

Skills Practice

Skills Practice for Lesson 5.1

Name _____ Date _____

Widgets, Dumbbells, and Dumpsters Multiple Representations of Linear Functions

Vocabulary

Write the term that best completes each statement.

1. A(n) _____ is an equation whose graph is a straight line.
2. The letters " $f(x)$ " can be used to name a function written in _____.
3. A(n) _____ describes the location of any point on a coordinate grid.
4. All linear equations are also _____, except when they are in the form $x = a$, where a represents any number.

Problem Set

Write a linear equation to model each situation.

5. A carpenter charges a \$75 flat fee plus \$50 per hour. Write an equation to represent the cost, c , to hire the carpenter for h hours.
6. Marsha has \$125 now and plans to save \$35 per week. Write an equation to represent the amount, s , that Marsha will have saved after w weeks.
7. Raul and his friends rent a sailboat for \$15 per hour plus a basic fee of \$50. Write an equation that gives the total cost, c , to rent the boat for h hours.
8. Gail orders CDs for \$8 each plus a total shipping cost of \$5. Write an equation that gives the total price, p , of her order if she orders n CDs.
9. A teacher starts the year with \$600 for art supplies. He plans to spend \$40 per week on supplies. Write an equation to show the amount, d , that the teacher has left after w weeks.
10. A sales representative on a business trip is 550 miles from home. She estimates that she can travel 50 miles per hour while driving home. Write an equation to show her distance from home, d , after she has been driving for h hours.

Complete the table of values for each linear equation.

11. $y = 3x + 10$

x	y
5	
8	
10	
12	
50	

12. $y = 8x - 3$

x	y
1	
2	
4	
8	
10	

13. $y = 50 - 2x$

x	y
0	
3	
5	
10	
12	

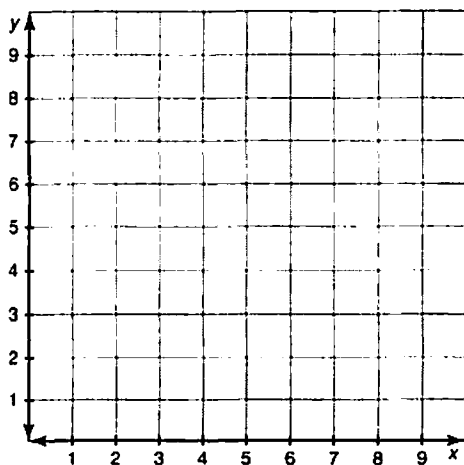
14. $y = 14 + 4x$

x	y
1	
3	
5	
10	
20	

Graph the points for each table of values. Draw a straight line through the points.

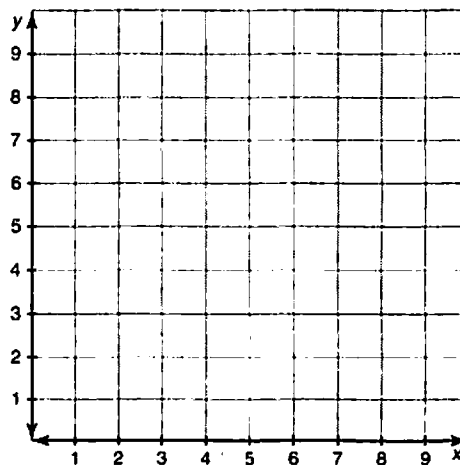
15.

x	2	4	8	10
y	4	5	7	8



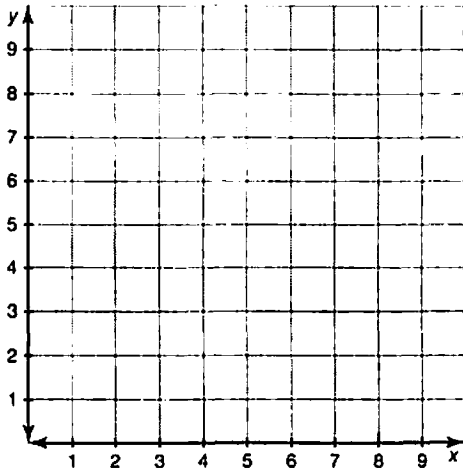
16.

x	3	5	7	8
y	0	4	8	10



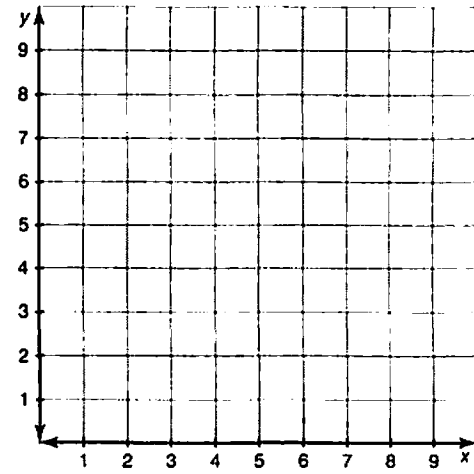
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x	0	1	3	4
y	8	6	2	0



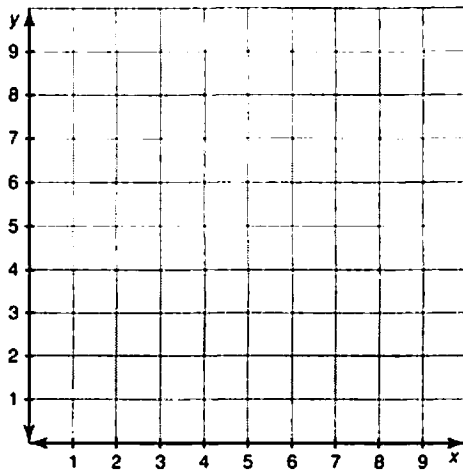
18.

x	0	2	6	8
y	4	3	1	0



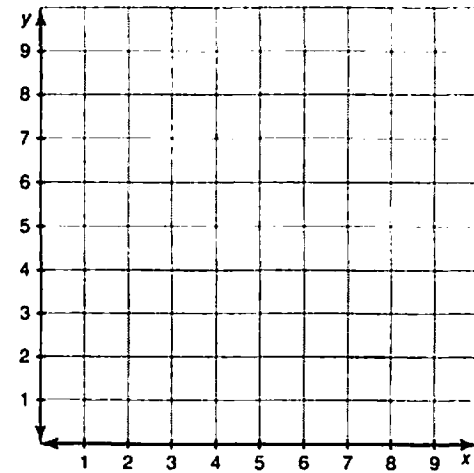
19.

x	1	3	4	9
y	5	5	5	5



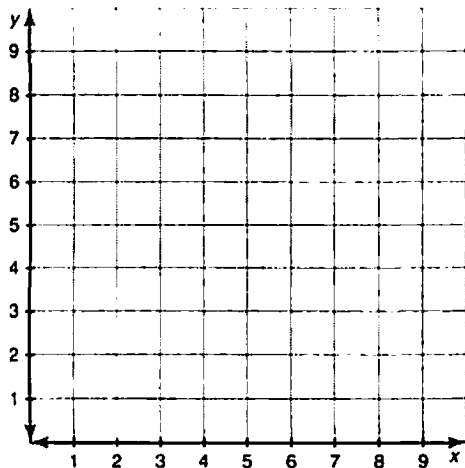
20.

x	0	2	5	7
y	8	8	8	8



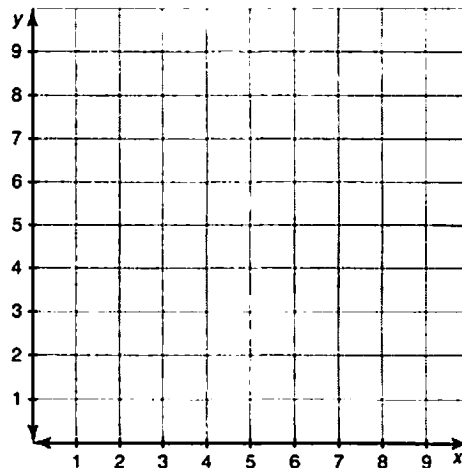
21.

x	7	7	7	7
y	0	1	3	5



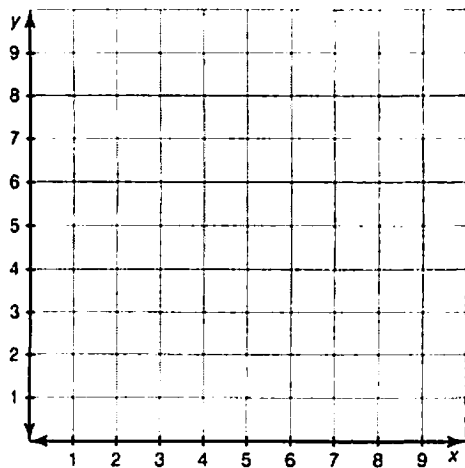
22.

x	2	2	2	2
y	2	4	6	8



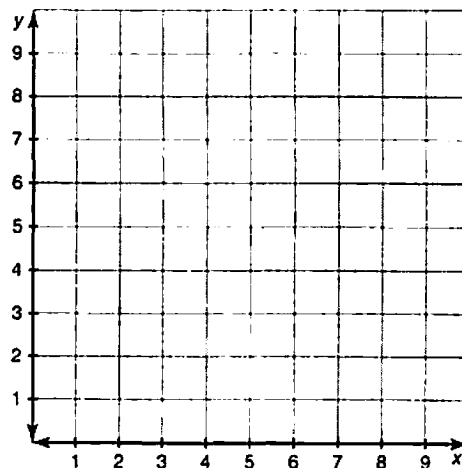
23.

x	2	4	6	8
y	0	3	6	9



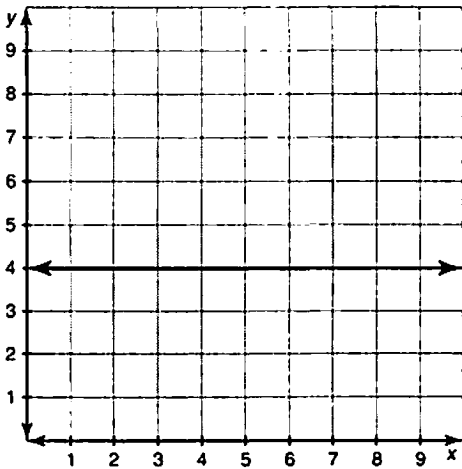
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x	0	2	4	6
y	9	6	3	0

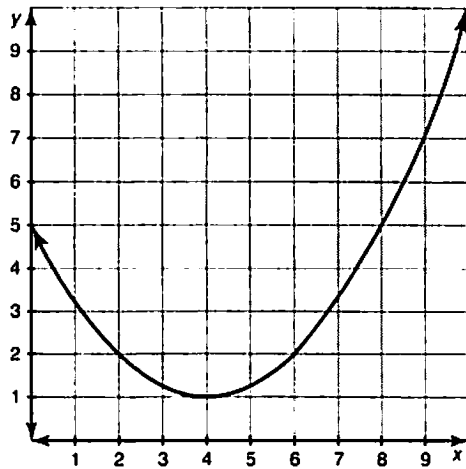


Decide whether each graph represents a linear equation, a linear function, both, or neither.

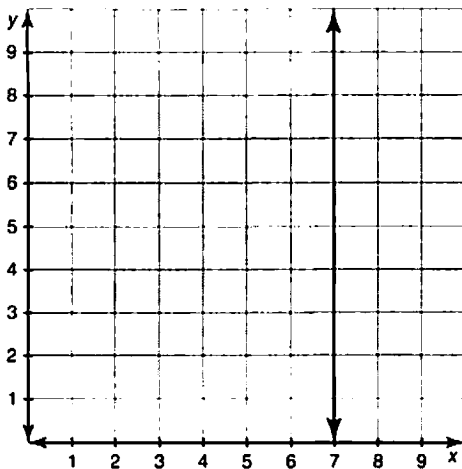
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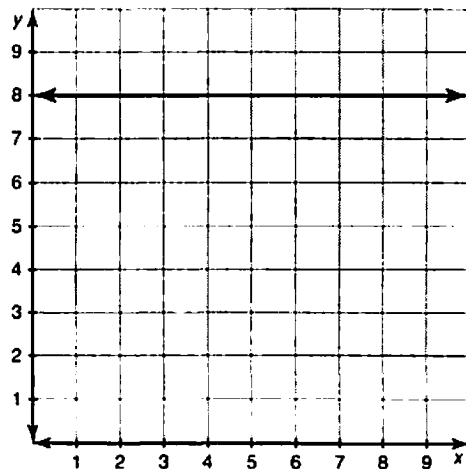
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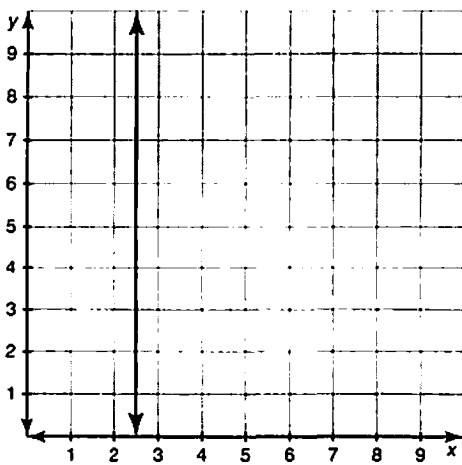
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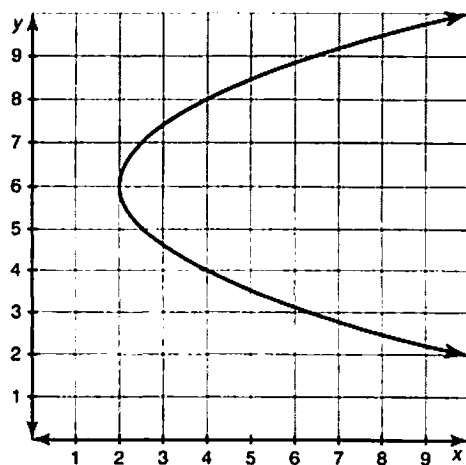
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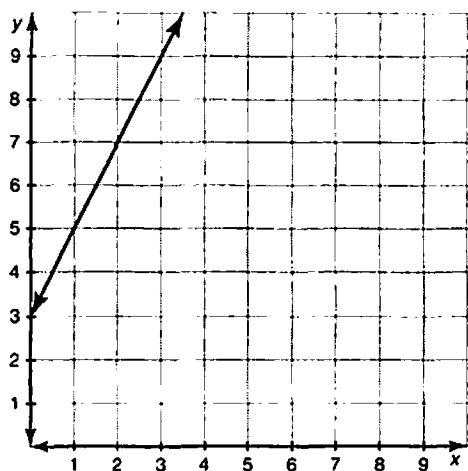
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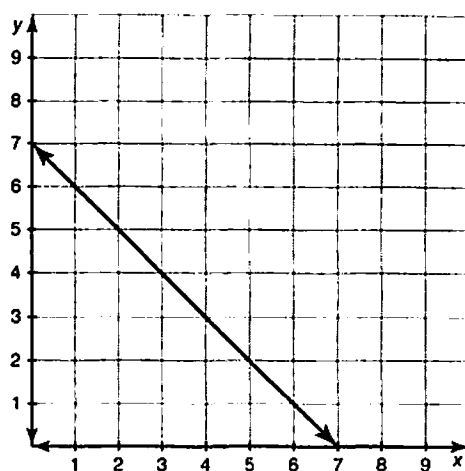
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Skills Practice

Skills Practice for Lesson 5.2

Name _____

Date _____

Selling Balloons Finding Intercepts of a Graph

Vocabulary

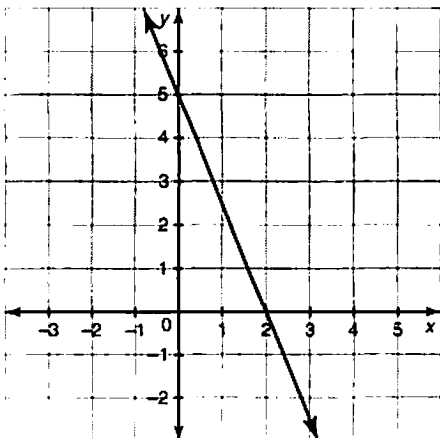
Explain how each pair of terms is related by identifying similarities and differences.

1. x -coordinate and y -coordinate
2. x -intercept and y -intercept
3. vertical line and horizontal line
4. x -axis and y -axis

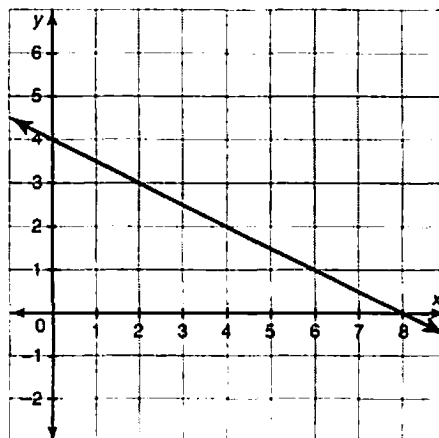
Problem Set

Determine the x -intercept and the y -intercept for each graph.

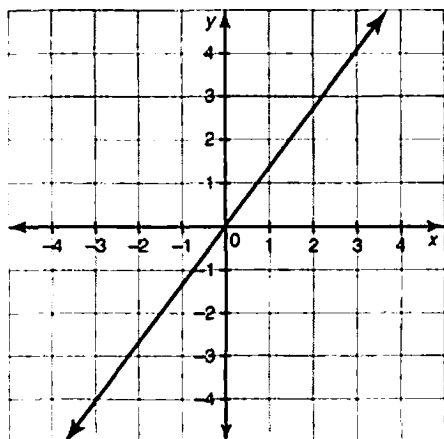
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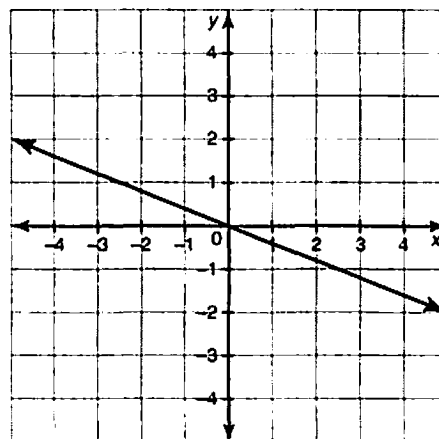
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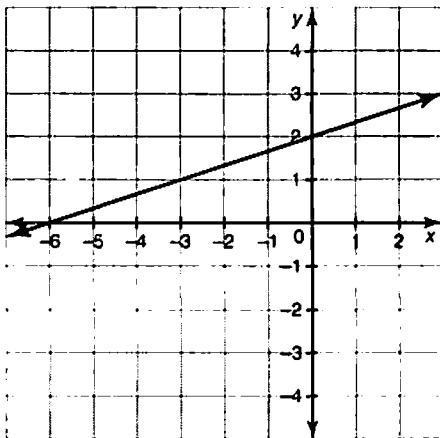
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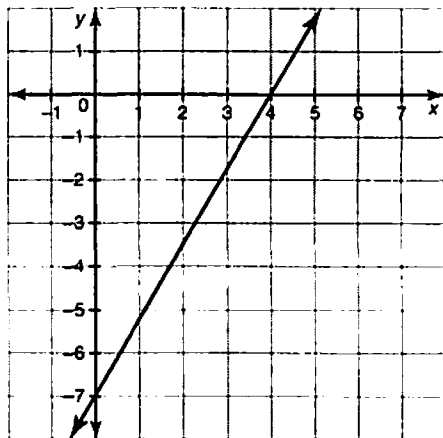
8.



9.



10.



Determine the x-intercept of the graph of each equation.

11. $y = 3x - 6$

12. $y = 2x + 8$

13. $3x + 5y = 15$

14. $6x - 2y = 30$

5

Determine the y-intercept of the graph of each equation.

15. $y = 8 - 3x$

16. $y = 4x + 1$

17. $2x - 5y = 10$

18. $3y - 2x = 9$

Identify each intercept and explain what it means in terms of the problem situation.

19. To find the cost y of manufacturing x pens, a company uses the equation $y = 5000 + 2x$. Identify and interpret the y -intercept.
20. The cost y of renting a canoe can be shown by $y = 25 + 10x$, where x is the time in hours. Identify and interpret the y -intercept.
21. An art teacher has \$360 for supplies and plans to spend \$18 per week. An equation for the situation is $y = 360 - 18x$. Identify and interpret the x -intercept.
22. Alma wants to lose 30 pounds at the rate of 2 pounds per week. An equation for the situation is $y = 30 - 2x$. Identify and interpret the x -intercept.
23. A bookstore has mysteries on sale for \$2 each and biographies for \$3 each. Greg has \$30 to spend on books. An equation for the situation is $2x + 3y = 30$. Identify and interpret both intercepts.
24. Marge's goal is to sell \$100 worth of tickets to the school play. The tickets are \$4 for children and \$10 for adults. An equation for the situation is $4x + 10y = 100$. Identify and interpret both intercepts.

Skills Practice

Skills Practice for Lesson 5.3

Name _____

Date _____

Recycling and Saving Finding the Slope of a Line

Vocabulary

Match each definition or description to its corresponding term.

- | | |
|--|----------------------|
| 1. comparison of two quantities written as $a : b$ or as a fraction | a. unit rate |
| 2. describes a line that slants upward from left to right | b. slope |
| 3. difference in x -coordinates when computing slope | c. vertical change |
| 4. ratio of vertical change, to horizontal change, of a line | d. horizontal change |
| 5. a rate per one unit | e. rate of change |
| 6. describes a line that slants downward from left to right | f. ratio |
| 7. difference in y -coordinates when computing slope | g. positive slope |
| 8. ratio comparing amount of change in dependent variable with amount of change in independent variable in a real-life situation | h. negative slope |

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Problem Set

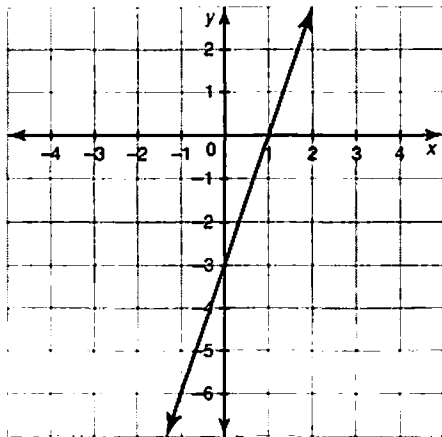
Calculate each unit rate. Write each rate as a fraction.

- It costs \$2.24 to mail a package that weighs 16 ounces. Calculate the cost per ounce.
- It costs \$3.95 for 5 pounds of bananas. Calculate the cost per banana.
- It takes 5 hours to travel 260 miles. Calculate the miles traveled each hour.

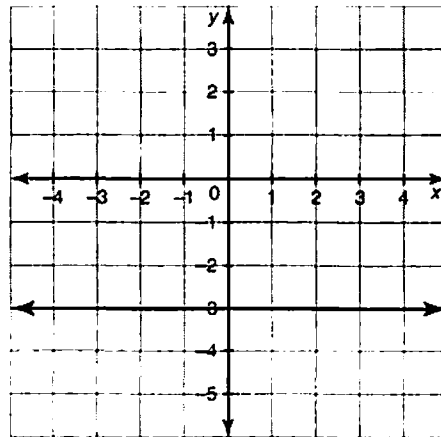
12. It takes 12 seconds to travel 540 meters. Calculate the number of meters traveled per second.
13. You can read 168 pages in 6 days. Calculate the number of pages read per day.
14. You save \$625 in 5 months. Calculate the amount of money saved each month.
15. It takes 4 hours to run 26.2 miles. Calculate the number of miles ran per hour.
16. It takes 8 days to bicycle 683.2 miles. Calculate the number of miles bicycled per day.
17. 3.2 pounds of cherries cost \$7.68. Calculate the cost per pound.
18. A package weighing 3.6 pounds costs \$8.10 to mail. Calculate the cost per pound.

Determine whether the slope of the line in each graph is positive, negative, zero, or undefined.

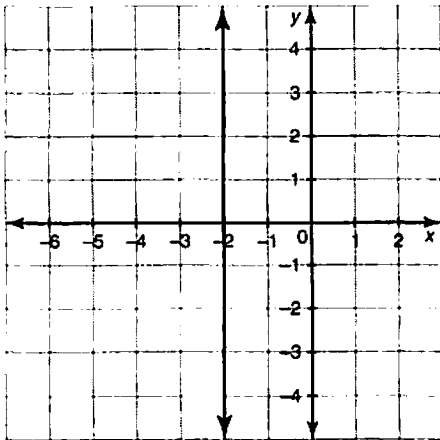
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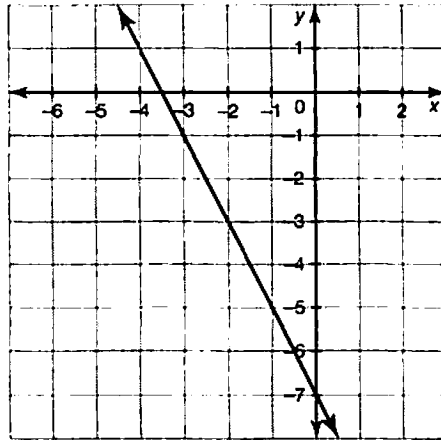
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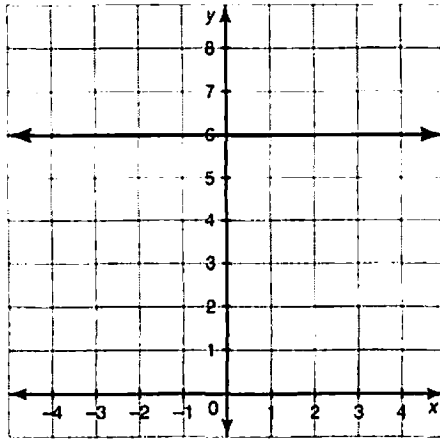
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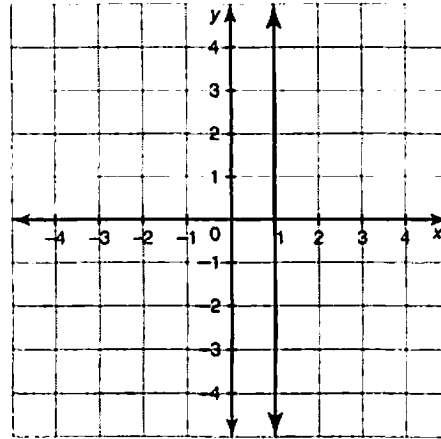
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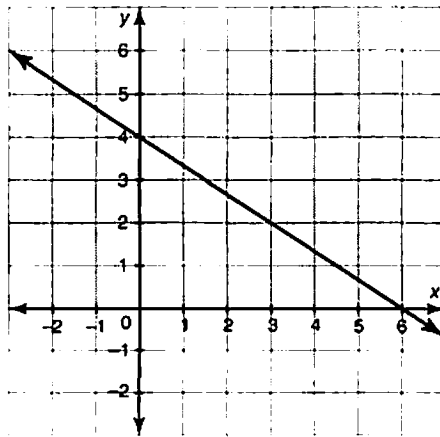
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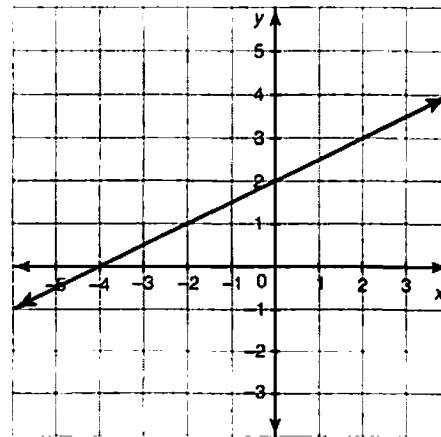
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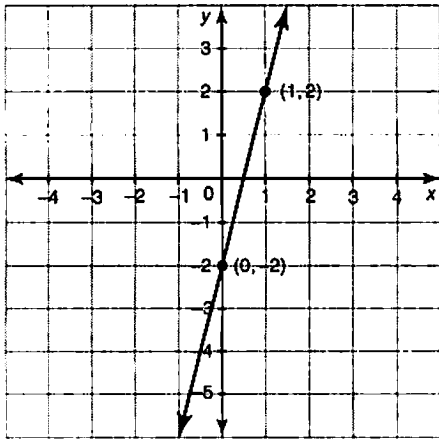


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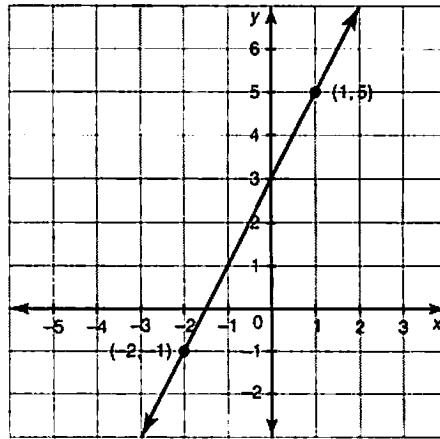


Use the coordinates of the points shown to calculate the slope of each line.

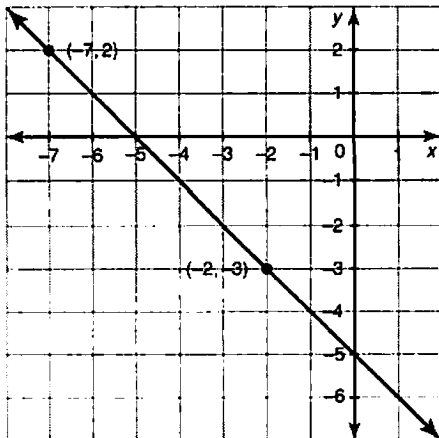
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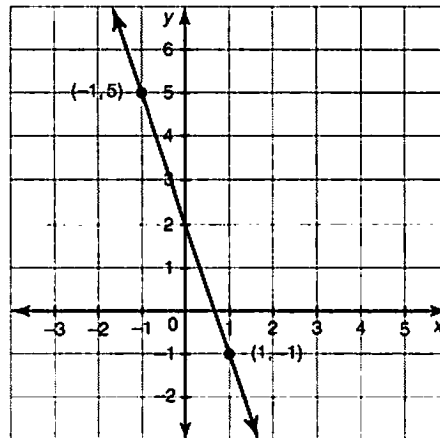
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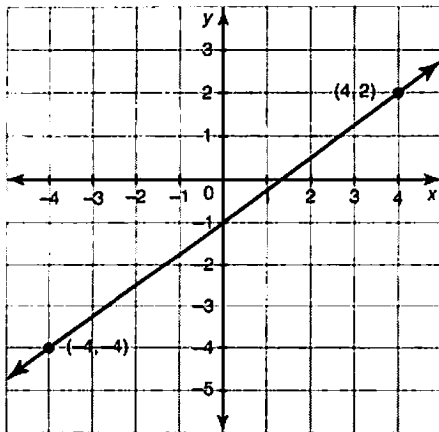
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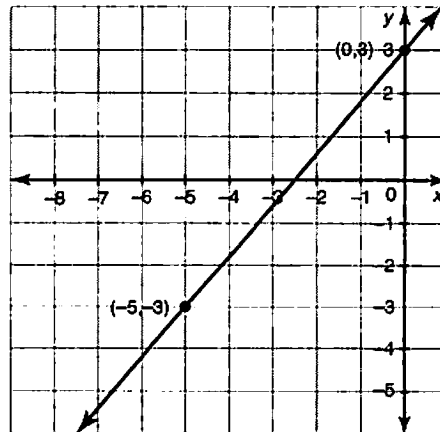
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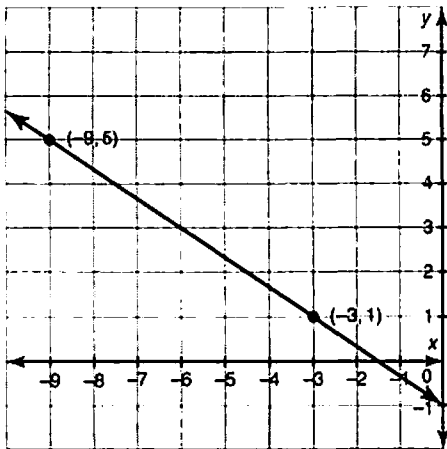
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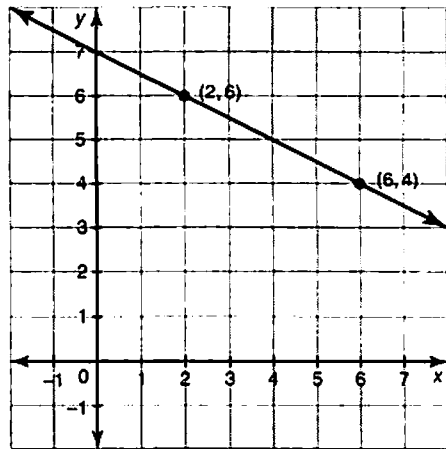
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Skills Practice

Skills Practice for Lesson 5.4

Name _____

Date _____

Running in a Marathon Slope-Intercept Form

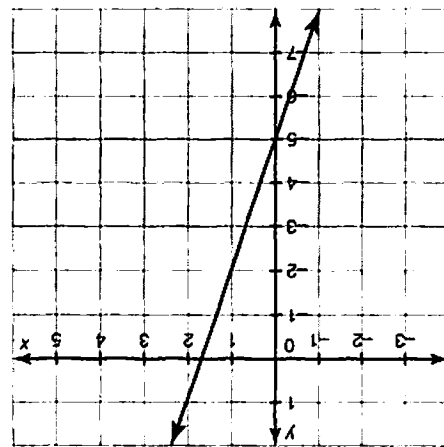
Vocabulary

Define each term in your own words.

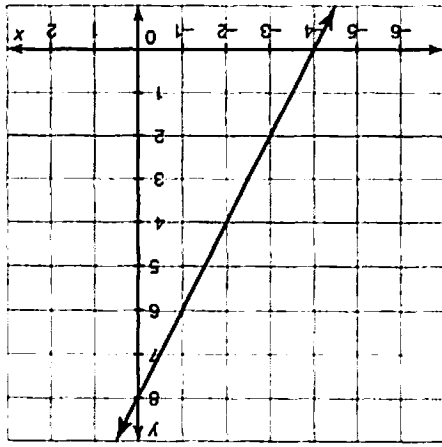
1. linear equation
2. y -intercept
3. slope
4. positive slope
5. negative slope
6. slope-intercept form

Problem Set

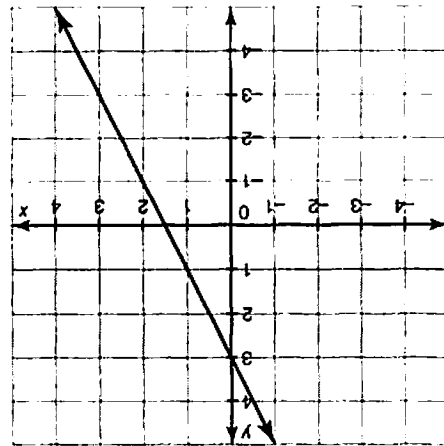
Identify the slope and y-intercept of the line shown on each graph.



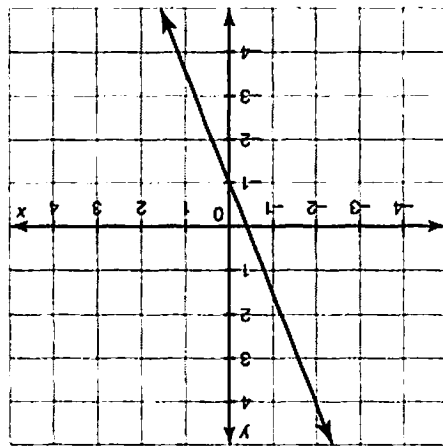
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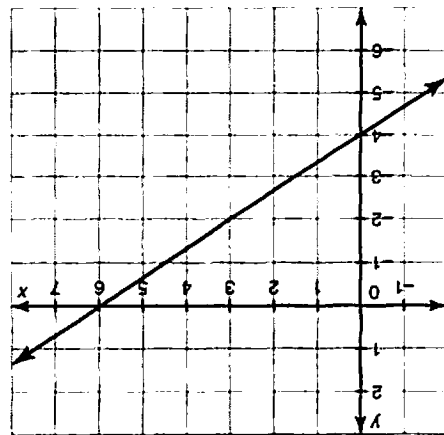
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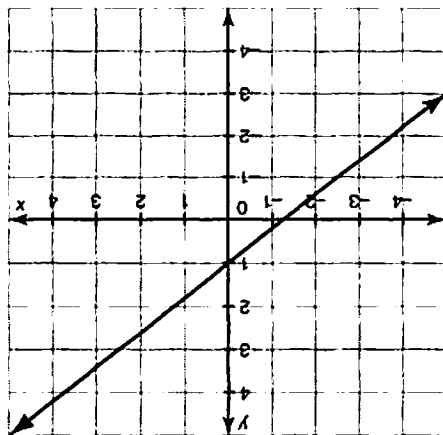
9.



10.



11.



12.

Name _____ Date _____

Write each equation in slope-intercept form. Then identify the slope and y-intercept for the graph of each equation.

13. $3x + y - 8 = 0$

14. $6x + y - 5 = 0$

15. $5x - y = -3$

16. $4x - y = -1$

17. $2x - 3y = 24$

18. $5y + 2x = 20$

19. $\frac{x}{3} + \frac{y}{5} = 1$

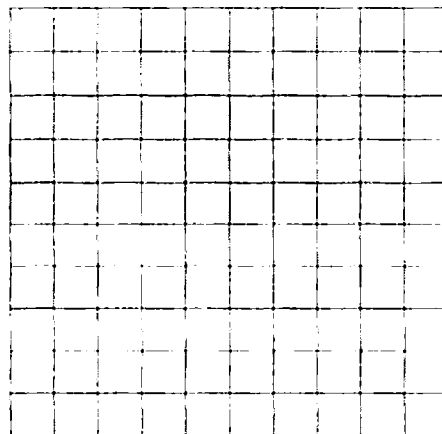
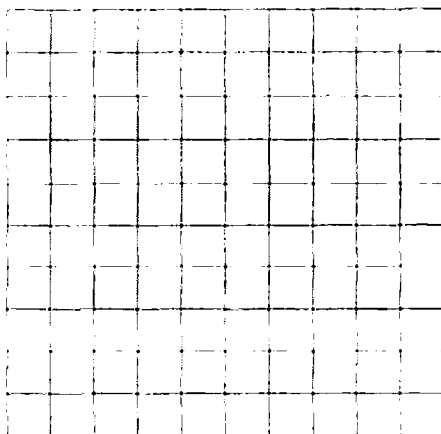
20. $-\frac{x}{2} + \frac{y}{3} = 1$

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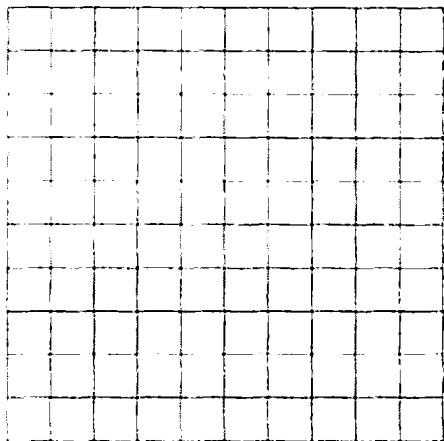
Use the slope and y-intercept to graph each equation.

21. $y = 3x + 2$

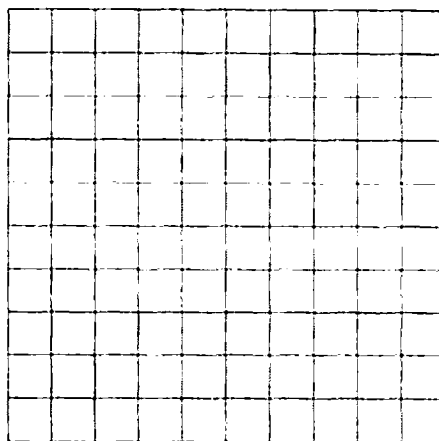
22. $y = 2x - 7$



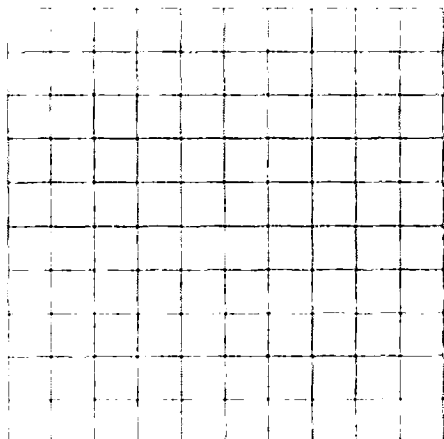
23. $y = -2x - 4$



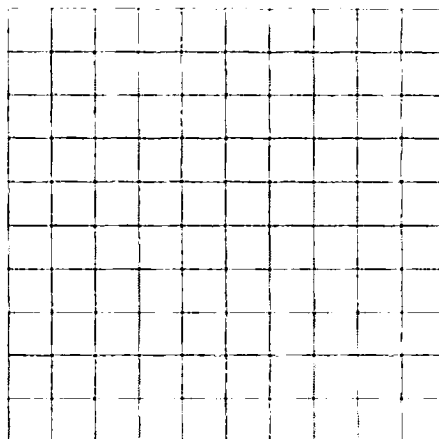
24. $y = -x + 6$



25. $y = \frac{5}{3}x + 1$

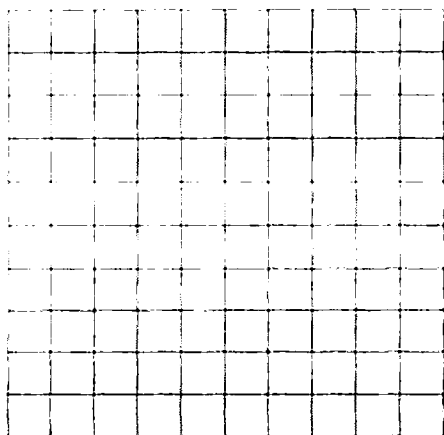


26. $y = \frac{3}{2}x - 5$

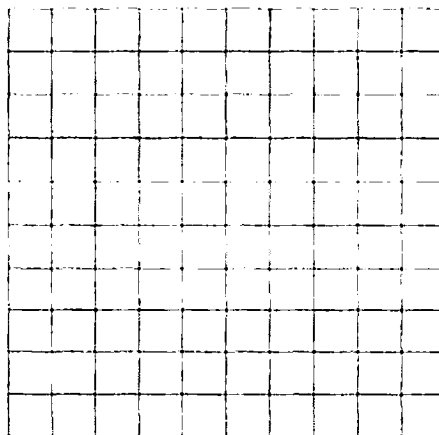


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27. $y = -\frac{1}{2}x - 4$



28. $y = -\frac{4}{3}x + 2$



Name _____ Date _____

Compare the slopes and y-intercepts of each pair of equations. Use complete sentences in your answer.

29. $y = x$
 $y = 2x$

30. $y = -3x$
 $y = x$

31. $y = 2x + 5$
 $y = 2x - 1$

32. $y = -x + 2$
 $y = -x - 4$

33. $3y = x - 6$
 $2 + y = -3x$

34. $5 - x = y$
 $2x + 10 = 2y$

35. $y - 2x = -1$
 $5 + 5y = 10x$

36. $2y = -6 + 2x$
 $9 = 3x - 3y$

Skills Practice

Skills Practice for Lesson 5.5

Name _____ Date _____

Saving Money Writing Equations of Lines

Vocabulary

Give two examples of each term.

1. equation of a horizontal line _____
2. equation of a vertical line _____
3. linear equation in slope-intercept form _____
4. linear equation in point-slope form _____

Problem Set

Write an equation of a line in slope-intercept form that has the given criteria.

5. slope is -3 and y -intercept is 7
6. slope is 8 and y -intercept is 2
7. slope is 4 and y -intercept is -3
8. slope is -1 and y -intercept is -8
9. slope is $\frac{2}{3}$ and y -intercept is -5
10. slope is $-\frac{1}{4}$ and y -intercept is 1

Write an equation in point-slope form of the line that passes through the given point and has the given slope. Then write the equation in slope-intercept form.

11. Has slope of 3 and passes through (1, 2) 12. Has slope of 5 and passes through (6, 1)

13. Has slope of -2 and passes through (3, 4) 14. Has slope of -5 and passes through (2, 5)

15. Has slope of 1 and passes through (3, -2) 16. Has slope of 2 and passes through (-1 , 4)

5

17. Has slope of -3 and passes through (-3 , 2) 18. Has slope of -1 and passes through (8, -5)

Name _____ Date _____

Write an equation of the line in slope-intercept form that passes through each given set of points.

19. Passes through (2, 9) and (4, 13)

20. Passes through (3, 2) and (6, 11)

21. Passes through $(-4, -10)$ and $(3, -3)$

22. Passes through $(-1, -9)$ and $(3, -1)$

23. Passes through (2, 10) and (7, 5)

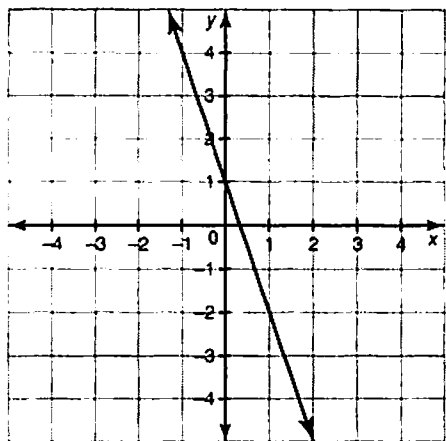
24. Passes through (1, 9) and (4, 3)

25. Passes through $(-2, -1)$ and $(2, -9)$

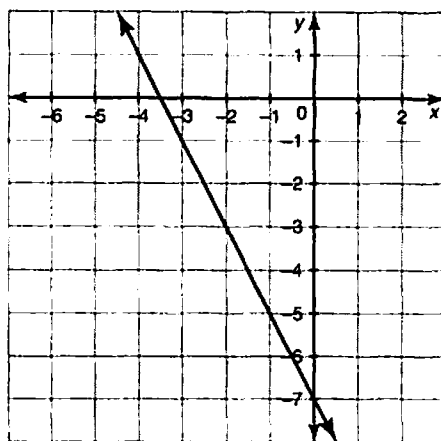
26. Passes through $(-5, -2)$ and $(3, -10)$

Write an equation in slope-intercept form for the line shown in each graph.

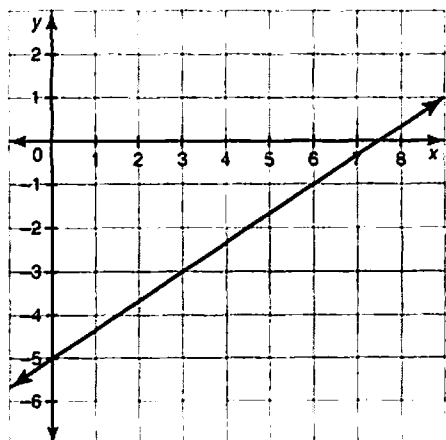
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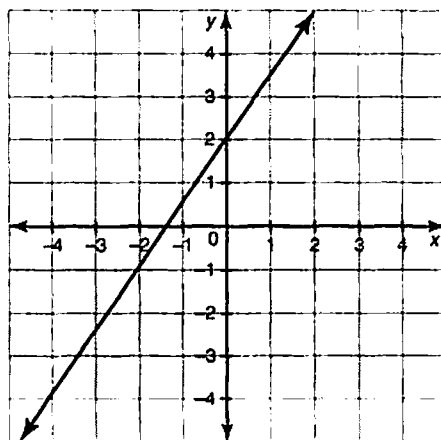
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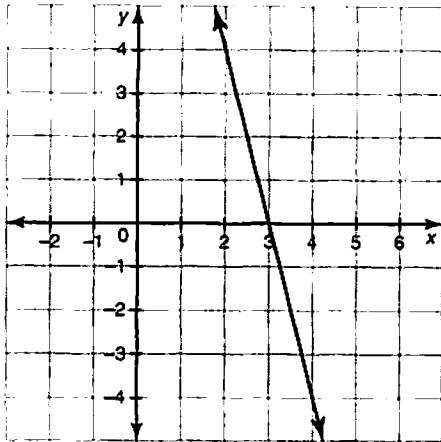


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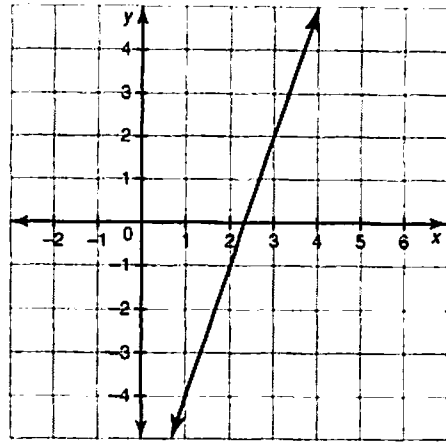


Name _____ Date _____

31.



32.



Skills Practice

Skills Practice for Lesson 5.6

Name _____ Date _____

Spending Money Linear and Piecewise Functions

Vocabulary

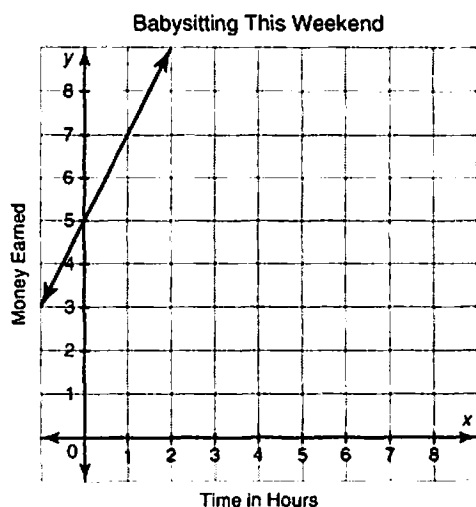
Match each definition or description to its corresponding term.

- | | |
|---|-----------------------|
| 1. set of output values of a function | a. domain |
| 2. function that can be written in the form $y = mx + b$ | b. range |
| 3. function represented by different expressions in different parts of its domain | c. positive slope |
| 4. shows decreasing y -values as the value of x increases | d. negative slope |
| 5. set of input values of a function | e. linear function |
| 6. shows increasing y -values as the value of x increases | f. piecewise function |

Problem Set

Write the domain and range of each function in terms of the given problem situation.

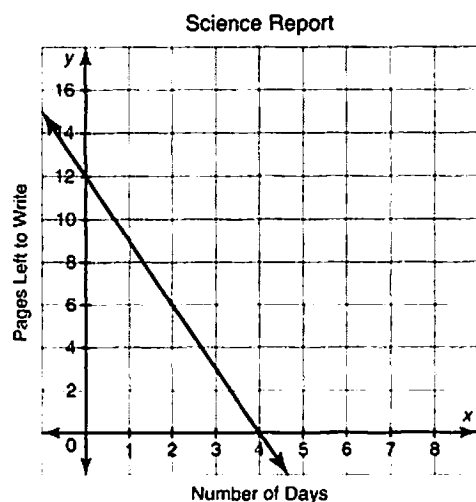
7. Gerald gets \$5 plus \$2 per hour for babysitting. He works 5 hours over the weekend. The function $f(x) = 2x + 5$ shows the relationship between the number of hours he works over the weekend and the amount of money he earns.



domain = _____

range = _____

8. Kim has a 12-page science report to write. She writes 3 pages each day. The function $f(x) = 12 - 3x$ shows the relationship between the number of days and the number of pages she has left to write.

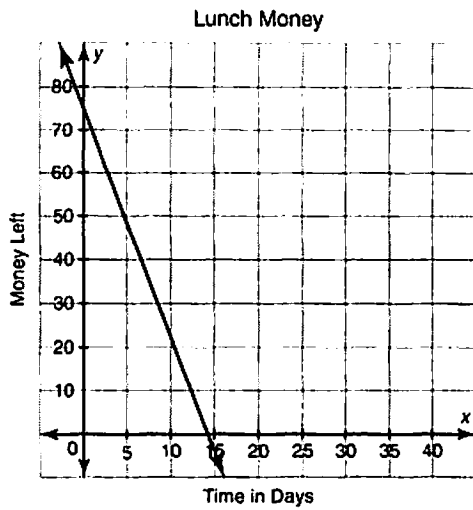


domain = _____

range = _____

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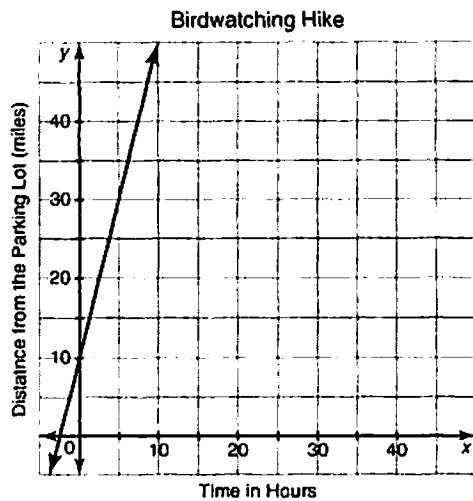
9. Tim has \$75 for lunch money. He spends \$5 each day. The function $f(x) = 75 - 5x$ shows the relationship between the number of days and the amount of money he has left.



domain = _____

range = _____

10. Marji is on a hike. At dawn she is 10 miles from the parking lot. Marji estimates that she will average 4 miles per hour for the next 10 hours. Then the hike will be over and Marji's friend will pick her up. The function $f(x) = 4x + 10$ shows her distance from the parking lot at any given time.

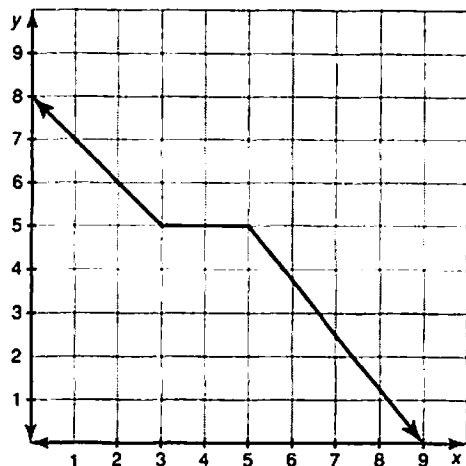


domain = _____

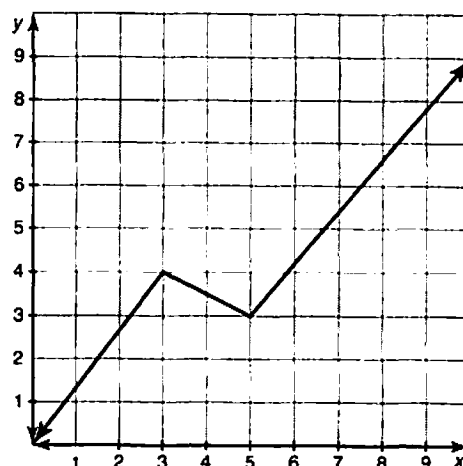
range = _____

For each piecewise function shown in the graph, state the number of pieces and the domain of each piece.

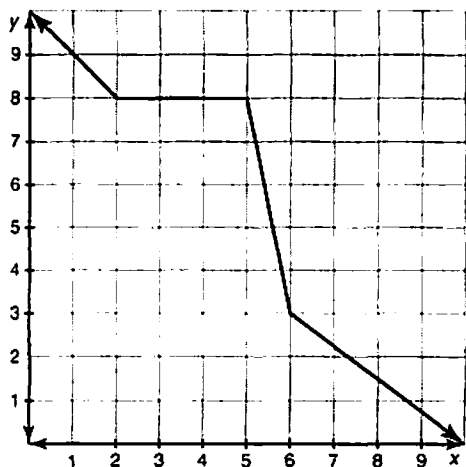
11.



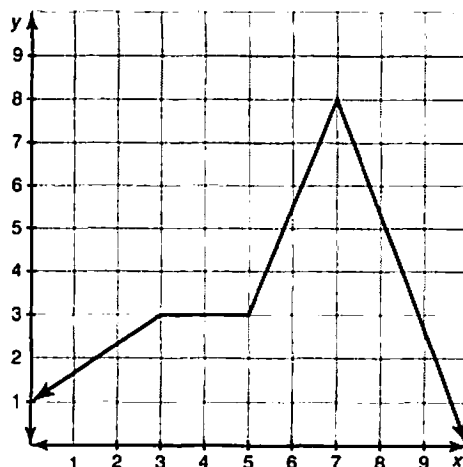
12.



13.

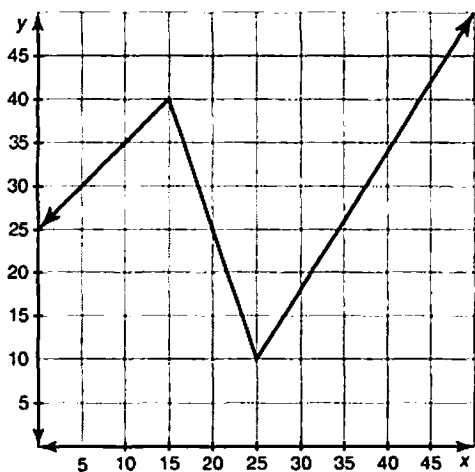


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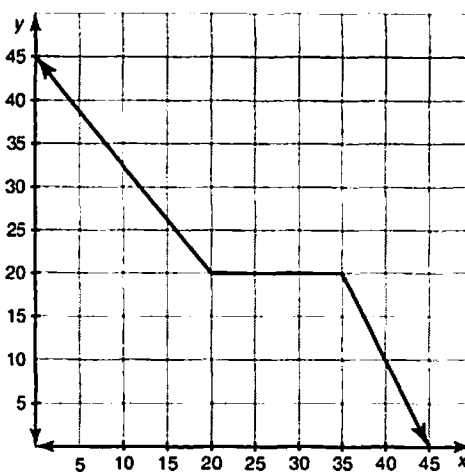


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15.

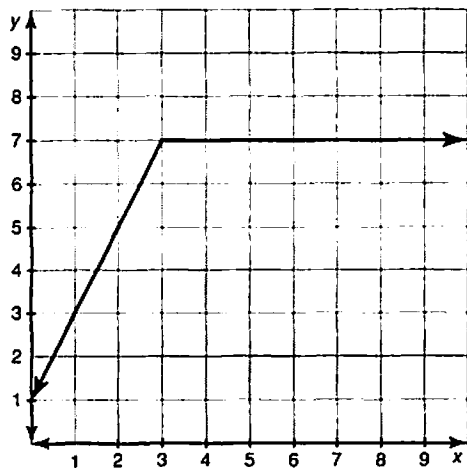


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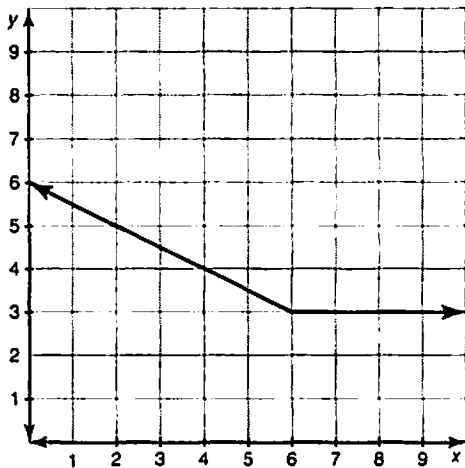


Write an equation for each piecewise function shown in the graph.

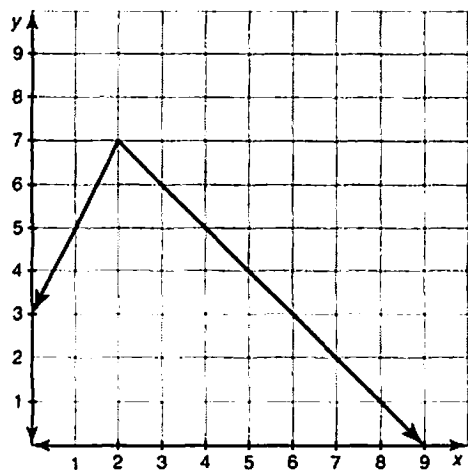
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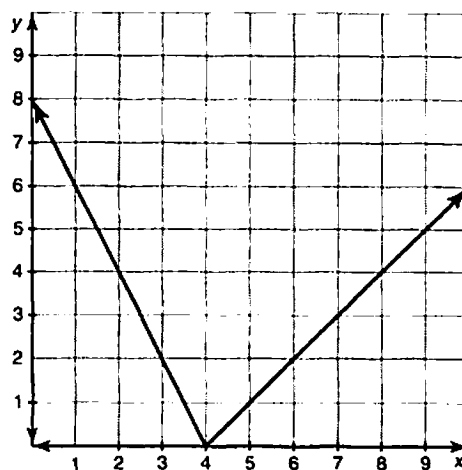
18.



19.

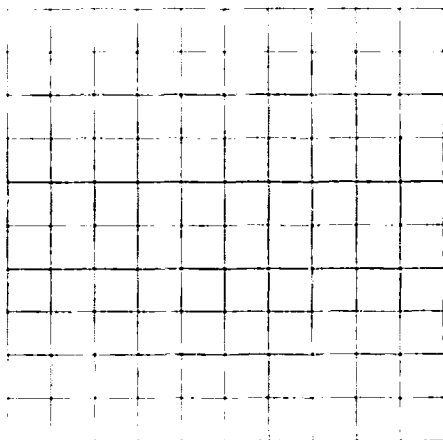


20.

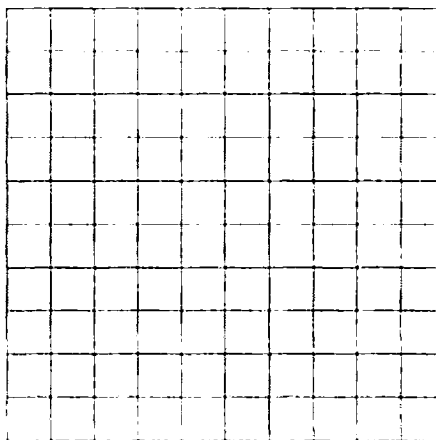


Graph each piecewise function.

21. $f(x) = \begin{cases} x + 1 & 0 \leq x \leq 5 \\ 6 & 5 < x \leq 10 \end{cases}$

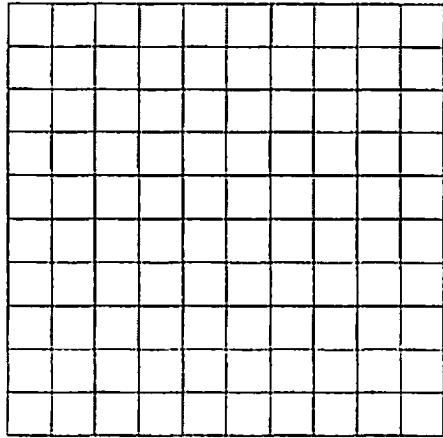


22. $f(x) = \begin{cases} 4 & 0 \leq x \leq 4 \\ 8 - x & 4 < x \leq 10 \end{cases}$

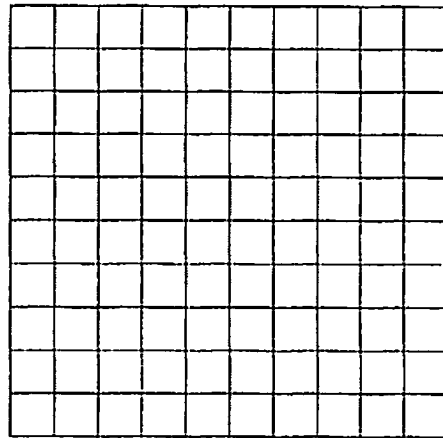


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$$23. f(x) = \begin{cases} 6 - x & 0 \leq x \leq 3 \\ 3 & 3 < x \leq 5 \\ x - 2 & 5 < x \leq 10 \end{cases}$$



$$24. f(x) = \begin{cases} 6 - x & 0 \leq x \leq 2 \\ x + 2 & 2 < x \leq 6 \\ 8 & 6 < x \leq 10 \end{cases}$$



Name _____

Date _____

The School Play Standard Form of a Linear Equation

Vocabulary

Give two examples of each term.

1. linear equation in slope-intercept form _____
2. linear equation in point-slope form _____
3. linear equation in standard form _____

Problem Set

Without graphing, calculate the x - and y -intercepts of the graph of each equation.

4. $3x + y = -2$

5. $-5x + y = 10$

6. $x - 2y = 8$

7. $x + 3y = -6$

8. $2x + 5y = 20$

9. $-3x + 4y = -12$

10. $5x + 2y = -1$

11. $-7x - 3y = 2$

5

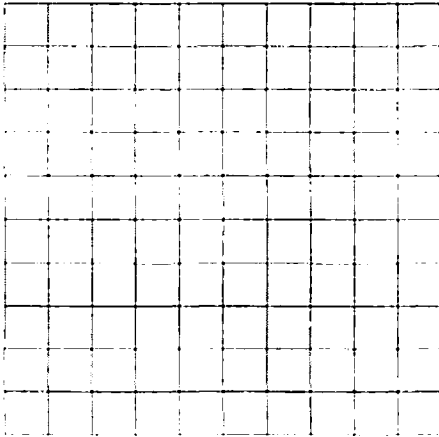
12. $\frac{2}{3}x - \frac{1}{2}y = 18$

13. $\frac{1}{5}x + \frac{3}{4}y = 12$

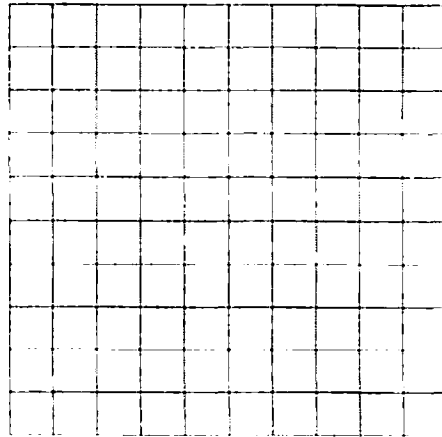
Name _____ Date _____

Graph each equation.

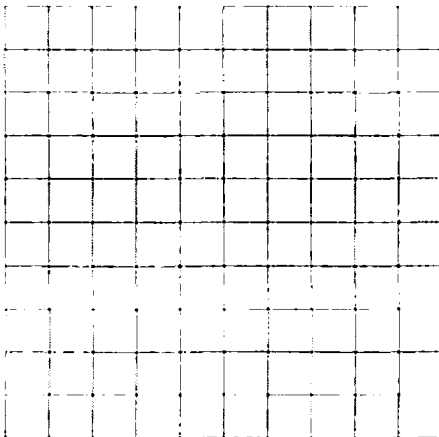
14. $5x - 3y = 15$



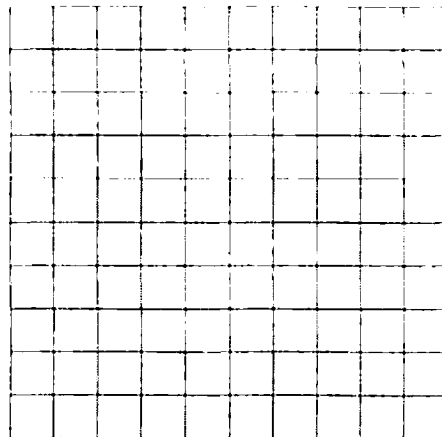
15. $3x - 4y = 12$



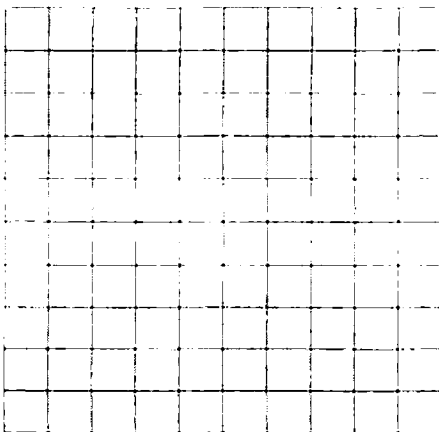
16. $-2x - 6y = 12$



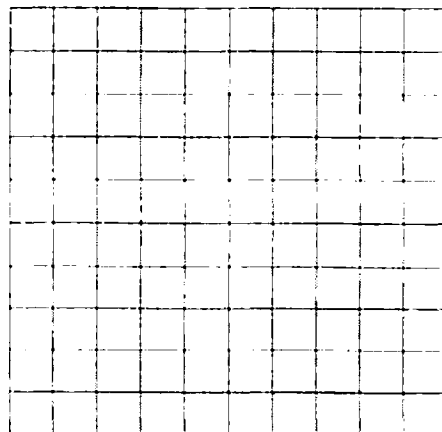
17. $-5x - 2y = 20$



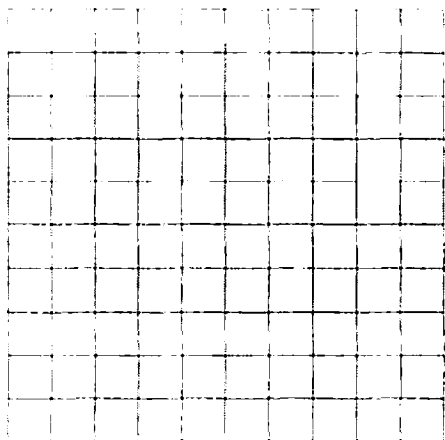
18. $4x + 2y = 6$



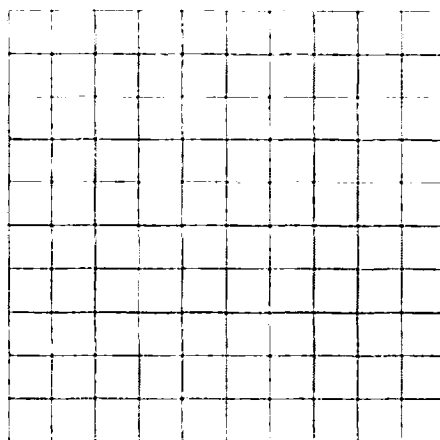
19. $15x + 30y = 45$



20. $-40x + 25y = 100$



21. $-25x + 30y = 75$



Write each equation in standard form.

22. $3y + x - 5 = 0$

23. $y - 2x + 3 = 0$

24. $y = 2x - 4$

25. $y = x + 6$

5

26. $y = \frac{2}{3}x + 5$

27. $y = \frac{1}{4}x - 1$

28. $y = \frac{1}{3}x - \frac{2}{5}$

29. $y = \frac{2}{3}x + \frac{1}{4}$

Name _____ Date _____

Write a linear equation in standard form to model each situation.

30. You have a \$25 book store gift card. You want to buy magazines that cost \$3 each and books that cost \$5 each.
31. Ed has \$35 to buy paints and brushes for a school project. Jars of paint cost \$4 each. The brushes are \$2 each.
32. Gail plans to spend \$20 on rides at an amusement park. Some rides cost \$1 and others cost \$2.
33. A basketball team scored 60 points by making a combination of 2-point shots and 3-point shots.

Write each equation in slope-intercept form.

34. $4x + 3y = 5$
35. $5x + 2y = 3$
36. $-4x + 3y = 2$
37. $-6x + 5y = -4$
38. $2x - 3y = -1$
39. $3x - 7y = 2$

Skills Practice

Skills Practice for Lesson 5.8

Name _____ Date _____

Earning Interest Solving Literal Equations

Vocabulary

Write the term that best completes each statement.

1. The equation $I = Prt$ is a(n) _____ formula.
2. _____ is the initial amount of money borrowed or invested.
3. In the formula $I = Prt$, the value for r is the _____.
4. When the interest rate is a fixed percent, invested money earns _____.
5. $A(n)$ _____ often has more than two different variables.
6. _____ is the amount earned when saving or investing money.

Problem Set

Solve each equation for the given variable.

7. $I = Prt$ for r

8. $I = Prt$ for t

9. $A = l \cdot w$ for l

10. $A = l \cdot w$ for w

11. $P = 2(l + w)$ for l

12. $P = 2(l + w)$ for w

13. $D = rt$ for r

14. $D = rt$ for r

15. $A = \frac{1}{2}bh$ for b

16. $A = \frac{1}{2}bh$ for h

Use the given information to determine the amount of interest earned.

17. Jennifer deposits \$800 in an account that earns 5% interest for 1 year.

18. Tonya deposits \$1200 in an account that earns 3% interest for 1 year.

19. David deposits \$1400 in an account that earns 2% interest for 3 years.

20. Lin deposits \$3500 in an account that earns 6% interest for 5 years.

21. Shania deposits \$3200 in an account that earns 4.5% interest for 7 years.

22. Horace deposits \$6800 in an account that earns 6.7% interest for 4 years.

5

23. Leslie deposits \$7500 in an account that earns 3.2% interest for 6 months.

24. Tabitha deposits \$4000 in an account that earns 4.8% interest for 9 months.

25. Sean deposits \$12,500 in an account that earns 5.5% interest for 3.5 years.

26. Jorge deposits \$18,800 in an account that earns 3.6% interest for 6.25 years.

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Use the given information to solve each problem. Round your answers to two decimal places.

27. Calculate the amount of time it will take to earn \$200 in simple interest if you deposit \$8000 into an account that earns 3% interest.
28. Calculate the amount of time it will take to earn \$150 in simple interest if you deposit \$9000 into an account that earns 5% interest.
29. Calculate the amount of time it will take to earn \$500 in simple interest if you deposit \$6000 into an account that earns 7.5% interest.
30. Calculate the amount of time it will take to earn \$3500 in simple interest if you deposit \$10,000 into an account that earns 6.5% interest.

Use the given information to answer each question.

31. How far can a car travel in 4.5 hours at an average speed of 45 miles per hour?
32. How far can a car travel in 1.5 hours at an average speed of 35 miles per hour?
33. How long does it take to run 10 miles at an average speed of 8 miles per hour?
34. How long does it take to walk 6 miles at an average speed of 4 miles per hour?
35. A car travels 350 miles in 6.5 hours. What is the average speed?
36. A car travels 150 miles in 3.25 hours. What is the average speed?