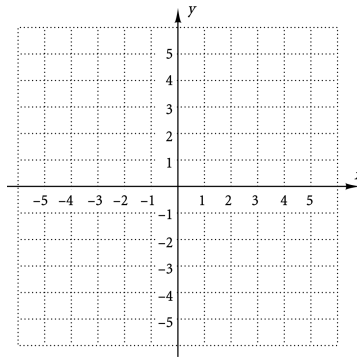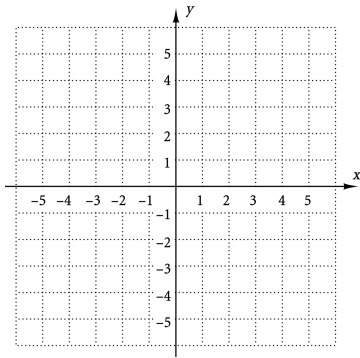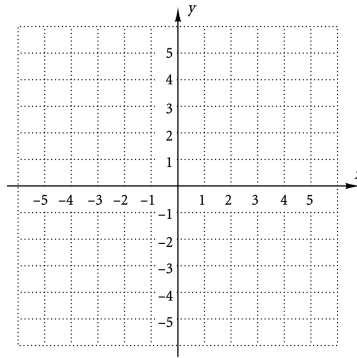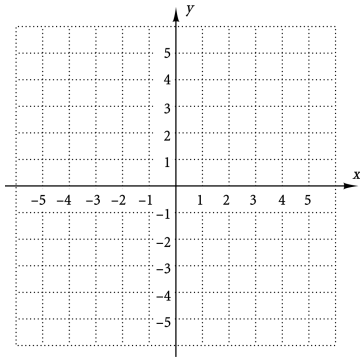1. $(-1,1);\ 2x+y=3$

2. $(2,5);\ 3a-b=1$

Graph.

3. $y=2x+1$

4. $f(x)=\dfrac{4}{3}x$

5. $g(x)=3-|x|$

6. $y=\dfrac{3}{x}$

7. The function $w(t)=170-2t$ can be used to estimate Janelle's weight, in pounds, t weeks after the start of a diet.
    a) Find Janelle's weight 12 weeks after the start of the diet.
    b) After how many weeks will Janelle weigh 156 lb?

Determine whether the correspondence is a function.

8. permanent → up
    crown → down
    molar → left
    wisdom → right
    canine → middle

9. Vikings → 486
    Bears → 319
    Lions → 685
    Packers → 143
    → 506

ANSWERS

1. _____

2. _____

3. _See graph._____

4. See graph._____

5. See graph._____

6. See graph._____

7. a)_____

   b)_____

8. _____

9. _____

103

NAME_____

TEST FORM A

ANSWERS

10. _____

11. _____

12. _____

13. _____

14. a)_____

b)_____

15. a)_____

b)_____

c)_____

d)_____

16. _____

17. _____
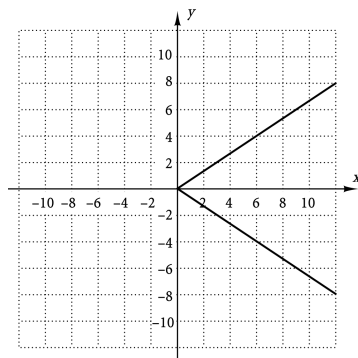
18. _____

19. _____

Find the function values.

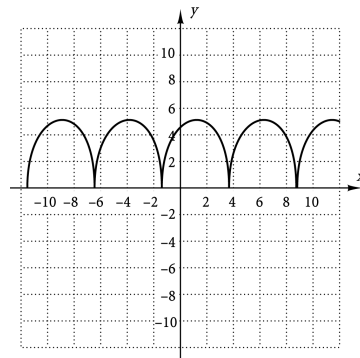10. $f(x) = -5x - 4$; $f(0)$ and $f(-3)$

11. $g(x) = x^2 + 2$; $g(0)$ and $g(-5)$

Determine whether each of the following is the graph of a function.
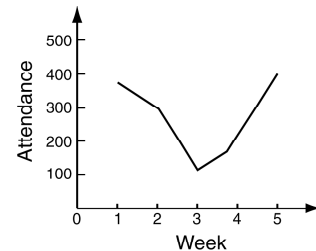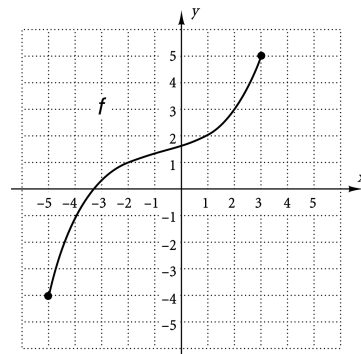
12.

13.

14. The graph at right shows the weekly attendance at a special exhibit at the Farley Gallery. The attendance is given as a function of the week. Use the graph to answer the following.
a) What was the attendance in week 3?
b) What was the attendance in week 5?

15. For the graph of function f at right, determine
a) $f(-4)$;
b) the domain;
c) all x-values such that $f(x) = 2$;
and d) the range.

Find the domain.

16. $g(x) = 5 + x^2$ 17. $f(x) = \dfrac{4}{3x - 2}$

Find the slope and the y-intercept.

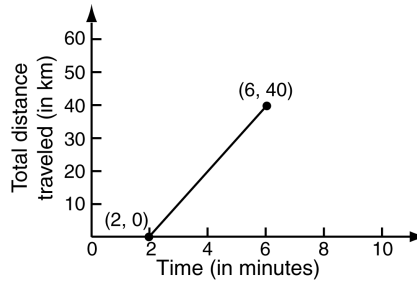18. $f(x) = \dfrac{4}{3}x + 6$ 19. $3x - 5y = 15$

Find the slope, if it exists, of the line containing the following points.
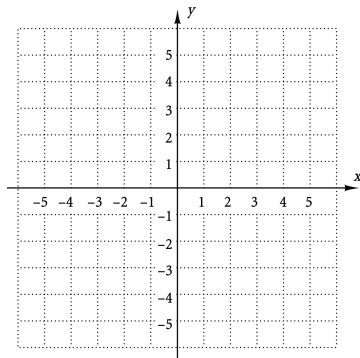20. $(4,-6)$ and $(5,-3)$ 21. $(2.4, 4.3)$ and $(-3.6, 4.3)$ **ANSWERS**

22. Find the slope, or rate of change, of the graph at right.

20. _____

21. _____
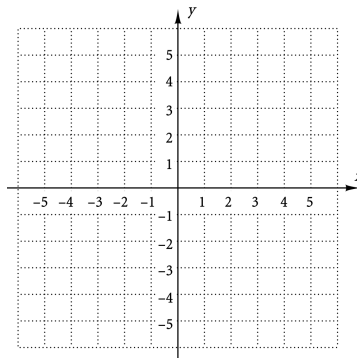
23. Find the intercepts. Then graph the equation.

$3x - 2y = 6$

24. Graph using the slope and the y-intercept.

$f(x) = \frac{1}{3}x + 2$

22. _____

23. See graph. _____

24. See graph. _____

Graph.
25. $y = f(x) = 3$ 26. $6x = -24$

25. See graph. _____

26. See graph. _____

Determine whether the graphs of the given pair of lines are parallel or perpendicular.

27. $2x + 4y = 7$,   28. $7x = y + 5$,   27. _____
     $2y - 4x = 11$ $14x - 2y = 11$

28. _____

105

NAME_____

ANSWERS

29._____

30._____

31._____

32._____

33._____

34._____

35. a)_____

   b)_____

36._____

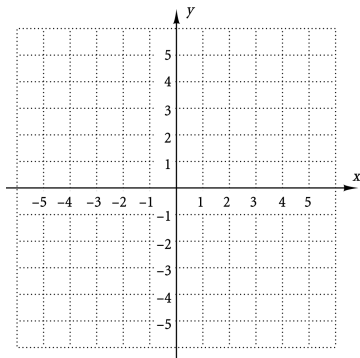37._____

38._____

39._____

40._____

29. Find an equation of the line that has the given characteristics:
   slope: -5; y-intercept: $(0, 3.9)$.

30. Find a linear function $f(x) = mx + b$ whose graph has the given slope and y-intercept:
   slope: 2.5; y-intercept: $\left(0, -\dfrac{3}{7}\right)$.

31. Find an equation of the line having the given slope and containing the given point: $m = -2$; $(4, -3)$.

32. Find an equation of the line containing the given pair of points: $(1, -6)$ and $(-3, 4)$.

33. Find an equation of the line containing the given point and parallel to the given line: $(1, -3)$; $4x + y = 2$.

34. Find an equation of the line containing the given point and perpendicular to the given line: $(5, 4)$; $x + 2y = 8$.

A person's income is generally related to the level of education attained. Use this table of data for Exercise 35.

Number, x, of years of schooling	Median income, y (in thousands)
12	$44
14	$58
16	$77

35. a) Use the two points (12, 44) and (16, 77) to find a linear function that fits the data.
   b) Use the function to estimate the income of a person who has attended school 18 years.

Solve.

36. The sum of three consecutive even integers is 90. Find the integers.

37. $4(2x - 1) - 5x \geq 2(x + 4) - 6$

38. $|3 - 2x| = 7$

_____

39. Find the value of k such that the graphs of $3x - 4y = 7$ and $y - 5 = kx$ are perpendicular.

40. Write an equation of a line parallel to the x-axis and 2 units above it.

NAME_____

CLASS_____SCORE_____GRADE_____

Determine whether the given points are solutions of the equation.

ANSWERS

1. $(-1,-4);\ 3x-6y=21$
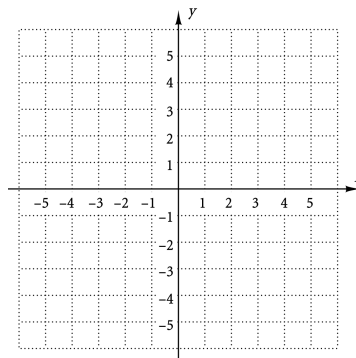
2. $(6,7);\ 4a-3b=3$

Graph.

1._____

3. $y=-2x+4$

4. $f(x)=-\dfrac{3}{2}x$

2._____

3. <u>See graph.</u>_____

4. <u>See graph.</u>_____

5. $g(x)=2+|x|$

6. $y=-\dfrac{4}{x}$

5. <u>See graph.</u>_____

6. <u>See graph.</u>_____

7. a)_____
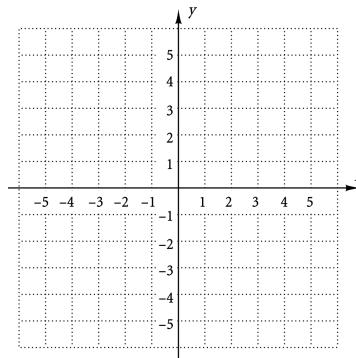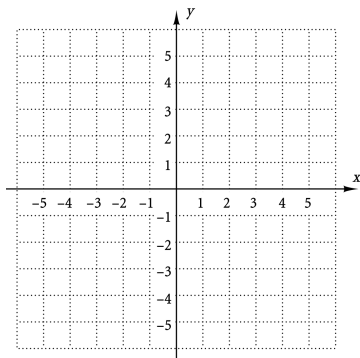
7. The function $L(t)=1.843t+12.327$ can be used to estimate the
   retail sales of lawn care items in the U.S., in billions of dollars, t
   years after 2004.
   a) Estimate the sales of lawn care items in the U.S. in 2008.
   b) In what year would the estimated sales be \$30.757 billion?

   b)_____

8._____

Determine whether the correspondence is a function.

8. catcher   6
    pitcher   7
    fielder   8
    umpire   9
    Louise   0

9. Oranges ⟶ Navel
    Apples ⟶ Washington
    ⟶ Michigan
    Cherries

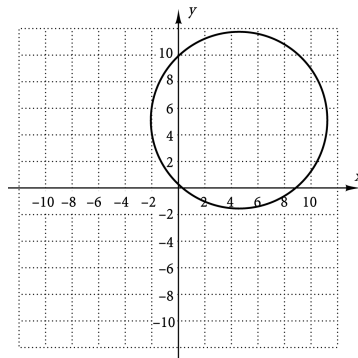9._____

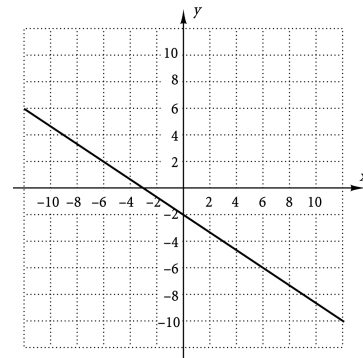**ANSWERS**

Find the function values.

10. $f(x) = -5x + 3$; $f(0)$ and $f(-6)$

10. _____

11. $g(x) = x^2 + 4$; $g(0)$ and $g(7)$

Determine whether each of the following is the graph of a function.

11. _____

12.   13.

12. _____

13. _____

14. a)_____

   b)_____
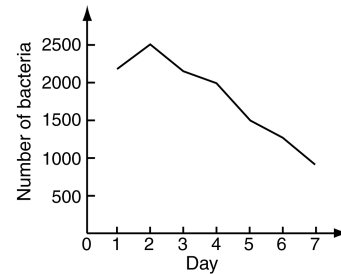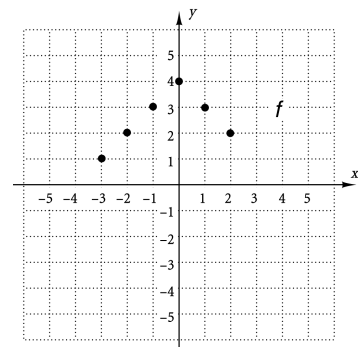
14.   The graph at right shows the number of bacteria present in an infection. The number of bacteria is given as a function of the day. Use the graph to answer the following.
       a) How many bacteria were present on day 2?
       b) How many bacteria were present on day 4?

15. a)_____

   b)_____

   c)_____

   d)_____

15.   For the graph of function *f* at right, determine
       a) $f(-1)$;
       b) the domain;
       c) all *x*-values such that $f(x) = 2$; and
       d) the range.

16. _____

Find the domain.

18. _____

16. $g(x) = 5 - |x|$ 17. $f(x) = \dfrac{4}{3x+1}$

Find the slope and the *y*-intercept.

19. _____

18. $f(x) = \dfrac{3}{8}x - 2$ 19. $4x - 3y = 12$
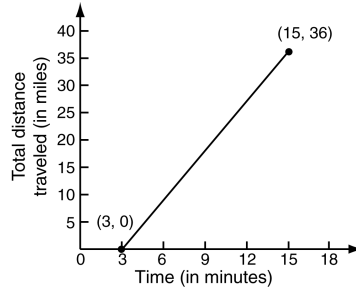
17. _____

TEST FORM B

_____

Find the slope, if it exists, of the line containing the following points.

20. $(7,-2)$ and $(2,5)$ 21. $(6.8, 3.4)$ and $(6.8, -2.7)$

ANSWERS

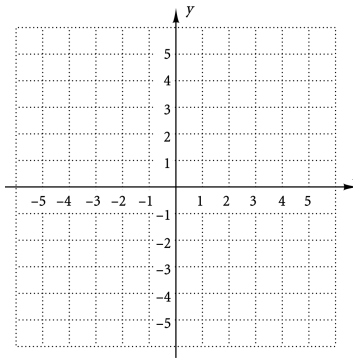22. Find the slope, or rate of change, of the graph at right.

23. Find the intercepts. Then graph the equation.

$4x - y = 4$

24. Graph using the slope and the y-intercept.

$f(x) = -\dfrac{3}{2}x + 2$
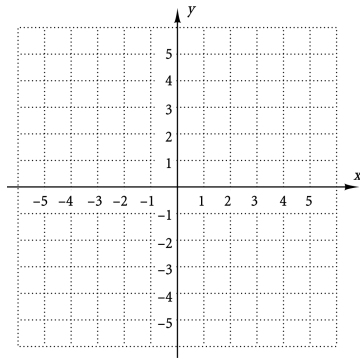
Graph.

25. $y = f(x) = -4$ 26. $3x = -15$

Determine whether the graphs of the given pair of lines are parallel or perpendicular.

27. $2y + x = 12,$
        $3x + 6y = 15$

28. $y + 5x = 17,$
        $x - 5y = 12$

20. _____

21. _____

22. _____

23. See graph. _____

24. See graph. _____

25. See graph. _____

26. See graph. _____

27. _____

28. _____

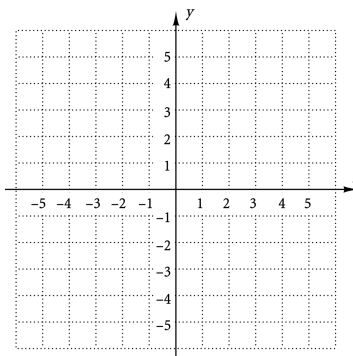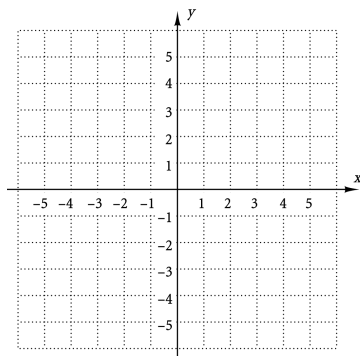|	
ANSWERS	29. Find an equation of the line that has the given characteristics: slope: -3; y-intercept: $(0, 4.6)$.

29. Find an equation of the line that has the given characteristics:
    slope: -3; y-intercept: $(0, 4.6)$.

29. _____

30. Find a linear function $f(x) = mx + b$ whose graph has the given slope and y-intercept:
    slope: 5.5; y-intercept: $\left(0, -\frac{4}{5}\right)$.

30. _____

31. Find an equation of the line having the given slope and containing the given point: $m = 4$; $(-2, 6)$.

31. _____

32. Find an equation of the line containing the given pair of points: $(3, -4)$ and $(-2, 5)$.

32. _____

33. Find an equation of the line containing the given point and parallel to the given line: $(-2, 4)$; $2x + y = 5$.

33. _____

34. Find an equation of the line containing the given point and perpendicular to the given line: $(5, -3)$; $2x + 6y = 9$.

34. _____

The average ACT scores at a small college have been increasing in recent years. Use this table of data for Exercise 35.

Year, x, since 2001	Average ACT score, y
0	20
1	22
2	22
3	24

35. a)_____

35. a) Use the two points (0, 20) and (3, 24) to find a linear function that fits the data.
    b) Use the function to estimate the average ACT score in 2008.

    b)_____

36. _____

Solve.
36. Nine more than twice a number is the same as seven less than four times the number. What is the number?

37. _____

37. $-5x + 6 < -4 \text{ or } 6 - x > 5$

38. _____

38. $|4x + 3| = 8$

39. _____

39. Find the value of a such that the graphs of $4y = ax + 2$ and $\frac{1}{5}y = \frac{1}{4}x + 7$ are parallel.

40. _____

40. Find the value of m such that the graph of $y = mx + 3$ has an x-intercept of $\left(\frac{1}{3}, 0\right)$.

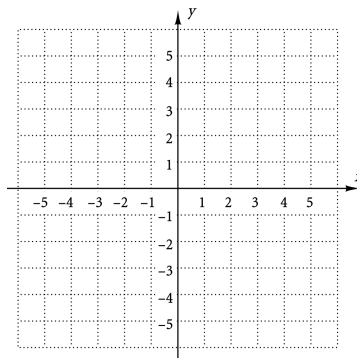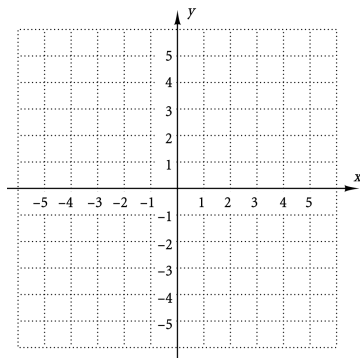Determine whether the given points are solutions of the equation.

ANSWERS

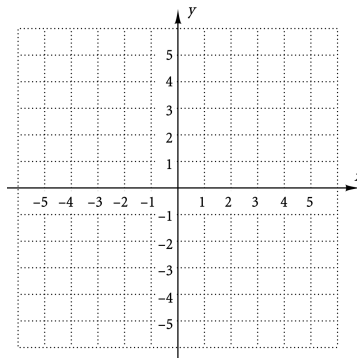1. $(2,-5);\ 3x-y=11$ 2. $(4,-2);\ 4c-d=14$

1. _____

Graph.

3. $y=2x-4$ 4. $f(x)=\dfrac{3}{5}x$

2. _____

3. See graph. _____

4. See graph. _____

5. $g(x)=4-|x|$ 6. $y=\dfrac{2}{x}$

5. See graph. _____

6. See graph. _____

7. a)_____
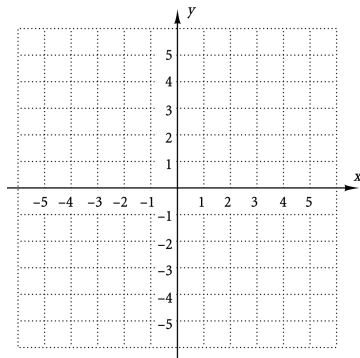
7. The function $R(t)=0.201t+7.417$ can be used to estimate the
    revenue from magazine publishing in the U.S., in billions of
    dollars, t years after 2003.
    a) Find the revenue in 2006.
    b) In what year will the revenue be $9.829 billion?
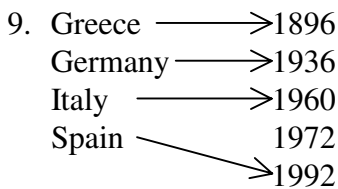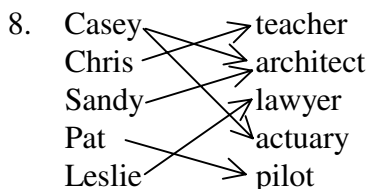
   b)_____

8. _____

Determine whether the correspondence is a function.

8. Casey   teacher   9. Greece ———→1896
    Chris   architect   Germany ———→1936
    Sandy   lawyer   Italy ———→1960
    Pat   actuary   Spain   1972
    Leslie   pilot   ———→1992

9. _____

NAME_____

ANSWERS

Find the function values.

10. $f(x) = -4x - 5$; $f(0)$ and $f(-3)$

10. _____

11. $g(x) = x^2 - 6$; $g(0)$ and $g(3)$

11. _____

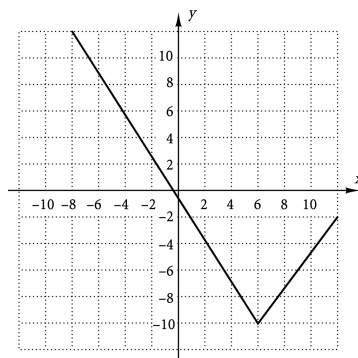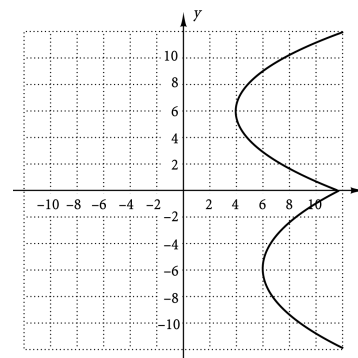Determine whether each of the following is the graph of a function.

12.   13.

12. _____

13. _____

14. a)_____

   b)_____

14. The graph at right shows the population of Stevens Bay. The population is given as a function of the year. Use the graph to answer the following.
   a) What was the population in year 2?
   b) What was the population in year 6?
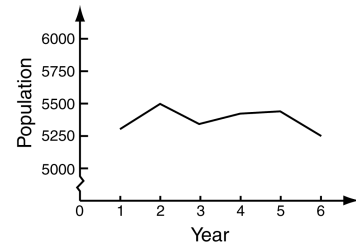
15. a)_____

   b)_____

   c)_____

   d)_____

15. For the graph of function f at right, determine
   a) $f(4)$;
   b) the domain;
   c) all x-values such that $f(x) = -5$;
   and d) the range.

16. _____

17. _____
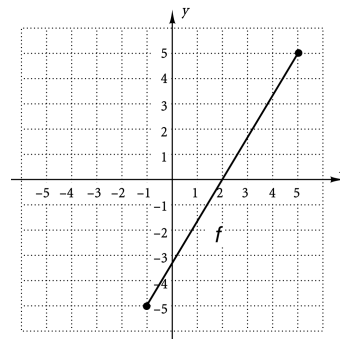
Find the domain.

16. $g(x) = x - 8$ 17. $f(x) = \dfrac{4}{3x + 7}$

18. _____

Find the slope and the y-intercept.

18. $f(x) = -\dfrac{7}{6}x + 9$ 19. $x - 6y = 12$

19. _____

NAME_____

TEST FORM C

Find the slope, if it exists, of the line containing the following points.

20. $(7,-3)$ and $(4,1)$

21. $(3.8, 7.4)$ and $(2.3, 7.4)$

22. Find the slope, or rate of change, of the graph at right.

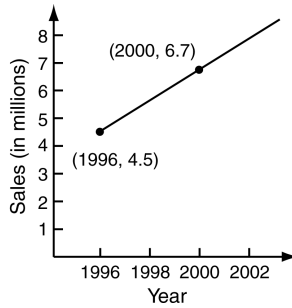23. Find the intercepts. Then graph the equation.

$2y + 4x = 8$
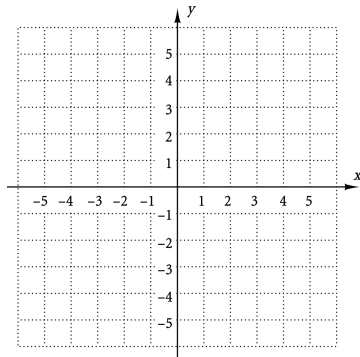
24. Graph using the slope and the y-intercept.

$f(x) = -\dfrac{4}{3}x - 1$
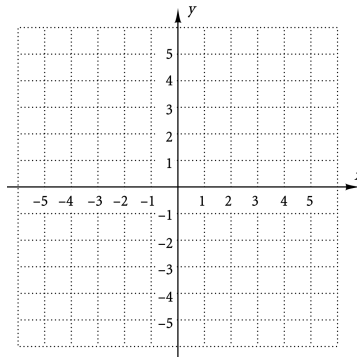
Graph.

25. $y = f(x) = 4$

26. $4x = -16$

Determine whether the graphs of the given pair of lines are parallel or perpendicular.

27. $8x - 5 = 4y,$
$2x - y = 7$

28. $y = -2x + 3,$
$x - 2y = 14$

ANSWERS

20. _____

21. _____

22. _____

23. See graph. _____

24. See graph. _____

25. See graph. _____

26. See graph. _____

27. _____

28. _____

TEST FORM C

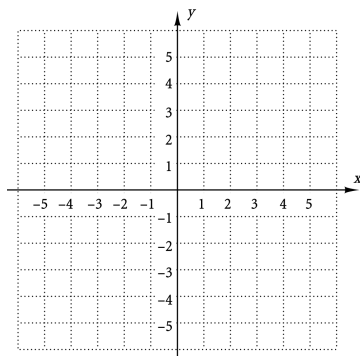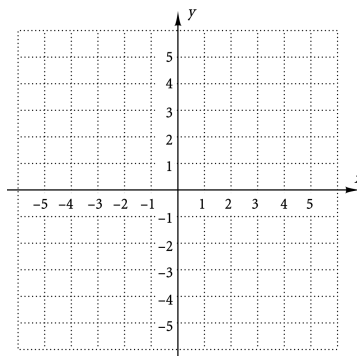|	
ANSWERS	29. Find an equation of the line that has the given characteristics: slope: -4; y-intercept: $(0, 6.3)$.
29. _____	30. Find a linear function $f(x) = mx + b$ whose graph has the given slope and y-intercept: slope: 5.4; y-intercept: $\left(0, -\dfrac{7}{8}\right)$.
30. _____	31. Find an equation of the line having the given slope and containing the given point: $m = 3$; $(-3, -2)$.
31. _____	32. Find an equation of the line containing the given pair of points: $(4, 3)$ and $(-3, 0)$.
32. _____	33. Find an equation of the line containing the given point and parallel to the given line: $(5, -2)$; $x - 6y = 8$.
33. _____	34. Find an equation of the line containing the given point and perpendicular to the given line: $(-3, 2)$; $3y + x = 5$.

34. _____

The number of hours a person spends on the Internet each year has increased recently. Use this table of data for Exercise 35.

Year, x, since 2000	Hours on Internet, y, per person per year
0	135
1	162
2	187
3	219

35. a)_____

    b)_____

35. a) Use the two points (0, 135) and (2, 187) to find a linear function that fits the data.
     b) Use the function to estimate the number of hours spent on the Internet per person in 2008.

36. _____

Solve.

37. _____

36. $4(8 - y) + 3y \geq 6(y + 1) - 5$

37. $-2x + 3 < -5 \ or - 3x + 1 > 4$

38. _____

38. $|6x - 5| > 4$

---

39. _____

39. Given $f(x) = 5x + 1$ and $g(x) = 3x^2 - 2$, find $f\big(g(-1)\big)$ and $g\big(f(-1)\big)$.

40. _____

40. Write an equation of a line parallel to the y-axis and passing through $(4, -3)$.
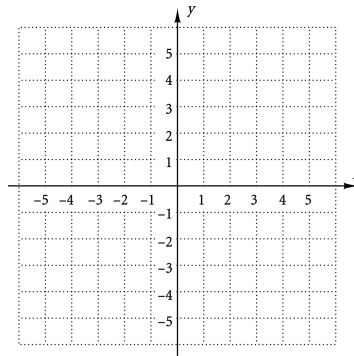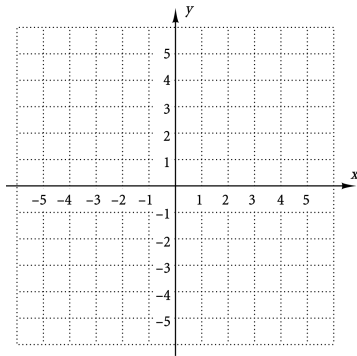
Determine whether the given points are solutions of the equation.

1. $(1,-3)$; $3x-5y=-12$ 2. $(-6,4)$; $2b-a=-16$

Graph.

3. $y=-4x+2$ 4. $f(x)=\dfrac{3}{2}x$

5. $g(x)=-3-|x|$ 6. $y=-\dfrac{2}{x}$
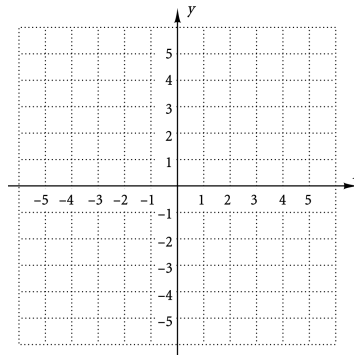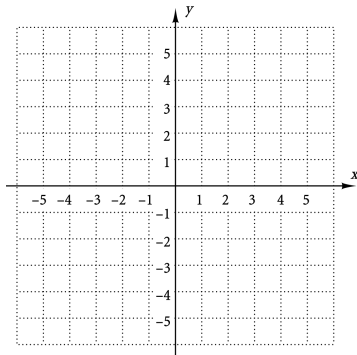
7. The function $S(t)=2.6t+32.0$ can be used to estimate the
    amount spent in the U.S., in dollars, per person per year on
    home video games t years after 2003.
    a) Find the amount spent per person in 2006.
    b) In what year will the spending per person be $73.60?

Determine whether the correspondence is a function.

8. table   alpha   9. water ——→ 24
    chair   beta   milk ——→ 28
    couch   gamma   30
    bench   rho   tea ——→ 32
    shelf   decaf ——→ 36

ANSWERS

1. _____

2. _____

3. See graph. _____

4. See graph. _____

5. See graph. _____

6. See graph. _____

7. a)_____

   b)_____

8. _____

9. _____

115

TEST FORM D

ANSWERS	Find the function values.

10. $f(x) = -3x - 7$; $f(0)$ and $f(5)$

10. _____

11. $g(x) = x^2 - 8$; $g(0)$ and $g(-6)$
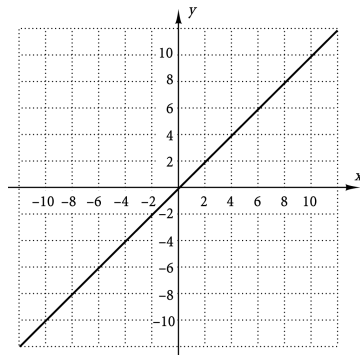
Determine whether each of the following is the graph of a function.

12.   13.

11. _____

12. _____

13. _____

14. a)_____

   b)_____
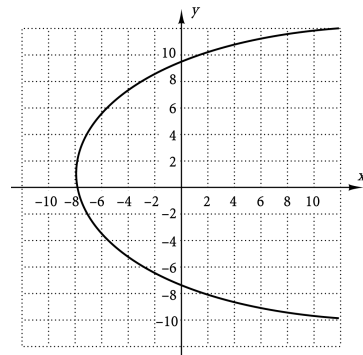
14.   The graph at right shows the number of bacteria present, in thousands, during an infection. The number of bacteria is given as a function of the day. Use the graph to answer the following.

15. a)_____

   b)_____

   a) How many bacteria were present on day 2?

   c)_____

   d)_____
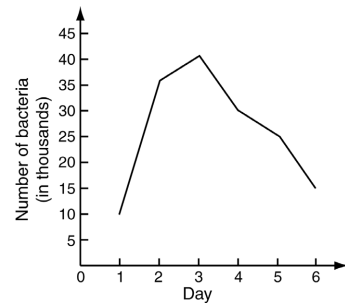
   b) How many bacteria were present on day 4?

15.   For the graph of function f at right, determine

16. _____

   a) $f(4)$;

   b) the domain;

17. _____

   c) all x-values such that $f(x) = -1$;

   and d) the range.

Find the domain.

18. _____
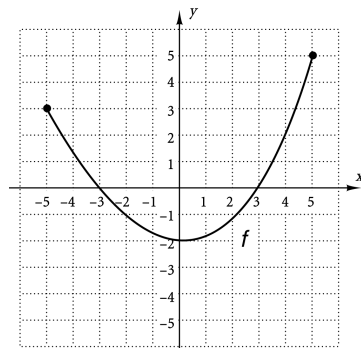
16. $g(x) = 4 - x^3$ 17. $f(x) = \dfrac{3}{5x - 6}$

Find the slope and the y-intercept.

19. _____

18. $f(x) = \dfrac{8}{7}x + 4$ 19. $-3x + 4y = 36$

TEST FORM D

Find the slope, if it exists, of the line containing the following points.

20. $(0, -3)$ and $(4, 3)$ 　　　21. $(7.8, -2.6)$ and $(7.8, 3.9)$

ANSWERS

22. Find the slope, or rate of change, of the graph at right.
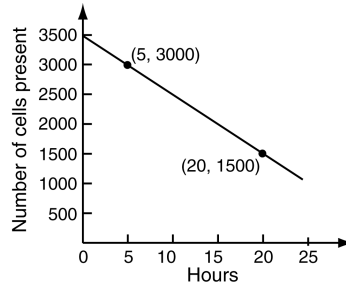
23. Find the intercepts. Then graph the equation.

$$2y + 5x = 10$$

24. Graph using the slope and the y-intercept.

$$y = -\frac{1}{3}x + 2$$
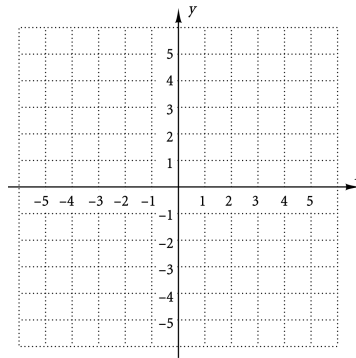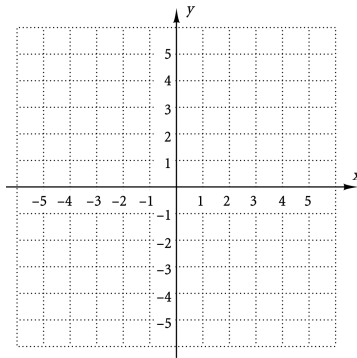
Graph.

25. $y = f(x) = -3$ 　　　26. $-4x = -16$
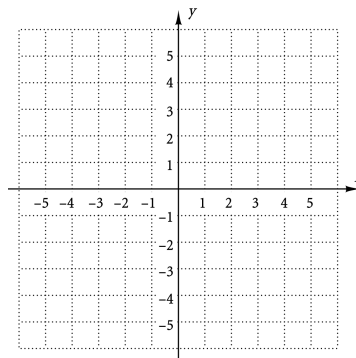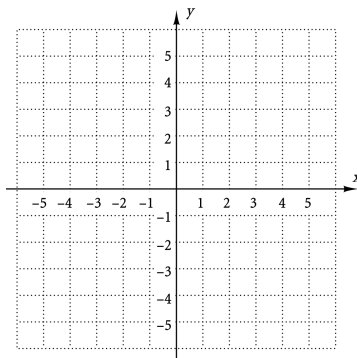
Determine whether the graphs of the given pair of lines are parallel or perpendicular.

27. $2x - y = 3$,
$2y + x = 5$

28. $4y + 2x = 5$,
$x = 5 - 2y$

20. _____

21. _____

22. _____

23. See graph. _____

24. See graph. _____

25. See graph. _____

26. See graph. _____

27. _____

28. _____

| ANSWERS | 29. Find an equation of the line that has the given characteristics: slope: 7; y-intercept: $(0, 3.6)$. |

29. _____

30. Find a linear function $f(x) = mx + b$ whose graph has the given slope and y-intercept:

slope: -2.3; y-intercept: $\left(0, \frac{2}{9}\right)$.

30. _____

31. Find an equation of the line having the given slope and containing the given point: $m = -2$; $(3, -4)$.

31. _____

32. Find an equation of the line containing the given pair of points: $(-5, 4)$ and $(-4, -2)$.
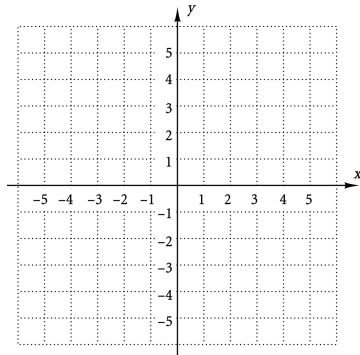
32. _____

33. Find an equation of the line containing the given point and parallel to the given line: $(7, -4)$; $3x - y = 4$.

33. _____

34. Find an equation of the line containing the given point and perpendicular to the given line: $(0, -2)$; $4x - y = 6$.

34. _____

The amount of revenue earned by a large corporation has increased in recent years. Use this table of data for Exercise 35.

Year, x, since 2002	Annual Revenue R (in billions)
0	$2.15
1	$2.25
2	$2.45
3	$2.42

35. a) _____

b) _____

35. a) Use the two points (0, 2.15) and (3, 2.42) to find a linear function that fits the data.
b) Use the function to estimate the annual revenue in 2008.

36. _____

Solve.

36. The sum of two consecutive odd integers is 136. Find the integers.

37. _____

37. $3(5 - y) + 2y > 4(y + 1) - 6$

38. _____

38. $-4x - 1 < -5 \, or \, 5 - 2x > 9$

39. _____

39. Find an equation of a horizontal line that passes through the point $(3, -2)$.

40. _____

40. Find the value of k such that the graph of $5x = k + 3y$ has a y-intercept of $(0, -4)$.

Determine whether the given points are solutions of the equation.

ANSWERS

1. $(-4, 0)$; $2x - 3y = -8$

2. $(6, -2)$; $a - 7b = -20$

1. _____

Graph.

3. $y = 2x - 3$

4. $f(x) = -\dfrac{4}{5}x$

2. _____

3. See graph._____

4. See graph._____

5. $g(x) = 4 + |x|$

6. $y = \dfrac{5}{x}$

5. See graph._____

6. See graph._____

7. a)_____

7. The function $S(t) = 0.2t + 3.2$ can be used to estimate the U.S. sales of exercise equipment, in billions of dollars, t years after 1998.
   a) Estimate the U.S. sales of exercise equipment in 2006.
   b) In what year will U.S. sales of exercise equipment be $5.4 billion?

   b)_____

8. _____

Determine whether the correspondence is a function.

8. doctor   biology   9. Abilene   1963
   actuary   math   Manhattan   1964
   historian   chemistry   Topeka   1979
   journalist   writing   Witchita   1986
   nurse   history   1995

9. _____

NAME_____

ANSWERS

10. _____

11. _____

12. _____

13. _____

14. a)_____

    b)_____

15. a)_____

    b)_____

    c)_____

    d)_____

16. _____

17. _____

18. _____

19. _____

Find the function values.

10. $f(x) = -6x - 1$; $f(0)$ and $f(-3)$

11. $g(x) = x^2 + 5$; $g(0)$ and $g(4)$

Determine whether each of the following is the graph of a function.

12.   13.
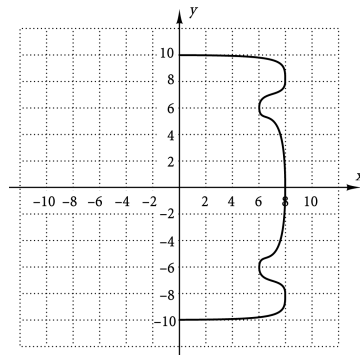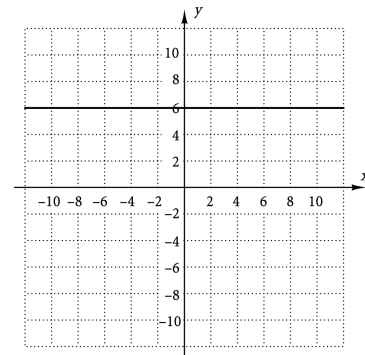
14. The graph at right shows the monthly sales of skateboards, in thousands, by a certain manufacturer. The sales are given as a function of the month. Use the graph to answer the following.
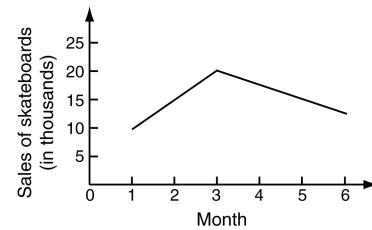
   a) What were the sales for month 1?
   b) What were the sales for month 5?

15. For the graph of function *f* at right, determine

   a) $f(3)$;
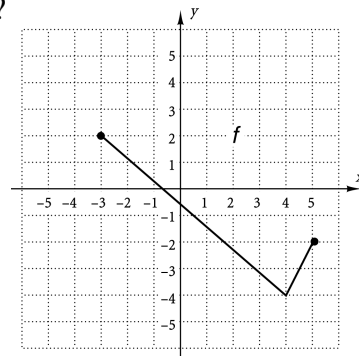
   b) the domain;

   c) all *x* values such that $f(x) = 1$;

   and d) the range.

Find the domain.

16. $g(x) = 8 - |x|$ 17. $f(x) = \dfrac{8}{7x + 4}$

Find the slope and the *y*-intercept.

18. $f(x) = -\dfrac{5}{4}x + 3$ 19. $-3y + 8x = 15$

120

Find the slope, if it exists, of the line containing the following points.

ANSWERS

20. $(9,5)$ and $(-4,3)$ 21. $(8.3, 4.7)$ and $(-2.2, 4.7)$

22. Find the slope, or rate of change, of the graph at right.

20. _____

21. _____
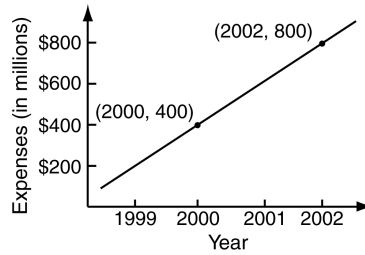
23. Find the intercepts. Then graph the equation.

$2x + y = 4$

24. Graph using the slope and the y-intercept.

$f(x) = \dfrac{1}{2}x - 3$
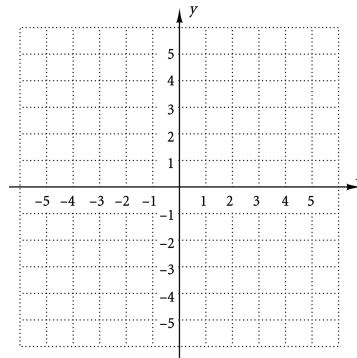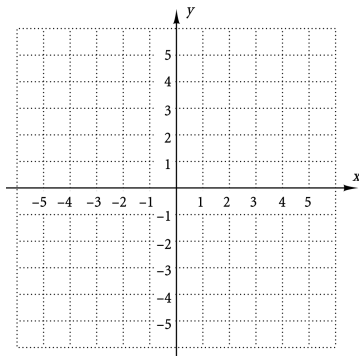
22. _____

23. See graph. _____

24. See graph. _____

Graph.

25. $y = f(x) = -1$ 26. $5x = -20$

25. See graph. _____

26. See graph. _____

27. _____
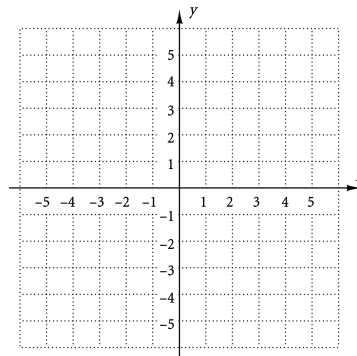
Determine whether the graphs of the given pair of lines are parallel or perpendicular.

27. $x - 4y = 5$,

$y = \dfrac{1}{4}x + 3$

28. $2y = 4x + 3$,

$3x + 6y = 7$

28. _____

ANSWERS

29. _____

30. _____

31. _____

32. _____

33. _____

34. _____

35. a)_____

   b)_____

36. _____

37. _____

38. _____

39. _____

40. _____

29. Find an equation of the line that has the given characteristics:
    slope: -3; y-intercept: $(0, 8.2)$.

30. Find a linear function $f(x) = mx + b$ whose graph has the given slope and y-intercept:
    slope: -4.9; y-intercept: $\left(0, \dfrac{9}{8}\right)$.

31. Find an equation of the line having the given slope and containing the given point: $m = 6$; $(-5, 0)$.

32. Find an equation of the line containing the given pair of points: $(4, -5)$ and $(-2, 5)$.

33. Find an equation of the line containing the given point and parallel to the given line: $(-6, 4)$; $4y + 5x = 10$.

34. Find an equation of the line containing the given point and perpendicular to the given line: $(3, -4)$; $x - 7y = 9$.

The revenue from the sale of bicycles at a small bike shop has increased in recent years. Use this table of data for Exercise 35.

Year, x, since 2002	Annual Revenue R (in thousands)
0	$85
1	$91
2	$100
3	$103

35. a) Use the two points (0, 85) and (3, 103) to find a linear function that fits the data.
    b) Use the function to estimate the revenue in 2009.

Solve.

36. The length of a rectangle is three more than twice the width. The perimeter is 42 ft. Find the dimensions.

37. $3(5 - 2x) + 4 \geq 5(3x - 1) + 2$

38. $|3x + 2| \leq 5$

_____

39. Given $f(x) = 2x^2 - 5$ and $g(x) = 3x + 4$, find $f(g(-2))$ and $g(f(-2))$.

40. Find k such that the line $5x + ky = -1$ is perpendicular to the line $9x - 4y = 17$.

Determine whether the given points are solutions of the equation.

1. $(3,4)$; $3x + y = 13$ 2. $(6,-1)$; $3x - 5y = 11$

ANSWERS

3. Graph: $y = -5x + 3$.   4. Graph: $y = -\dfrac{3}{4}x$.

1. _____

2. _____

3. See graph. _____
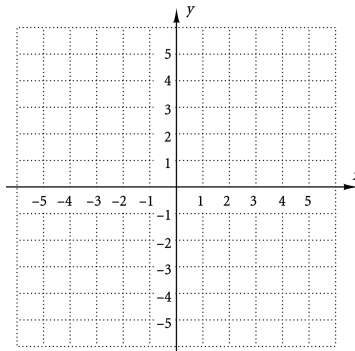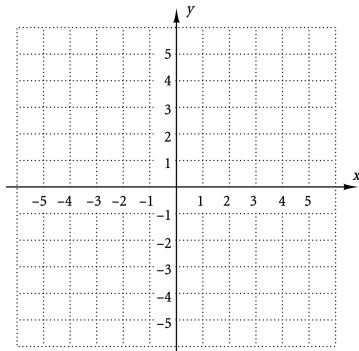
Determine whether the correspondence is a function.

5. Winter   56°   6. beef ⟶ 7
   Spring   89°   chicken   12
   Summer   17°   pork   14
   Fall   2°   fish

4. See graph. _____

7. The function $E(t) = 0.175t + 17.8$ can be used to estimate the tax expenditures on Social Security benefits for retired workers, in billions of dollars, t years after 2001.
   a) Estimate the tax expenditures on Social Security for retired workers in 2006.
   b) In what year will expenditures be $20.075 billion?

5. _____

6. _____

Find the function values.

8. $f(x) = -3x + 2$; $f(0)$ and $f(-3)$

9. $g(x) = x^2 + 6$; $g(0)$ and $g(2)$

10. Graph: $y = \dfrac{4}{x}$.   11. Graph: $g(x) = -1 + |x|$.
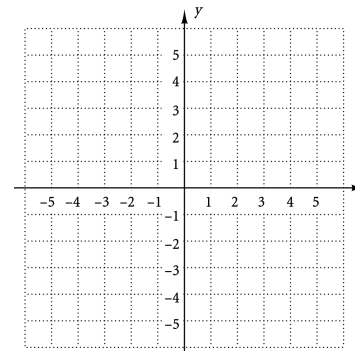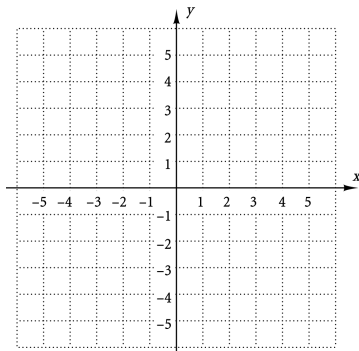
7. a)_____

   b)_____

8. _____

9. _____

10 See graph. _____

11. See graph. _____

123

NAME_____

ANSWERS

Determine whether each of the following is the graph of a function.

12.

13.

12. _____

13. _____

14. a)_____

  b)_____
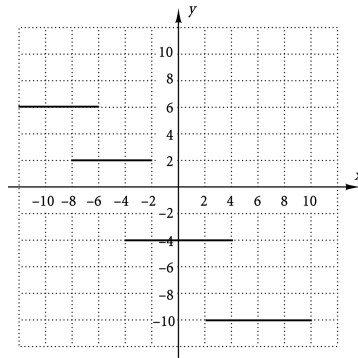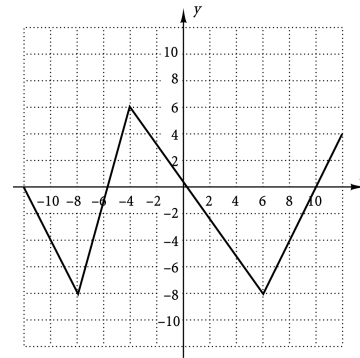
14. The graph at right shows the weekly revenue, in millions of dollars, from a recent release of a DVD. The revenue is given as a function of the week. Use the graph to answer the following.
   a) What was the revenue in week 2?
   b) What was the revenue in week 5?
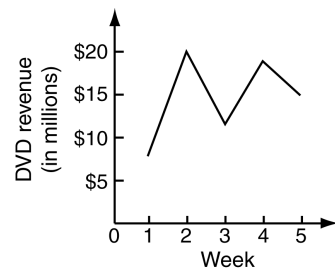
15. a)_____

  b)_____

  c)_____

  d)_____
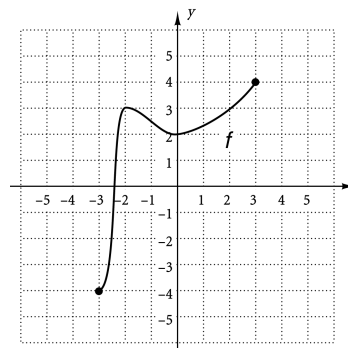
15. For the graph of function f at right, determine
   a) $f(0)$;
   b) the domain;
   c) all x-values such that $f(x) = 3$;
   and d) the range.

16. _____

17. _____

18. _____

Find the domain.

16. $g(x) = 2 + x^2$

17. $f(x) = \dfrac{10}{3x + 5}$

19. _____

Find the slope and the y-intercept.

18. $f(x) = -\dfrac{6}{5}x + 3$

19. $-4y - 9x = 8$

20. _____

Find the slope, if it exists, of the line containing the following points.

20. $(-4, -2)$ and $(3, 8)$

21. $(5.4, -5.7)$ and $(6.3, -5.7)$

21. _____

22. Find the slope, or rate of change, of the graph at right.

ANSWERS

22. _____
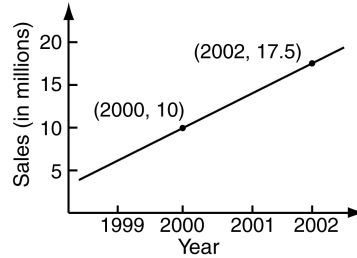
23. Find the intercepts. Then graph the equation.

$$-2x + 5y = 10$$
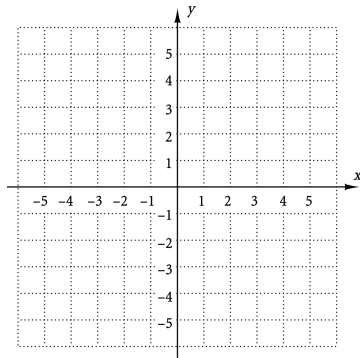
24. Graph using the slope and the y-intercept.

$$f(x) = \frac{1}{2}x + 2$$
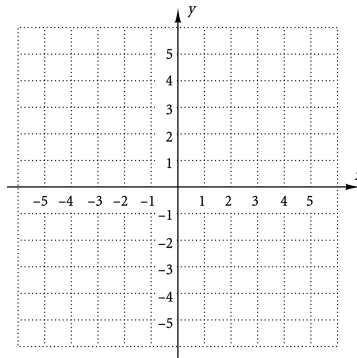
23. See graph._____

24. See graph._____
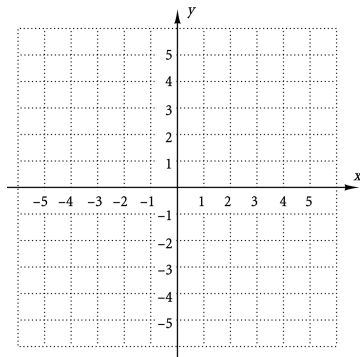
25. See graph._____

25. Graph: $y = f(x) = 2$.

26. Graph: $3x = -12$
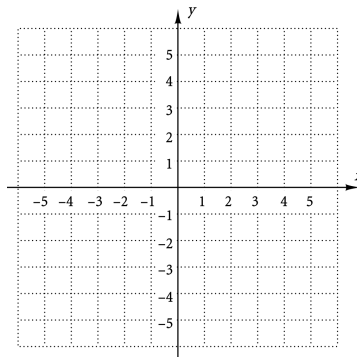
26. See graph._____

Determine whether the graphs of the given pair of lines are parallel or perpendicular.

27. $3x - 2 = y$,
    $6x = 7 + 2y$

28. $y + 3x = 15$,
    $20 + 6y = 2x$

29. Find an equation of the line that has the given characteristics:
    slope: 9; y-intercept: $(0, 7.1)$.

27. _____

28. _____

29. _____

ANSWERS

30. _____

31. _____

32. _____

33. _____

34. _____

35. a)_____

   b)_____

36. _____

37. _____

38. _____

39. _____

40. _____

30. Find a linear function $f(x) = mx + b$ whose graph has the given slope and y-intercept:

   slope: -3.6; y-intercept: $\left(0, \dfrac{4}{9}\right)$.

31. Find an equation of the line having the given slope and containing the given point: $m = -2$; $(-3, -1)$.

32. Find an equation of the line containing the given pair of points: $(6, -9)$ and $(4, 5)$.

33. Find an equation of the line containing the given point and parallel to the given line: $(2, -3)$; $x - 2y = 7$.

34. Find an equation of the line containing the given point and perpendicular to the given line: $(4, -1)$; $x - 5y = 4$.

Total expenses for a small manufacturing plant have increased in recent years. Use this table of data for Exercise 35.

Year, x, since 1999	Total expenses, y (in thousands)
0	$18.2
1	$21.5
2	$23.6
3	$27.3
4	$30.2

35. a) Use the two points (1, 21.5) and (3, 27.3) to find a linear function that fits the data.
   b) Use the function to estimate the total expenses in 2010.

Solve.

36. Four more than five times a number is the same as two less than four times the number. What is the number?

37. $7 - x < -3 \ or \ 4 - 2x > 6$

38. $|2 - 3x| = 8$

_____

39. Find the value of k such that the graphs of $3x - 4y = 12$ and $y - 3 = kx$ are perpendicular.

40. Find an equation of the horizontal line that passes through the point $(-6, 8)$.

Determine whether the given points are solutions of the equation.

1. $(-5,9)$; $2x-3y=17$ 2. $(1,-3)$; $2a-3b=10$

3. Graph: $y=2x+3$.   4. Graph: $y=\dfrac{x}{2}$.

ANSWERS

1. _____

2. _____

3. See graph._____

Determine whether the correspondence is a function.

5. Mary ⟶ 8
    Rosa ⟶ 12
    Kari ⟶ 19
    Jane ⟶

6. biology ⟶ 21
    chemistry ⟶ 25
    math ⟶ 29
    physics ⟶ 33

4. See graph._____

5. _____
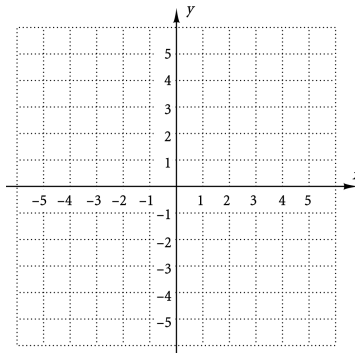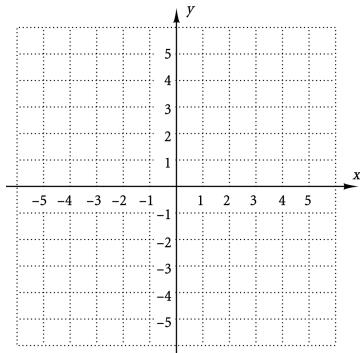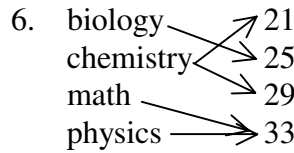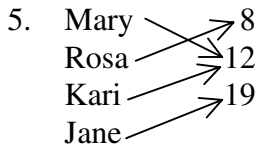
7. The function $S(t)=1.15t+41.3$ can be used to estimate the average annual salary of classroom teachers, in thousands of dollars, t years after 1999.
    a) Estimate the average annual salary of teachers in 2010.
    b) In what year will the average annual salary of teachers be $60.85 thousand?

Find the function values.

8. $f(x)=3+x^2$; $f(0)$ and $f(-3)$

9. $g(x)=7x-5$; $g(0)$ and $g(8)$

10. Graph: $y=-\dfrac{3}{x}$.   11. Graph: $g(x)=-3+|x|$.
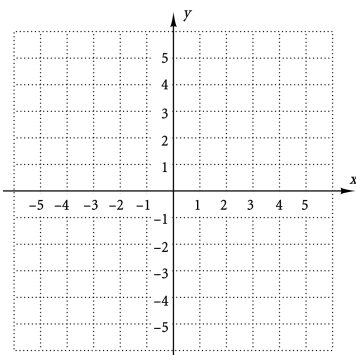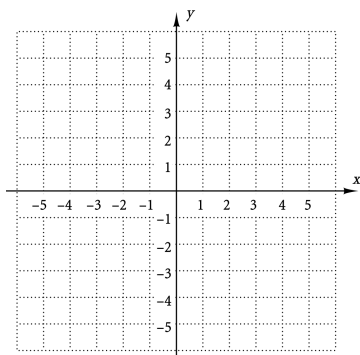
6. _____

7. a)_____

   b)_____

8. _____

9. _____

10 See graph._____

11. See graph._____

127

ANSWERS

Determine whether each of the following is the graph of a function.

12. _____

12.

13.

13. _____

14. a)_____

b)_____
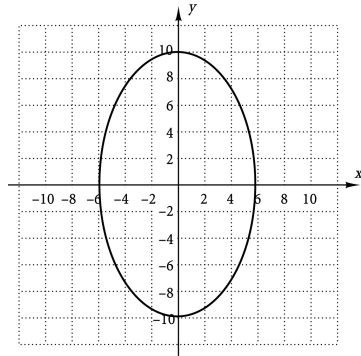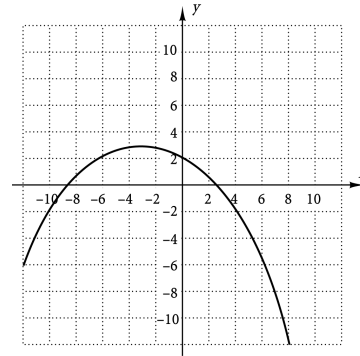
14. The graph at right shows the weekly revenue, in millions of dollars, from the sales of a popular paperback book. The revenue is given as a function of the week. Use the graph to answer the following.
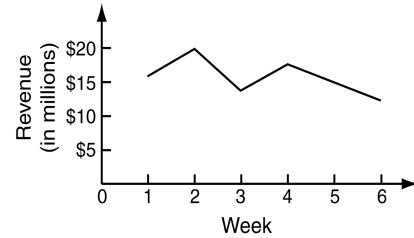
15. a)_____

b)_____

c)_____

d)_____

a) What was the revenue in week 2?
b) What was the revenue in week 5?

16. _____

15. For the graph of function f at right, determine

a) $f(-3)$;

17. _____

b) the domain;
c) all x-values such that $f(x)=0$;
and d) the range.

18. _____
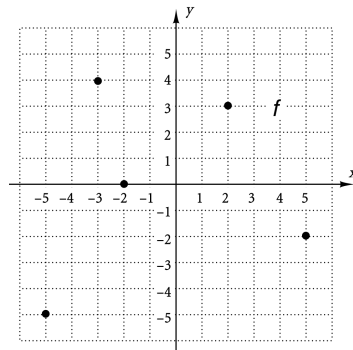
Find the domain.

16. $g(x)=3x-9$ 17. $f(x)=\dfrac{5}{8x-9}$

19. _____

Find the slope and the y-intercept.

20. _____

18. $f(x)=-\dfrac{6}{7}x+8$ 19. $-3y+5x=18$

Find the slope, if it exists, of the line containing the following points.

21. _____

20. $(6,-3)$ and $(-2,4)$ 21. $(-9.2, 3.7)$ and $(-9.2, 6.4)$

22. Find the slope, or rate of change, of the graph at right.

ANSWERS

22. _____
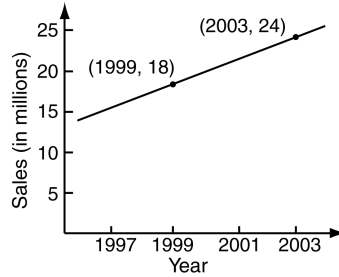
23. Find the intercepts. Then graph the equation.

    $6x + 4y = 12$

24. Graph using the slope and the y-intercept.

    $f(x) = \frac{2}{3}x + 4$

23. See graph._____
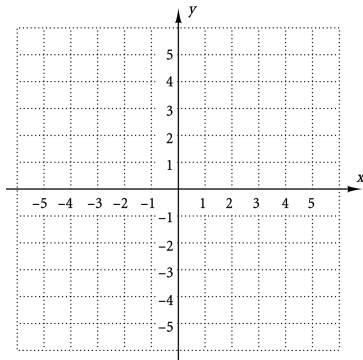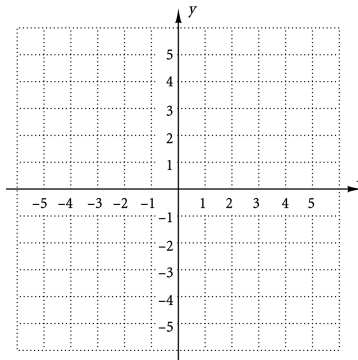
24. See graph._____

25. See graph._____

25. Graph: $y = f(x) = -2$.

26. Graph: $2x = -8$.

26. See graph._____

Determine whether the graphs of the given pair of lines are parallel or perpendicular.

27. $3x = 2y + 7$,
    $4x + 6y = 9$

28. $y = 7 - 4x$,
    $3y = 17 - 12x$

27. _____

28. _____

29. Find an equation of the line that has the given characteristics:
    slope: -5; y-intercept: $(0, 3.4)$.

29. _____

ANSWERS

30. _____

31. _____

32. _____

33. _____

34. _____

35. a)_____

    b)_____

36. _____

37. _____

38. _____

39. _____

40. _____

30. Find a linear function $f(x) = mx + b$ whose graph has the given slope and y-intercept:

    slope: -3.6; y-intercept: $\left(0, \frac{5}{8}\right)$.

31. Find an equation of the line having the given slope and containing the given point: $m = -2$; $(3, -5)$.

32. Find an equation of the line containing the given pair of points: $(7, -3)$ and $(3, 6)$.

33. Find an equation of the line containing the given point and parallel to the given line: $(-3, 3)$; $x + 3y = 17$.

34. Find an equation of the line containing the given point and perpendicular to the given line: $(-5, 4)$; $x + y = -6$.

The federal minimum hourly wage (adjusted to constant 2000 dollars) has decreased in recent years. Use this table of data for Exercise 35.

Year, x, since 1997	Federal minimum hourly wage, y
0	$5.53
1	$5.44
2	$5.32
3	$5.15

35. a) Use the two points (1, 5.44) and (3, 5.15) to find a linear function that fits the data.
    b) Use the function to predict the minimum wage in 2010.

Solve.

36. A piece of wire that is 60 ft long is cut into three pieces such that the second piece is 6 ft longer than the first and the third is five-thirds of the second. Find the length of each piece.

37. $3 - 4(x + 2) < 2x - 5(x - 3)$

38. $|5 - 3x| = 17$

_____

39. Find an equation of a vertical line that passes through the point $(-8, 3)$.

40. Find the value of a such that the graphs of $4y = ax + 6$ and $\frac{1}{2} y = \frac{1}{3} x + 2$ are parallel.

130

Determine whether the given points are solutions of the equation.

1. $(0,4)$; $x-3y=12$ 2. $(5,2)$; $y+4x=13$

3. Graph: $y=3x+2$.   4. Graph: $y=-\dfrac{x}{3}$.

ANSWERS

1. _____

2. _____

3. See graph._____

4. See graph._____

Determine whether the correspondence is a function.

5. cocoa ———→ night   6. Idaho ———→ 1999
    soda   morning   Iowa   2000
    tea ———→ noon   Ohio   2001
    water ———→ afternoon   Texas ———→ 2002
    coffee

5. _____
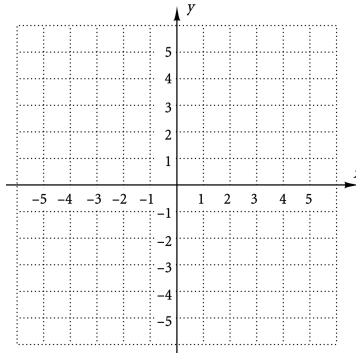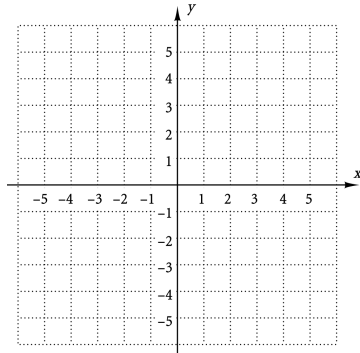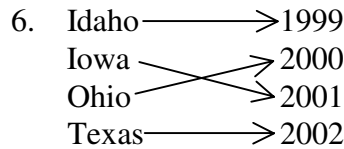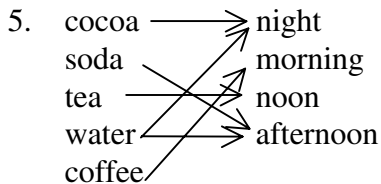
7. The function $S(t)=41.95t+607.12$ can be used to estimate
    the total U.S. sales of new cars, in billions of dollars, t years
    after 1999.
    a) Estimate the total U.S. sales of new cars in 2007.
    b) In what year will the total sales be \$1152.47 billion?

6. _____

7. a)_____

  b)_____

Find the function values.

8. $f(x)=5+9x$; $f(0)$ and $f(-2)$

9. $g(x)=3x^2-2$; $g(0)$ and $g(4)$

10. Graph: $g(x)=-1-|x|$.   11. Graph: $y=\dfrac{1}{x}$.
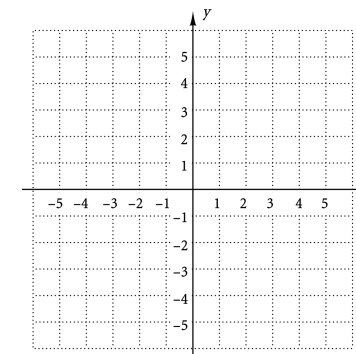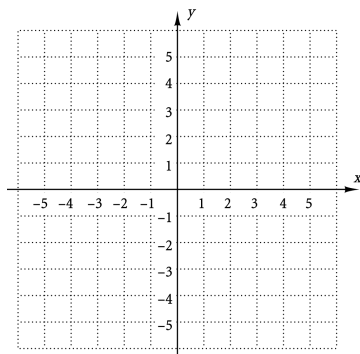
8. _____

9. _____

10 See graph._____

11. See graph._____

131

TEST FORM H

Determine whether each of the following is the graph of a function.
12.   13.

12._____

13._____

14. a)_____

b)_____
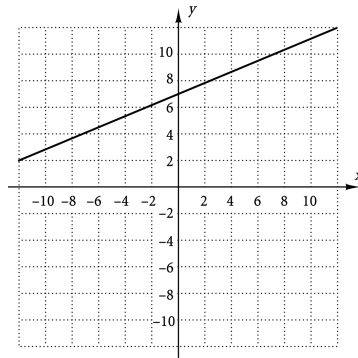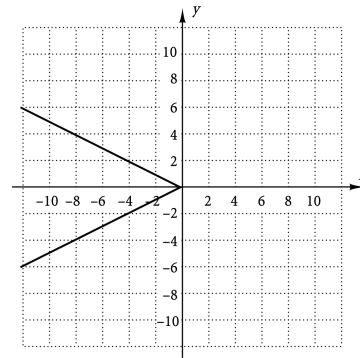
14.   The graph at right
approximates the weekly
revenue, in millions of dollars,
from a recent movie. The
revenue is given as a function
of the week. Use the graph to
answer the following.
a) What was the movie revenue for week 2?
b) What was the movie revenue for week 4?
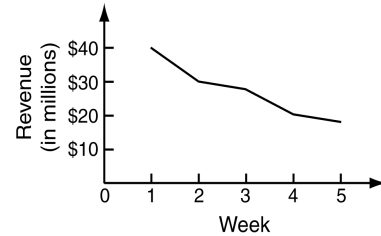
15. a)_____

b)_____

c)_____

d)_____

16._____

15.   For the graph of function f at right,
determine
a) $f(1)$;
b) the domain;
c) all x-values such that $f(x)=1$;
and d) the range.

17._____
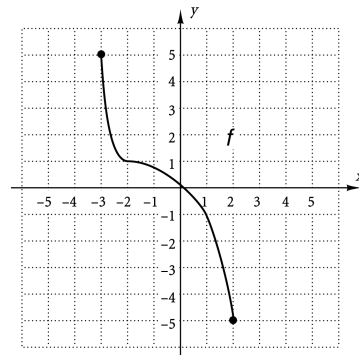
Find the domain.

16. $g(x)=10-|x|$ 17. $f(x)=\dfrac{9}{2x+7}$

Find the slope and the y-intercept.

18._____

18. $f(x)=-\dfrac{3}{4}x-8$ 19. $-3y+8x=-12$

Find the slope, if it exists, of the line containing the following points.

19._____

20._____

20. $(-2,-3)$ and $(-3,7)$ 21. $(9.3,-2.6)$ and $(9.3,4.7)$

21._____

22. Find the slope, or rate of change, of the graph at right.

22. _____
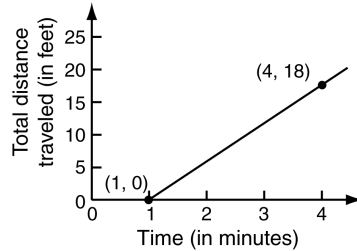
23. Find the intercepts. Then graph the equation.

$-2x - 3y = 6$

24. Graph using the slope and the *y*-intercept.

$f(x) = \dfrac{3}{4}x - 2$

23. See graph. _____

24. See graph. _____

25. See graph. _____
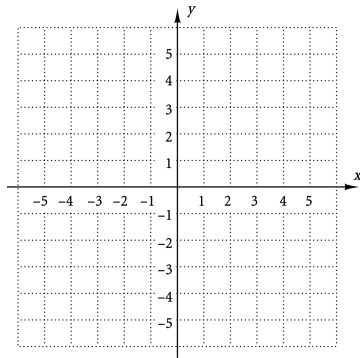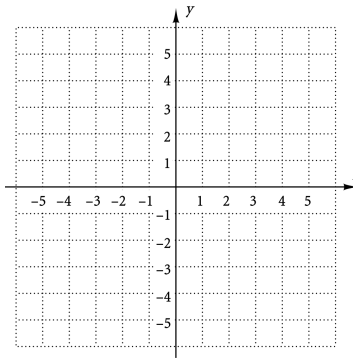
25. Graph: $y = f(x) = -5$.

26. Graph: $2x = 8$.
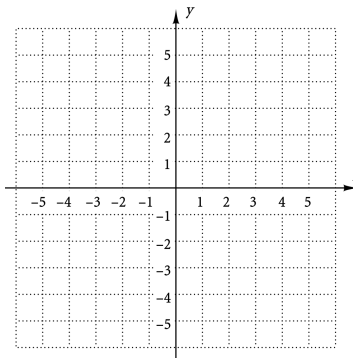
26. See graph. _____

27. _____

Determine whether the graphs of the given pair of lines are parallel or perpendicular.

28. _____

27. $3x - 2y = 5$,
    $6y = 9x + 5$

28. $9y = 5 - 3x$,
    $6x = 2y + 5$

29. Find an equation of the line that has the given characteristics: slope: -9; *y*-intercept: $(0, 2.3)$.

29. _____

ANSWERS

30. _____

31. _____

32. _____

33. _____

34. _____

35. a)_____

    b)_____

36. _____

37. _____

38. _____

39. _____

40. _____

30. Find a linear function $f(x) = mx + b$ whose graph has the given slope and y-intercept:

    slope: 5.2; y-intercept: $\left(0, -\frac{3}{5}\right)$.

31. Find an equation of the line having the given slope and containing the given point: $m = 3$; $(4, -2)$.

32. Find an equation of the line containing the given pair of points: $(6, 8)$ and $(-1, 4)$.

33. Find an equation of the line containing the given point and parallel to the given line: $(4, -1)$; $x - 2y = 3$.

34. Find an equation of the line containing the given point and perpendicular to the given line: $(-4, 0)$; $3y + 5 = x$.

The total revenue of Retailers, Inc. has increased in recent years. Use this table of data for Exercise 35.

Year, x, since 1999	Total revenue, R (in millions)
0	$27
1	$31
2	$33
3	$38

35. a) Use the two points (1, 31) and (3, 38) to find a linear function that fits the data.
    b) Use the function to predict the total revenue in 2008.

Solve.

36. $3(2x + 5) + x > 4(x - 7) + 6$

37. $8 - 2x < -3 \text{ or } -2x + 1 > 5$

38. $|2 - 5x| = 10$

---

39. Write an equation of a line parallel to the y-axis and 3 units to the right of it.

40. Find the value of k such that the graph of $3x - k = 5y$ has a y-intercept of $(0, -3)$.

1. Determine whether the given point is a solution of the equation.
    $(-3,1)$; $2y - x = 5$.

ANSWERS

Graph.

2. $f(x) = \dfrac{4}{3}x$ 3. $y = -\dfrac{2}{x}$

1. _____

2. <u>See graph.</u>_____

3. <u>See graph.</u>_____

4. Determine whether the correspondence is a function.
    Saints ———→ 7
    Bucs
    Falcons   9
    Panthers   10
                           11

4. _____
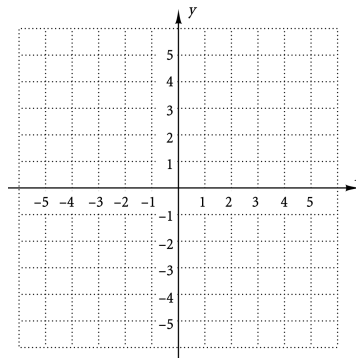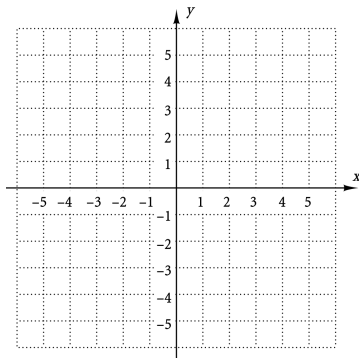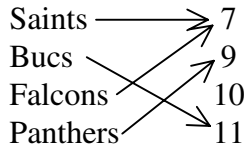
Find the function values.

5. $f(x) = -3x + 10$; $f(0)$ and $f(-3)$

5. _____

6. $g(x) = x^2 - 5$; $g(0)$ and $g(4)$

6. _____

Determine whether each of the following is the graph of a function.

7.   8.

7. _____

8. _____
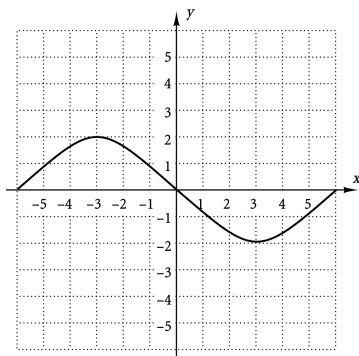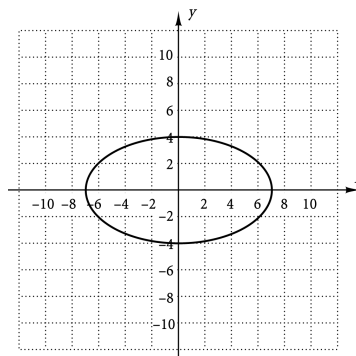
ALTERNATE TEST FORM 1

ANSWERS

9. a)_____

   b)_____

   c)_____

   d)_____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

17. _See graph._

9. For graph of function f at right, determine
    a) $f(-2)$;
    b) the domain;
    c) all x-values such that $f(x) = -1$;
    and d) the range.
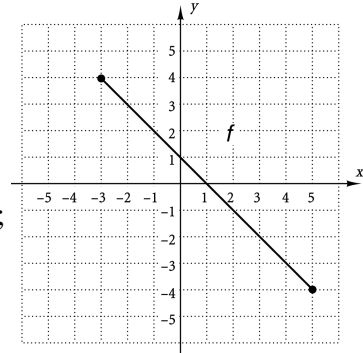
Find the domain.

10. $g(x) = 8 + x^2$ 11. $f(x) = \dfrac{7}{4x-3}$

Find the slope and the y-intercept.

12. $f(x) = \dfrac{2}{5}x - 6$ 13. $3y - 2x = 9$

Find the slope, if it exists, of the line containing the following points.

14. $(2, -8)$ and $(8, -6)$ 15. $(-6.5, 2.4)$ and $(-6.5, 4.6)$

16. Find the slope, or rate of change, of the graph at right.
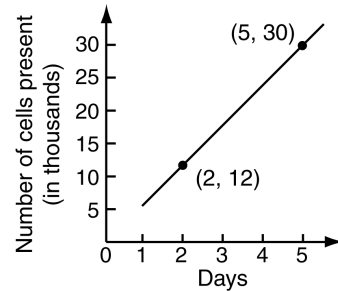
17. Find the intercepts. Then graph the equation.
     $3x - 5y = 15$
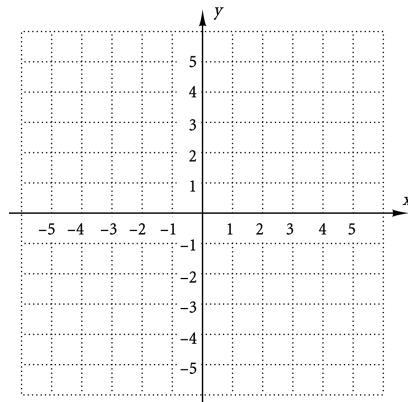
ALTERNATE TEST FORM 1

_____

18. Graph using the slope and
     the *y*-intercept.

     $f(x) = -\dfrac{3}{4}x + 1$
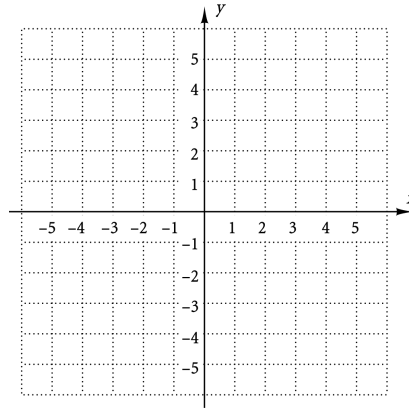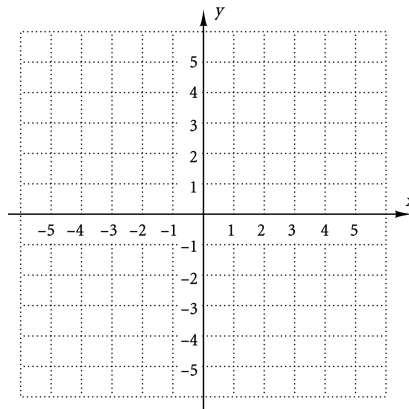
ANSWERS

18. See graph.

19. See graph.

19. Graph: $y = f(x) = -2$.

20. _____

20. Determine whether the graphs of the given pair of lines are
     parallel or perpendicular. $3y - x = 8,$
                                        $6x + 2y = 9$

21. _____

21. Find a linear function $f(x) = mx + b$ whose graph has the given
     slope and *y*-intercept:

        slope: -5.9; *y*-intercept: $\left(0, \dfrac{1}{3}\right)$.

22. Find an equation of the line having the given slope and
     containing   the given point: $m = -3$; $(1, -4)$.

22. _____

ALTERNATE TEST FORM 1

ANSWERS

23. _____

24. _____

25. a)_____

   b)_____

26. _____

27. _____

28. _____

29. _____

30. _____

23. Find an equation of the line containing the given pair of points:
   $(-2, 7)$ and $(1, 6)$.

24. Find an equation of the line containing the given point and parallel to the given line:
   $(3, -2)$; $5x - y = 6$.

The starting salaries for first-year elementary teachers at Egads Academy have increased in recent years. Use the following table of data for Exercise 25.

Year, x, since 2001	Starting salary, s (in thousands)
0	$32.4
1	$32.9
2	$33.9
3	$34.5

25. a) Use the two points $(0, 32.4)$ and $(3, 34.5)$ to find a linear function that fits the data.
   b) Use the function to estimate the starting salary for a first-year teacher in 2010.

Solve.

26. An auto dealership reduces the price of a used car 15% to a sale price of $7225. What was the original price?

27. $6 - x < -5 \, or \, 5 - 3x > 8$

28. $|4 - 5x| = 9$

---

29. Find the value of *m* such that the graph of $y = mx - 2$ has an
   x-intercept of $\left(-\frac{3}{2}, 0\right)$.

30. Given $f(x) = 6 + 3x^2$ and $g(x) = 2x - 1$, find $f(g(-3))$ and
   $g(f(-3))$.

NAME_____

CLASS_____SCORE_____GRADE_____

---

1. Determine whether the given point is a solution of the equation. $(-4, 2)$; $2y - x = -10$.

ANSWERS

1. _____

Graph.

2. $y = -\dfrac{2}{3}x$ 3. $y = 2 - |x|$
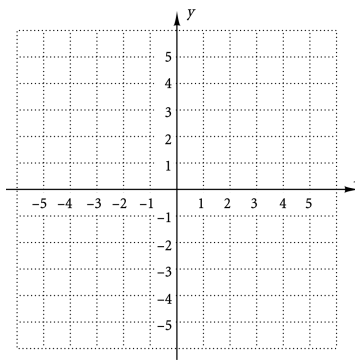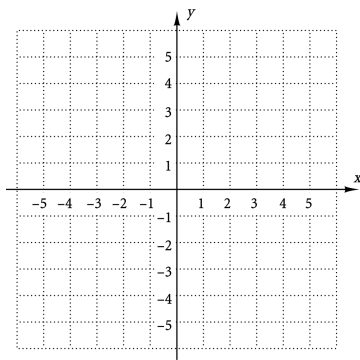
2. See graph. _____

3. See graph. _____

4. Determine whether the correspondence is a function.

4. _____

Pistons ⟶ NBA Championship
Cavilers
Bulls ⟶ No NBA Championship
Bucks
Pacers
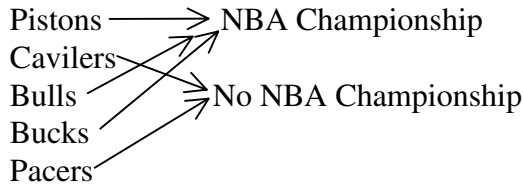
5. _____

Find the function values.

5. $f(x) = 9 - x^2$; $f(0)$ and $f(-2)$

6. _____

6. $g(x) = 8x - 3$; $g(0)$ and $g(-4)$

7. The function $S(t) = 0.87t + 4.92$ can be used to estimate the sales of U.S. Savings Bonds, in billions of dollars, t years after 1998.
   a) Estimate sales of U.S. Savings Bonds in 2008.
   b) In what year will the sales of U.S. Savings Bonds be $18.84 billion?

7. a) _____

   b) _____

ALTERNATE TEST FORM 2

ANSWERS

8. _____

9. _____

10. a)_____

   b)_____

   c)_____

   d)_____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

Determine whether each of the following is the graph of a function.
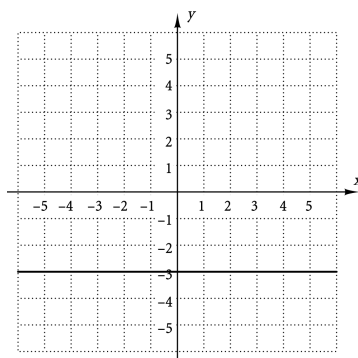
8.   9.
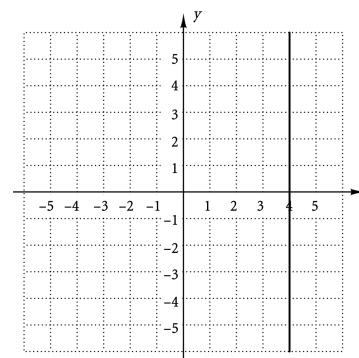
10. For graph of function f at right, determine
   a) $f(4)$;
   b) the domain;
   c) all x-values such that $f(x)=0$;
   and d) the range.
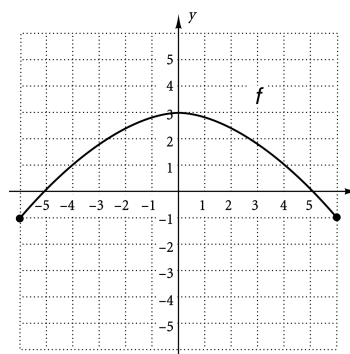
Find the domain.

11. $g(x)=\dfrac{4}{2x+1}$ 12. $f(x)=-2|x|+7$

Find the slope and the y-intercept.

13. $f(x)=\dfrac{1}{3}x+4$ 14. $-6y-7x=9$

Find the slope, if it exists, of the line containing the following points.

15. $(-5,-2)$ and $(3,5)$ 16. $(1.9,-3.1)$ and $(-4.2,-3.1)$

140

ALTERNATE TEST FORM 2

17. Find the intercepts. Then graph the equation.
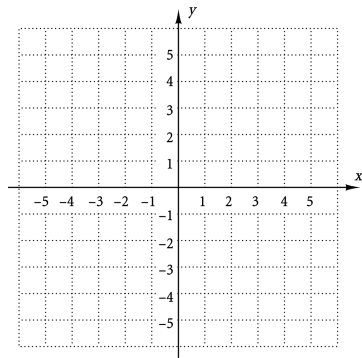
$$-2x + y = -4$$

18. Graph using the slope and the *y*-intercept.

$$f(x) = -\frac{3}{2}x + 4$$
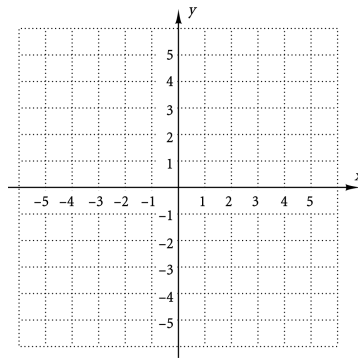
ANSWERS

17. <u>See graph.</u>

18. <u>See graph.</u>

19. Graph: $-5x = 15$.

19. <u>See graph.</u>
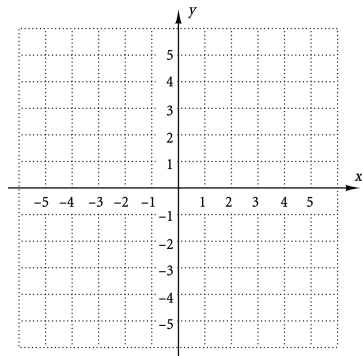
20. Determine whether the graphs of the given pair of lines are parallel or perpendicular. $y - 4x = 9,$
$8x + 5 = 2y$

20. _____

21. _____

21. Find an equation of the line that has the given characteristics:
slope: -8; *y*-intercept: $(0, 5.1)$.

22. Find an equation of the line having the given slope and containing the given point:
$m = 2$; $(5, -2)$.

22. _____

ALTERNATE TEST FORM 2

ANSWERS

23. _____

24. _____

25. a)_____

  b)_____

26. _____

27. _____

28. _____

29. _____

30. _____

23. Find an equation of the line containing the given pair of points:
    $(-4,3)$ and $(-1,5)$.

24. Find an equation of the line containing the given point and
    perpendicular to the given line:
    $(5,-3)$; $y+6x=-2$.

The total revenue of Lee's Snacks has increased in recent years. Use
the following table of data for Exercise 25.

Year, x, since 2000	Total revenue, R (in thousands)
0	$21.1
1	$24.5
2	$27.2
3	$29.5

25. a) Use the two points $(0, 21.1)$ and $(3, 29.5)$ to find a linear
      function that fits the data.
    b) Use the function to estimate the total revenue in 2008.

Solve.

26. The first angle of a triangle is three times as large as the third
    angle. The second angle is four degrees more than four times
    the third. How large are the angles?

27. $2(3x-2)+2x \geq 3(x-7)+2$

28. $|7-3x|=16$

---

29. Find k such that the line $3x-ky=-4$ is parallel to the line
    $8x+2y=11$

30. Given $f(x)=2x^2+5$ and $g(x)=7-x$, find $f(g(-2))$ and
    $g(f(-2))$.

ALTERNATE TEST FORM 3   CLASS_____SCORE_____GRADE_____

1. Determine whether the given point is a solution of the equation.
    $(-2,-3)$; $3y-4x=-1$.

ANSWERS

Graph.
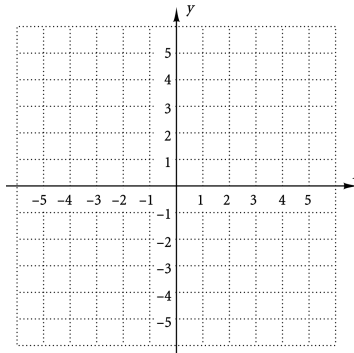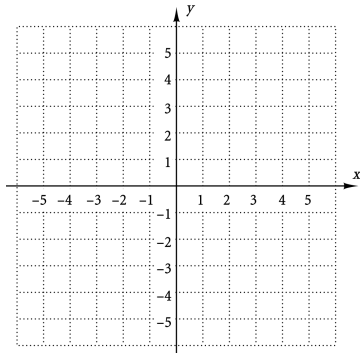
1. _____

2. $y=2x-3$ 3. $y=3+|x|$

2. See graph._____

3. See graph._____

4. Determine whether the correspondence is a function.
    Alabama ————→ 1950
    Mississippi ——→, 1983
    West Virginia ⟍↗ 1972
    North Carolina——→1947
    Tennessee

4. _____

Find the function values.

5. _____
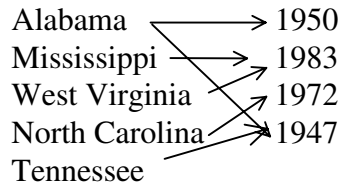
5. $f(x)=12-7x$; $f(0)$ and $f(-2)$

6. $g(x)=3-x^2$; $g(0)$ and $g(-5)$

6. _____

Determine whether each of the following is the graph of a function.

7.   8.

7. _____

8. _____
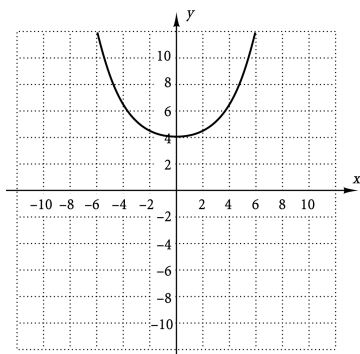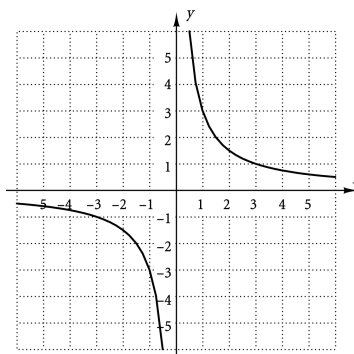
ALTERNATE TEST FORM 3

ANSWERS

9. a)_____

b)_____

10. a)_____

b)_____

c)_____

d)_____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

17. _See graph._____

9. The graph at right shows the monthly sales, in millions of dollars, for a new model car. The sales are given as a function of the month. Use the graph to answer the following questions.
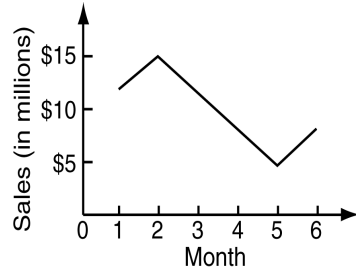
a) What were the new model car sales in month 2?

b) What were the new model car sales in month 5?

10. For the graph of function f at right, determine

a) $f(3)$;

b) the domain;

c) all x-values such that $f(x) = -3$;

and d) the range.
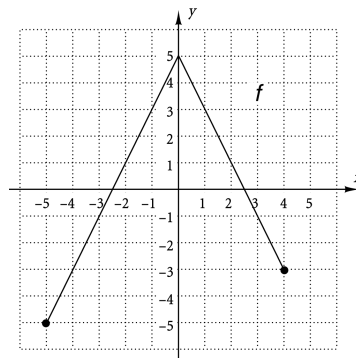
Find the domain.

11. $g(x) = 4 + x^2$ 12. $f(x) = \dfrac{7}{6x-1}$

Find the slope and the y-intercept.

13. $f(x) = -\dfrac{1}{5}x - 1$ 14. $-2y + x = 20$

Find the slope, if it exists, of the line containing the following points.

15. $(7, 8)$ and $(-2, -5)$ 16. $(-10.2, 3.6)$ and $(4.1, 3.6)$

17. Graph using the slope and the y-intercept.

$y = \dfrac{5}{3}x - 1$

NAME_____
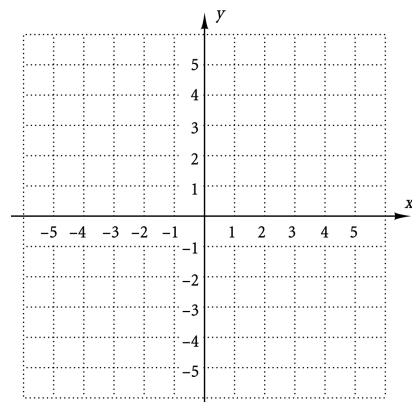
ALTERNATE TEST FORM 3

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18. Graph: $4x = 12$
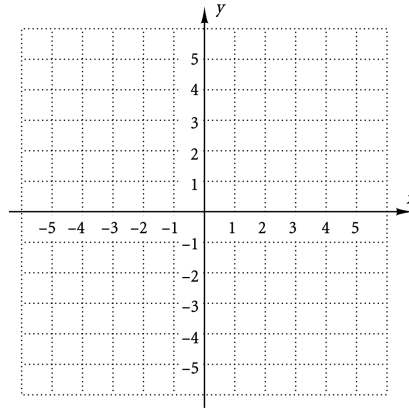
19. Graph: $y = f(x) = -5$.
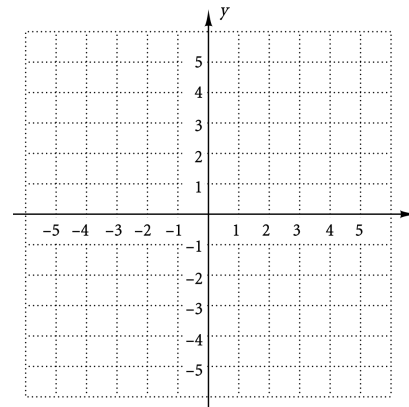
20. Determine whether the graphs of the given pair of lines are parallel or perpendicular. $3x = 6y + 4$,
$x - 2y = 9$

21. Find an equation of the line that has the given characteristics:
slope: -3; y-intercept: $(0, 2.7)$.

22. Find a linear function $f(x) = mx + b$ whose graph has the given slope and y-intercept:
slope: 1.6; y-intercept: $\left(0, -\dfrac{5}{8}\right)$

ANSWERS

18. _See graph._____

19. _See graph._____

20. _____

21. _____

22. _____

ALTERNATE TEST FORM 3

ANSWERS

23. _____

24. _____

25. a)_____

   b)_____

26. _____

27. _____

28. _____

29. _____

30. _____

23. Find an equation of the line containing the given point and perpendicular to the given line:
$$(-1,-2); \quad x+4y=8.$$

24. Find an equation of the line containing the given point and parallel to the given line:
$$(-3,5); \quad 3y-2x=12.$$

The expenses of a computer consulting firm have increased in recent years.   Use the following table of data for Exercise 25.

Year, x, since 1998	Expenses, E (in thousands)
0	$132
2	$146
4	$155
6	$169

25.   a) Use the two points $(0,132)$ and $(4,155)$ to find a linear function that fits the data.
   b) Use the function to estimate the expenses in 2010.

Solve.

26.   The length of a rectangle is nine less than three times the width. The perimeter is 118 m. Find the dimensions.

27. $6-4(x-3)+5 \geq 2(3x+1)+6$

28. $-4x+3<-5 \, or \, 5-x>6$

---

29.   Write an equation of a line parallel to the y-axis and passing through $(-7,5)$.

30.   Find the value of k such that the graphs of $3x+5y=9$ and $2y-6=kx$ are perpendicular.

NAME_____

MULTIPLE CHOICE TEST A   CLASS_____SCORE_____GRADE_____

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1. Which of the following is a solution of $4a - b = 17$?

    a) $(3, -5)$ b) $(2, -1)$ c) $(1, -3)$ d) $(-1, 11)$

2. Which of the following is the graph of $y = -\dfrac{2}{3}x - 2$?

    a)   b)

    c)   d)
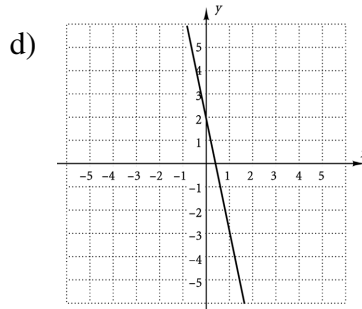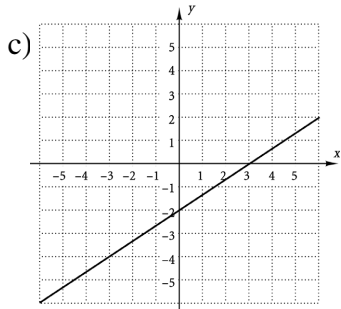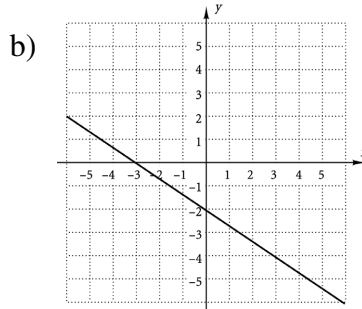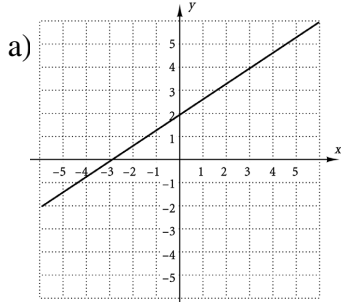
3. Which of the following is the graph of $g(x) = 3 - |x|$?

    a)   b)

    c)   d)
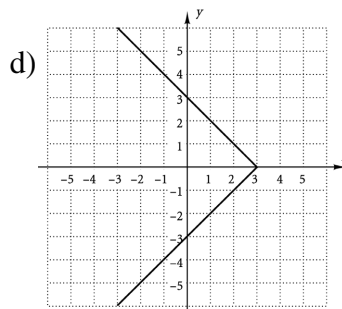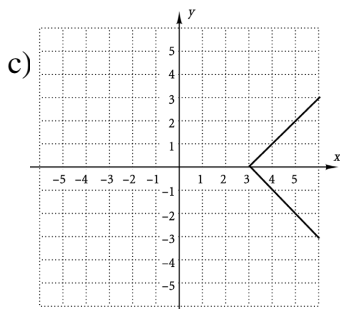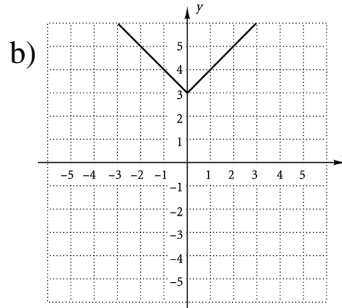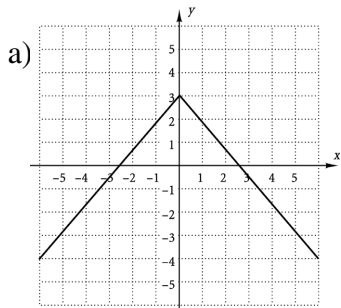
ANSWERS

1. _____

2. _____

3. _____

MULTIPLE CHOICE TEST A

ANSWERS	4. The function $V(t) = 0.116t + 1.556$ can be used to estimate the total value (in billions of dollars) of import dairy products into the U.S. t years after 1999. Estimate the value of import dairy products into the U.S. in 2010.

ANSWERS

4. _____

   4. The function $V(t) = 0.116t + 1.556$ can be used to estimate the total value (in billions of dollars) of import dairy products into the U.S. t years after 1999. Estimate the value of import dairy products into the U.S. in 2010.

     a) \$2.716 billion   b) \$2.832 billion
     c) \$4.126 billion   d) \$6.283 billion

5. _____

   5. For the graph of f at right, determine $f(4)$ and the domain of f.
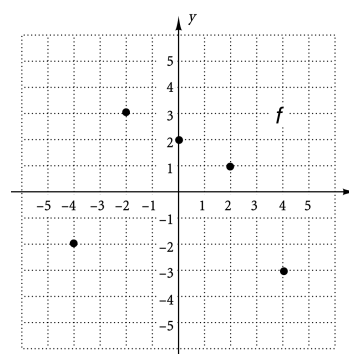
     a) -3; $\{x \mid x \text{ is a real number}\}$
     b) 4; $[-3,3]$
     c) -3; $\{-3, -2, 1, 2, 3\}$
     d) -3; $\{-4, -2, 0, 2, 4\}$

6. _____

   6. Find the domain: $f(x) = x^2 + 1$.

     a) $(-\infty, 1]$ b) $[0, \infty)$ c) $[1, \infty)$ d) All real numbers

7. _____

   7. Find the slope and the y-intercept of $-4y + 3x = -8$.

     a) Slope: $\frac{3}{4}$; y-intercept: $(0, -2)$

     b) Slope: $\frac{3}{4}$; y-intercept: $(0, 2)$

     c) Slope: $-\frac{4}{3}$; y-intercept: $\left(0, -\frac{1}{2}\right)$

     d) Slope: $-\frac{4}{3}$; y-intercept: $\left(0, \frac{1}{2}\right)$

NAME_____

MULTIPLE CHOICE TEST A

---

8. Find the slope of the line containing $(6, -2)$ and $(3, -3)$.

   a) $-\dfrac{5}{3}$ b) $\dfrac{5}{3}$ c) $\dfrac{3}{5}$ d) Not defined

   ANSWERS

   8. _____

9. Find the slope of the line containing $(5.9, -5.1)$ and $(7.6, -5.1)$.

   a) -6 b) 0 c) $-\dfrac{1}{6}$ d) Not defined

   9. _____

10. Find a linear function $f(x) = mx + b$ whose graph has slope -9 and y-intercept $(0, 7)$.

    a) $f(x) = -6x + 5$ b) $f(x) = -\dfrac{1}{6}x + 5$

    c) $f(x) = -9x + 7$ d) $f(x) = -\dfrac{7}{9}x + 9$

    10. _____

11. Find an equation of the line containing $(3, -1)$ with slope 2.

    a) $y = 2x - 1$ b) $y = 2x - 7$
    c) $y = 2x + 5$ d) $y = 2x + 3$

    11. _____

12. Find an equation of the line containing the points $(-1, 11)$ and $(-3, 7)$.

    a) $y = 2x + 13$ b) $y = -x + 4$
    c) $y = x + 10$ d) $y = -2x + 9$

    12. _____

13. Find an equation of the line containing the point $(4, -1)$ and parallel to the line $y = -3x + 4$.

    a) $y = -3x + 11$ b) $y = 3x - 13$
    c) $y = \dfrac{1}{3}x - \dfrac{7}{3}$ d) $y = -3x - 1$
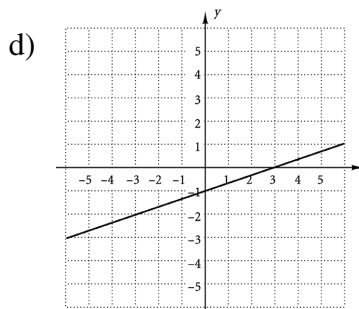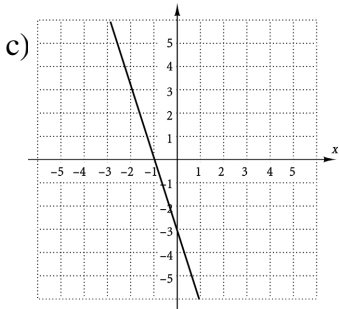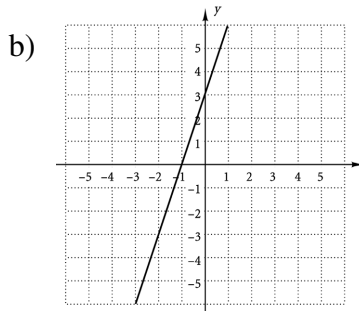
    13. _____

MULTIPLE CHOICE TEST A

ANSWERS

14. _____

15. _____

16. _____

17. _____

18. _____

19. _____

20. _____

14. Find an equation of the line containing the point $(-6, -1)$ and perpendicular to the line $2x + y = 7$.
   a) $y = -2x - 13$　　　　　　b) $y = 2x + 11$
   c) $y = \frac{1}{2}x + 2$　　　　　　d) $y = \frac{1}{2}x - 1$

15. The dividend paid by major petroleum companies have increased in recent years. Use the two points $(0, 21.7)$ and $(2, 29.6)$ from the accompanying table to find a linear function that fits the data.

Year, x, since 1999	Dividends paid, d
0	$21.70
1	$23.00
2	$29.60

   a) $d(x) = 0.25x + 21.7$　　　b) $d(x) = -3.95x + 21.7$
   c) $d(x) = 3.95x + 21.7$　　　d) $d(x) = 0.25x + 29.6$

----

16. When twelve is subtracted from twice a number, the result is four more than the number. Find the number.
   a) -16　　　b) $\frac{16}{3}$　　　c) 8　　　d) 16

17. Solve: $6 - x < -2 \ or \ -2x - 1 < 3$.
   a) $(-\infty, -4)$　　b) $(-4, -2)$　　c) $(-2, \infty)$　　d) $(-\infty, \infty)$

18. Solve: $|2x - 3| < 7$.
   a) $\{x | -5 < x < 2\}$　　　　　b) $\{x | -2 < x < 5\}$
   c) $\{x | -2 > x < 5\}$　　　　　d) $\{x | x < -2 \ or \ x > 5\}$

19. For a linear function f, $f(-3) = 2$ and $f(4) = 9$. Find $f(0)$.
   a) -2　　　b) 5　　　c) 7　　　d) 4

20. The graph of the function $f(x) = mx + b$ contains the points $(a, 2)$ and $(-5, c)$. Express a in terms of c if the graph is perpendicular to the line $9x - 3y = -5$.
   a) $a = 1 - 3c$　　　　　　b) $a = 3c - 1$
   c) $a = 3c - 11$　　　　　　d) $a = 11 - 3c$

150

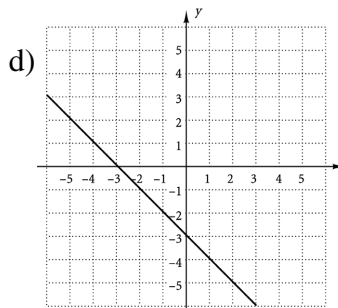**MULTIPLE CHOICE TEST B**   CLASS_____SCORE_____GRADE_____
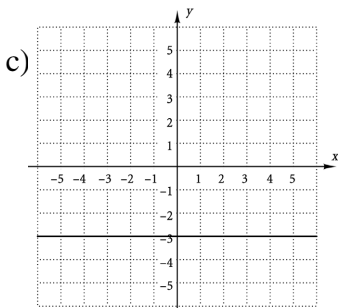
1. Which of the following is a solution of $3x + 5y = 11$?

    a) $(2,1)$ b) $(6,0)$ c) $(11,-2)$ d) $(-2,3)$

ANSWERS

2. Which of the following is the graph of $y = \frac{1}{3}x - 1$?

1. _____

a)

b)

c)

d)

2. _____

3. Which of the following is the graph of $5x = 15$?

3. _____

a)

b)

c)

d)

151

ANSWERS

4. The function $S(t) = 0.27t + 8.09$ can be used to estimate the total U.S. sales of light trucks, in millions, t years after 1999. Estimate the total U.S. sales of light trucks in 2008.

4. _____

   a) 10.25 million   b) 10.52 million
   c) 13.79 million   d) 14.43 million

5. For the graph of f at right, determine $f(-1)$ and the range of f.

5. _____

   a) -3; $\{x \mid x \geq -4\}$

   b) 1; $\{x \mid -4 \leq x \leq 5\}$

   c) -3; $\{x \mid -4 \leq x \leq 3\}$

   d) -1; $\{x \mid -4 \leq x \leq 5\}$
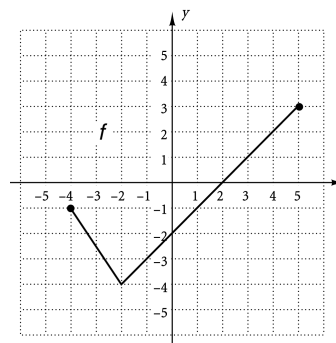
6. Find the domain: $f(x) = \dfrac{-4}{2x-3}$.

6. _____

   a) $\left(-\infty, \dfrac{1}{2}\right)$ b) $\left(-\infty, \dfrac{3}{2}\right) \cup \left(\dfrac{3}{2}, \infty\right)$

   c) $(-\infty, -4) \cup \left(\dfrac{3}{2}, \infty\right)$ d) All real numbers

7. Find the slope and the y-intercept of $-5y + 2x = 30$.

   a) Slope: $\dfrac{5}{2}$; y-intercept: $(0, -3)$

7. _____

   b) Slope: $\dfrac{2}{5}$; y-intercept: $(0, -6)$

   c) Slope: $-\dfrac{5}{2}$; y-intercept: $(0, -3)$

   d) Slope: $\dfrac{5}{2}$; y-intercept: $(0, 6)$

MULTIPLE CHOICE TEST B

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8.   Find the slope of the line containing $(4,-2)$ and $(1,-3)$.   **ANSWERS**

   a) 3   b) $\dfrac{1}{3}$ c) -3 d) Not defined   8. _____

9.   Find the slope of the line containing $(2.7,-6.2)$ and
   $(2.7,-7.4)$.

   a) $\dfrac{2}{9}$ b) 0   c) $\dfrac{9}{2}$ d) Not defined   9. _____

10.   Find a linear function $f(x) = mx + b$ whose graph has slope 5
   and y-intercept $(0,-6)$.

   a) $f(x) = -6x + 5$ b) $f(x) = -\dfrac{1}{6}x + 5$
                                                                                  10. _____
   c) $f(x) = -\dfrac{6}{5}x$ d) $f(x) = 5x - 6$

11.   Find an equation of the line containing $(-3,6)$ with slope -5.

   a) $y = -5x - 9$ b) $y = -5x + 6$
   c) $y = -5x + 27$ d) $y = -5x - 21$ 11. _____

12.   Find an equation of the line containing the points $(11,-4)$ and
   $(5,-8)$.

   a) $y = \dfrac{2}{3}x + \dfrac{31}{3}$ b) $y = \dfrac{2}{3}x + 4$
                                                                                  12. _____
   c) $y = \dfrac{2}{3}x - \dfrac{34}{3}$ d) $y = \dfrac{2}{3}x + 8$

13.   Find an equation of the line containing the point $(-3,5)$ and
   perpendicular to the line $2y - 4x = 5$.

   a) $y = -2x - 1$ b) $y = 2x - 1$ 13. _____

   c) $y = 2x + \dfrac{13}{2}$ d) $y = -\dfrac{1}{2}x + \dfrac{7}{2}$

MULTIPLE CHOICE TEST B

_____

ANSWERS

14. _____

15. _____

16. _____

17. _____

18. _____

19. _____

20. _____

14. Find an equation of the line containing the point $(1,-4)$ and parallel to the line $6y + 2x = 7$.

    a) $y = -3x - 1$ b) $y = 3x - 7$

    c) $y = \dfrac{1}{3}x - \dfrac{13}{3}$ d) $y = -\dfrac{1}{3}x - \dfrac{11}{3}$

15. Book stores have experienced increased sales in recent years. Use the two points $(0, 14.5)$ and $(2, 16.7)$ from the accompanying table to find a linear model function that fits the data.

Year, x, since 1999	Sales, S, (in billions)
0	$14.5
1	$15.4
2	$16.7

    a) $S(x) = 0.91x + 14.5$ b) $S(x) = 1.1x + 14.5$

    c) $S(x) = -0.91x + 14.5$ d) $S(x) = -1.1x + 16.7$

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16. A fourteen-foot pipe is cut into two pieces so that one piece is two-fifths as long as the other piece. What is the length of the shorter piece?

    a) 3 feet   b) 4 feet   c) 5.6 feet   d) 6 feet

17. Solve: $3(2x - 5) + x \le 2(x + 2) - 9$.

    a) $[-2, \infty)$ b) $(-\infty, 2]$ c) $[2, \infty)$ d) $(-\infty, -2]$

18. Solve: $|4 - x| = 7$.

    a) $\{x | -3 < x < 11\}$ b) $\{-3, 11\}$

    c) $\{3, -11\}$ d) $\{x | -11 < x < -3\}$

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19. Find the y-intercept of the function given by $f(x) + 3 = 2.9x^2 + (5 - 3x)^2 + 7$.

    a) $(0, -3)$ b) $(0, 0)$ c) $\left(0, \dfrac{5}{3}\right)$ d) $(0, 29)$

20. Find k so that the line containing $(-3, k)$ and $(2, 7)$ is perpendicular to the line containing $(3, -2)$ and $(-5, 7)$.

    a) $\dfrac{23}{9}$ b) $\dfrac{101}{8}$ c) $\dfrac{103}{9}$ d) $\dfrac{83}{8}$