

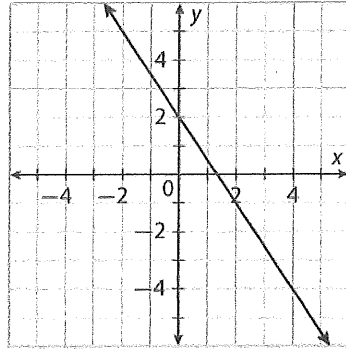
**MODULE**  
**7**

**Linear Equations and Inequalities**

**Module Quiz: B**

1. Write an equation in slope-intercept form to represent a line that passes through the points  $(-4, 1)$  and  $(-2, 4)$ .
- \_\_\_\_\_

2. Line  $r$  is shown on the graph.



Write the equation of a line that is perpendicular to line  $r$  and passes through  $(-3, -4)$  in point-slope form.

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3. Does each equation describe a line that is parallel to the line  $y = -\frac{1}{2}x + 3$ ?

A  $y + 3 = -\frac{1}{2}(x + 4)$      Yes     No

B  $2x - y = -6$      Yes     No

C  $y - 5 = 2(x - 1)$      Yes     No

D  $x + 2y = -16$      Yes     No

4. Write the equation of a line in slope-intercept form that is perpendicular to  $y = \frac{3}{4}x - 10$  and passes through  $(-6, 8)$ .
- \_\_\_\_\_

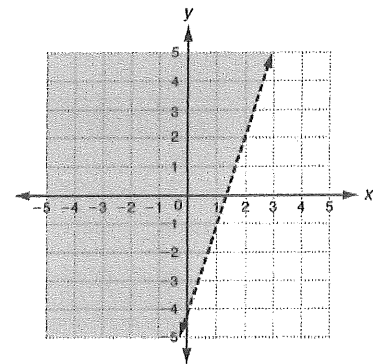
5. The function  $f(x)$  represents the amount charged by gardener **A** for  $x$  hours of work, and  $g(x)$  represents the amount charged by gardener **B** for  $x$  hours of work.

$x$	$f(x)$	$g(x)$
2	100	220
4	200	280
6	300	340
8	400	400
10	500	460

For how many hours of work will the gardeners charge the same amount, and how much will they charge?

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6. The solution of which linear inequality is graphed below?



A  $3x - y > -4$

C  $-3x + y > 4$

B  $3x - y < 4$

D  $3x + y < 4$

7. Is each ordered pair a solution of  $y \geq 5x - 2$ ?

A  $(1, 5)$

Yes     No

B  $(3, 13)$

Yes     No

C  $(2, 9)$

Yes     No

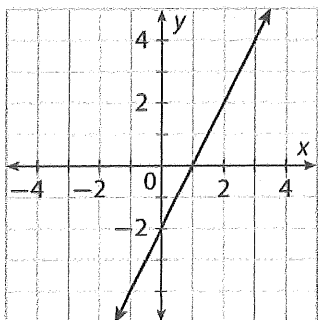
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**MODULE**  
**7**

# Linear Equations and Inequalities

## Module Quiz: B

8. Write an equation in standard form to represent the line shown on the graph below.

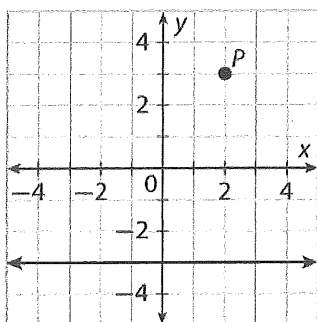


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9. Are the lines represented by the equations  $y + 5 = -3(x - 1)$  and  $x - 3y = -12$  perpendicular? Explain your answer.

\_\_\_\_\_  
\_\_\_\_\_

10. Write an equation for a line that is parallel to the one shown on the graph and passes through point  $P$ .



$y = -3$

\_\_\_\_\_

11. Terrell has \$2700 in his checking account and \$1500 in his savings account. He uses his checking account to pay bills which are about \$240 each month.

- a. In how many months will his checking account balance equal his savings account balance?

\_\_\_\_\_

- b. If Terrell deposited an additional \$720 in his savings account, in how many months will his balances be the same?

\_\_\_\_\_

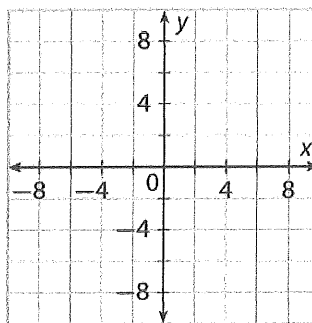
12. Mary has an office-supplies budget of \$150 for folders, which are \$2.15 each, and notebooks, which are \$4.60 each. Write an inequality that represents the number of folders  $f$  and notebooks  $n$  she can purchase.

\_\_\_\_\_

13. Is  $(10, -7)$  a solution of  $y \geq -0.5x - 5$ ? Explain your answer.

\_\_\_\_\_

14. Graph the inequality  $y > -\frac{1}{2}x + 4$ .



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Algebra 1 Study Guide

MODULE 1

Quantitative Reasoning

Module Quiz: B

1. Solve  $-8 = \frac{x}{2}$  for x.

2. Tonya is saving money to buy a computer that costs \$375. She has \$75 saved, and each week she adds \$25 to her savings. How many weeks will it take her to save enough money to buy the computer?

- A 5
B 4
C 12
D 15

3. What is the best first step for solving the equation  $-1.8 = \frac{2z - 18}{5}$ ?

- A Add 18 to both sides of the equation.
B Subtract 18 from both sides of the equation.
C Multiply both sides of the equation by 5.
D Divide both sides of the equation by 1.8.

4. What is the solution for the equation  $-3.2 = 2.5 + 1.2m$ ?

5. The perimeter of a square picture frame is 48 inches. One side length of the frame is 30.48 centimeters. How many centimeters are in an inch?

6. A building that is 15 meters tall casts a shadow that is 6 meters long. At the same time, a tree casts a shadow that is 9 meters long. How tall is the tree?

7. A bottle can hold 2.75 liters of water. About how many gallons can the bottle hold? Round to the nearest hundredth. (Hint: 1 liter ≈ 0.26 gallons.)

8. A train travels 125.5 miles in 150 minutes. One mile is about 1.61 kilometers. Which of the following is closest to the train's speed in kilometers per hour?

- A 31.2 km/h
B 78.0 km/h
C 80.8 km/h
D 202 km/h

9. Which of the following is the most precise measurement?

- A 13 in. C 13.615 in.
B 13.6 in. D 13.62 in.

10. Does each of the following numbers have 3 significant digits?

- A 0.091
B 0.910
C 910
D 9100
Yes No
Yes No
Yes No
Yes No

1

**MODULE 1**  
**Quantitative Reasoning**  
**Module Quiz: B**

11. Solve  $2.5 = \frac{x}{6}$ .

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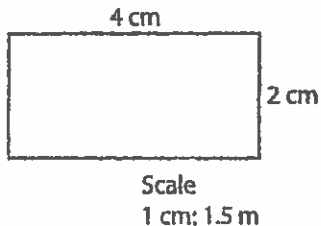
12. Solve the equation  $-4 = \frac{12p + 10}{2}$ .

\_\_\_\_\_

13. Dante's cell phone company charges \$45 per month for unlimited calls and internet use and \$0.25 per text message. His last cell phone bill was \$60.50. How many text messages did Dante send last month?

\_\_\_\_\_

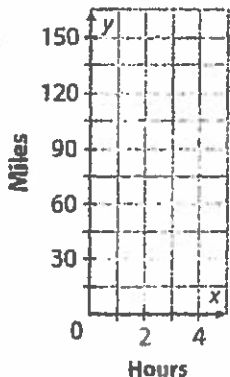
14. Thomas is building a fence around his garden. He made a scale drawing as shown below.



What is the perimeter of the actual fence?

\_\_\_\_\_

15. Mr. Swanson drove 150 miles in 4 hours at a constant speed. Plot the points on the graph to represent the total distance he drove each hour.



For 16-19, use the table.

Tonya's age (y)	Tonya's height (in)
3	36.8
4	40
5	41.25
6	45
7	48.0
8	51.5

16. Were more precise measurements taken when Tonya was 6 years old or 8 years old?

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17. a. Which height has the greatest number of significant digits?

\_\_\_\_\_

b. How many significant digits are in the number?

\_\_\_\_\_

18. a. Which height has the least number of significant digits?

\_\_\_\_\_

b. How many significant digits are in the number?

\_\_\_\_\_

19. Tonya's mother is 1.5 times as tall as Tonya was when she was 6. How tall is Tonya's mother? Use the correct number of significant digits.

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2

## MODULE

2

## Algebraic Models

## Module Quiz: B

1. Solve  $-1.5x + 6 = 15$  for  $x$ .
- \_\_\_\_\_
2. How many coefficients are in the expression  $\frac{1}{3}y^2 - 18y + 9 - 2y^{-2}$ ? *and what are they?*
- \_\_\_\_\_
3. Is each of the following a term of the expression  $-9x^3 + 12p + 6$ ?
- |           |                           |                          |
|-----------|---------------------------|--------------------------|
| A $p$     | <input type="radio"/> Yes | <input type="radio"/> No |
| B $-9x^3$ | <input type="radio"/> Yes | <input type="radio"/> No |
| C $3$     | <input type="radio"/> Yes | <input type="radio"/> No |
| D $6$     | <input type="radio"/> Yes | <input type="radio"/> No |
4. Kurt works at a cafe and earns \$16 per hour. On Wednesday, he worked  $t$  hours at the cafe, and his neighbor paid him \$5 per hour to babysit for  $b$  hours. Which expression best represents the amount Kurt earned on Wednesday?
- |              |              |
|--------------|--------------|
| A $16t + 5$  | C $16t + 5b$ |
| B $16t - 5b$ | D $16b + 5t$ |
5. Is each of the following equivalent to  $6(2y - 4) + p$ ?
- |                   |                           |                          |
|-------------------|---------------------------|--------------------------|
| A $p + 12y - 24$  | <input type="radio"/> Yes | <input type="radio"/> No |
| B $6y + p - 24$   | <input type="radio"/> Yes | <input type="radio"/> No |
| C $p - 6(4 - 2y)$ | <input type="radio"/> Yes | <input type="radio"/> No |
| D $24 + 12y + p$  | <input type="radio"/> Yes | <input type="radio"/> No |
6. Les bought 6 pairs of shorts for  $s$  dollars each and a blazer that cost three times as much as a pair of shorts. He spent a total of \$139.50. How much did the blazer cost?
- \_\_\_\_\_
7. Solve  $3(x - 4) = -5$  for  $x$ .
- \_\_\_\_\_
8. The equation for finding the area of a trapezoid is  $A = \frac{1}{2}(b_1 + b_2)h$ . What is the equation solved for  $h$ ?
- |                                |
|--------------------------------|
| A $h = \frac{A}{b_1 + b_2}$    |
| B $h = \frac{2A}{b_1 + b_2}$   |
| C $h = \frac{1}{2}(b_1 + b_2)$ |
| D $h = 2A - b_1 - b_2$         |
9. Marcus is buying 10 gift bags for his birthday party. He will choose items to put in the bags and then pay an additional charge of \$0.75 for the actual bag. Marcus cannot spend more than \$50. Write and solve an inequality to find the most Marcus can spend on the items for each bag.
- \_\_\_\_\_
10. Choose True or False for each statement about the solutions of  $\frac{x}{4} + 6\frac{1}{4} > 7\frac{1}{2}$ .
- |   |                            |                             |
|---|----------------------------|-----------------------------|
| A The solutions are all less than 5.    | <input type="radio"/> True | <input type="radio"/> False |
| B The solutions are all greater than 5. | <input type="radio"/> True | <input type="radio"/> False |
| C The solution set includes $-6$ .      | <input type="radio"/> True | <input type="radio"/> False |
| D The solution set includes 12.         | <input type="radio"/> True | <input type="radio"/> False |

3

**MODULE**  
**2**

**Algebraic Models**

**Module Quiz: B**

11. Stanley ran a 5 kilometer race in 30 minutes. What was his speed in kilometers per hour? Round to the nearest tenth.

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12. Write the coefficient(s) in the expression  $7x^2 - y + 9$ .

\_\_\_\_\_

13. Suppose  $x$  and  $y$  are the number of students in two classrooms, where  $x < y$ . Compare the expressions using  $<$ ,  $=$ , or  $>$ .  
 $(2x)^2$    $(x + y)^2$ .

14. Monday, Nita earned \$85 for  $h$  hours of babysitting. Wednesday, she earned the same rate for 8 hours of babysitting and got a \$12 tip. Write an expression to represent how much Nita earned on Wednesday.

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15. A cell phone company charges \$45 per month for unlimited calls and \$0.25 per text message. Another cell phone company charges \$0.15 per text message and \$70 per month for unlimited calls.

a. Write an equation to represent the time the cost from both companies will be the same.

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b. Solve the equation and interpret the solution.

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16. Lia gets paid \$450 a week plus a 5% commission on her sales. She hopes to earn at least \$600 dollars each week.

a. Write an inequality to represent the verbal description.

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b. How much does Lia need in sales to make her goal?

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17. Solve the inequality  $8 - d \geq -3d + 4$ .

\_\_\_\_\_

18. Solve the inequality  $2(3x - 4) \geq 9x - 10$ .

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19. Juan is making birdhouses to sell at a craft show. The cost of making the birdhouses is \$80 plus \$6.25 per birdhouse. He will sell them for \$16 each. Write and solve an inequality to find the number of birdhouses he must sell to make a profit.

\_\_\_\_\_

20. The formula for finding the area of a circle is  $A = \pi r^2$ . Solve the formula for  $r$ .

\_\_\_\_\_

21. Solve  $9(t - 7) = u$  for  $t$ .

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*Handwritten:* Solve  $y = 2(x + y) + 3$  for  $x$

*Handwritten:* (4)

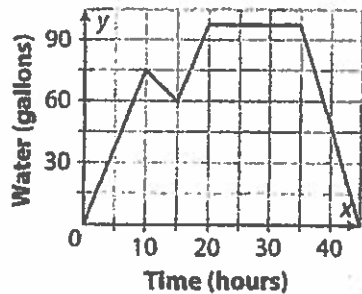
**MODULE 3** **Functions and Models**

**Module Quiz: B**

1. Solve  $13 + \frac{x}{2} = 3x$  for  $x$ .

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2. The amount of water in Nir's rain barrel is represented on the graph. Is each of the following a possible interpretation of the graph?



A The barrel started off empty.

- Yes       No

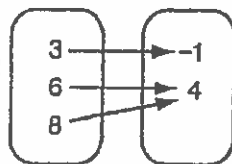
B Nir used water from the barrel to water her plants after 35 hours.

- Yes       No

C It rained for the first 10 hours.

- Yes       No

3. Find the domain of the relation represented on the mapping diagram.



4. Kim burns 85 calories per hour hiking. How many calories will Kim burn in  $h$  hours? Identify the independent and dependent variables of this situation.

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5. Is each of the following a function?

A  $(2, 1), (4, 3), (6, 5), (8, 7)$

- Yes       No

B  $(2, 1), (4, 3), (6, 5), (2, 7)$

- Yes       No

C  $(2, 1), (4, 1), (6, 5), (8, 7)$

- Yes       No

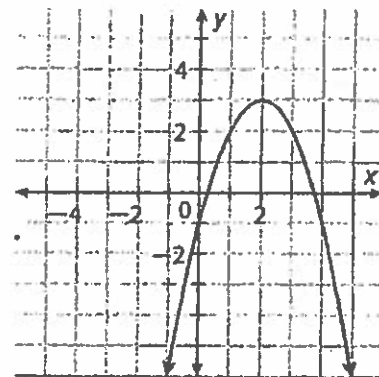
6. The table below shows the relationship between the size of a painting by a particular artist and the price the gallery charges for the painting.

Painting size in $(x)$	6	8	10
Price dollars $(y)$	30	40	50

Write a function that describes the relationship and use it to find the price of a  $16 \text{ in}^2$  painting.

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7. The graph of  $f(x) = -x^2 + 4x - 1$  is below.



Find the value of  $f(x)$  when  $x = 0$ .

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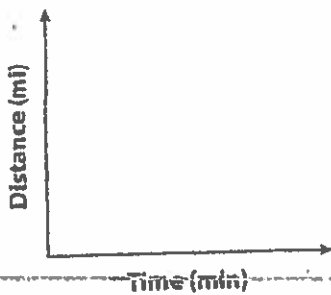
**MODULE**  
**3**

**Functions and Models**  
**Module Quiz: B**

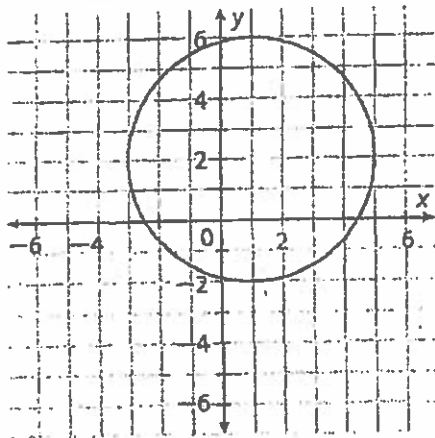
8. Solve  $13 - m = 2(-4 + m)$ .

\_\_\_\_\_

9. Varun drove to work this morning. It took him 15 minutes. He stopped at a traffic light for 3 minutes after driving for 5 minutes. Sketch a graph to represent the distance from Varun's house during his drive to work.



10. Is the relation represented on the graph below a function? Explain your answer.



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

11. A restaurant sells tea for \$1.50 per cup. A group of 6 people orders drinks.

a. Write a function for the cost of tea depending on the number of cups ordered.

\_\_\_\_\_

b. Find a reasonable domain for the situation.

\_\_\_\_\_

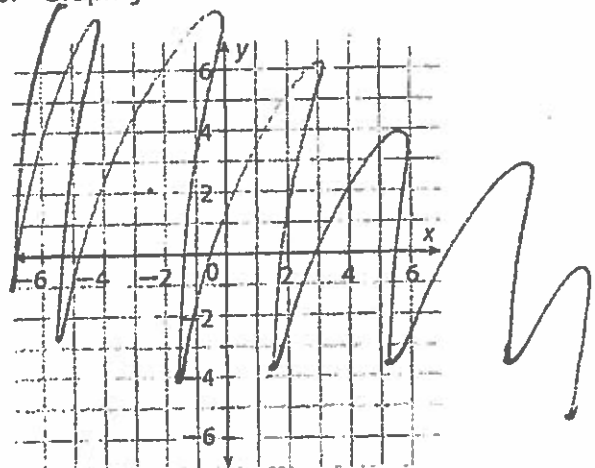
c. Find a reasonable range for the situation.

\_\_\_\_\_

12. a. Complete the table.

$x$	$y = x^2 - 3$	$(x, y)$
-3	$y = (-3)^2 - 3$	
-2		
0		
2		
3		

b. Graph  $y = x^2 - 3$ .



6



**MODULE**  
**5**
**Linear Functions**
**Module Quiz: B**

1. Write the first four terms of the sequence defined by the rule  $f(n) = -n^2 + 5$ .

*Handwritten answer: 4, 3, 0, -5*

2. Is each of the functions a linear function?

A  $y = 4x - 7$        Yes     No

B  $y = 6x^2 - 1$        Yes     No

C  $y = \frac{1}{2x} + 10$        Yes     No

D  $y = -7$        Yes     No

3. Does each of the following equations describe a line with an x-intercept of 7?

A  $-2x - 7y = -14$        Yes     No

B  $3x + 2y = 14$        Yes     No

C  $-4x + 2y = -28$        Yes     No

D  $x = 7$        Yes     No

**Use the information below for 4-5.**

Stanley is running a 5-mile race. He runs 1 mile every 7 minutes. Stanley's distance from the finish line after  $x$  minutes is represented by the function  $x + 7y = 35$ .

4. Find and interpret the x-intercept.

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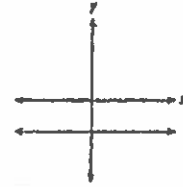
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5. Find and interpret the y-intercept.

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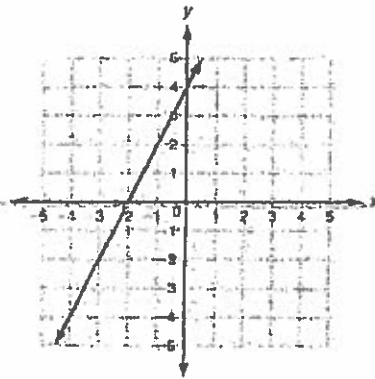
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6. What describes the slope of the line shown on the graph below?



- A positive      C 0  
 B negative      D undefined

7. What is the slope of the line below?



8. Does each of the following equations represent a direct variation?

A  $2x + 2y = 2$        Yes     No

B  $y = -\frac{2}{3}x$        Yes     No

C  $-x + 2y + 4 = 0$        Yes     No

D  $9.5x + 0.6y = 0$        Yes     No

9. Find the constant of variation of  $-8x + 5y = 0$ .

*Handwritten answer: 1.6*

## MODULE

5

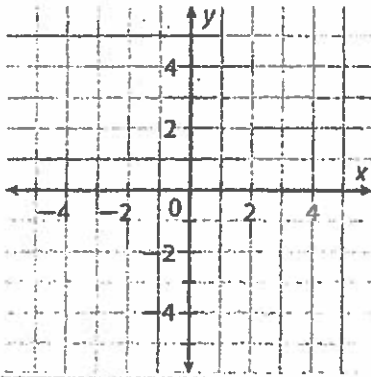
## Linear Functions

## Module Quiz: B

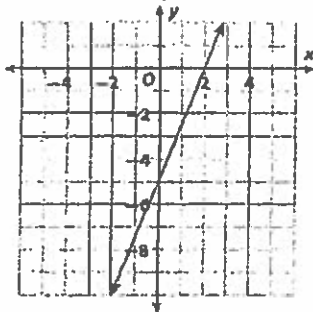
10. Write the explicit rule of the sequence

$$-\frac{1}{3}, -\frac{2}{3}, -3, -4\frac{1}{3}, \dots$$

11. Graph
- $x - 2y = 4$
- .



12.



- a. What are the  $x$ - and  $y$ -intercepts of the line graphed above?

\_\_\_\_\_

- b. What is the slope of the line?

\_\_\_\_\_

- c. Write an equation for the line in standard form.

\_\_\_\_\_

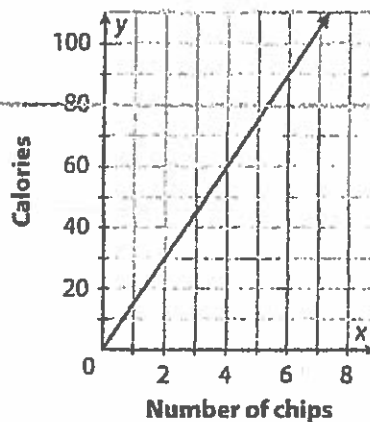
13. A line has an
- $x$
- intercept of 2 and a
- $y$
- intercept of 6. Find the slope of the line.

\_\_\_\_\_

14. A line includes the points
- $(\frac{1}{4}, -3)$
- and
- $(-2\frac{1}{4}, 5)$
- . Find the slope of the line.

\_\_\_\_\_

15. The graph below shows the relationship between the number of tortilla chips and total number of calories of the chips.



- a. Find and interpret the slope.

\_\_\_\_\_

\_\_\_\_\_

- b. Write an equation to represent the relationship. Is it a direct variation? Explain why or why not.

\_\_\_\_\_

\_\_\_\_\_

## MODULE

6

## Forms of Linear Equations

## Module Quiz: B

1. Does each equation represent direct variation?

A  $6y = -8x$

 Yes No

B  $12 + y = -\frac{1}{2}x$

 Yes No

C  $y = 6x^2$

 Yes No

D  $1.5x = 3y + 0$

 Yes No

2. Line  $m$  includes the points  $(-5, 3)$  and  $(-2, -6)$ . Line  $n$  has the same slope as line  $m$  and a  $y$ -intercept of  $-\frac{2}{3}$ . Write the equation for line  $n$  in slope-intercept form.

Use this information for 3 and 4.

A landscape service charges customers a one-time fee and an hourly rate of \$15. For 3 hours of work, it charges \$75.

3. Write an equation in point-slope form.

4. How much does the landscape service charge for 10 hours of work?

5. Does each of the following equations describe a line that includes the points

$$\left(1, -1\frac{3}{4}\right) \text{ and } \left(-2, 3\frac{1}{4}\right)?$$

A  $y = -\frac{5}{3}x - \frac{1}{12}$

 Yes No

B  $y - \frac{13}{4} = -\frac{1}{12}(x - 1)$

 Yes No

C  $20x + 12y = -1$

 Yes No

6. Write an equation in standard form for a line that passes through  $(2, 2)$  and  $(0, -3)$ .

7. For  $f(x) = 3x + 5$  and  $g(x) = \frac{3}{4}x + 5$

determine if each statement is True or False.

A  $f(x)$  and  $g(x)$  have the same  $y$ -intercept.  True  False

B  $f(x)$  and  $g(x)$  have the same slope.  True  False

C The graph of  $f(x)$  is steeper than the graph of  $g(x)$ .  True  False

D The graph of  $g(x)$  is steeper than the graph of  $y = x$ .  True  False

Use this information for 8 and 9.

Mr. Suarez drives at a speed of 60 miles per hour to visit his brother who lives 200 miles away from his home.

8. Write an equation in slope-intercept form that represents the distance  $d$  in miles from his brother's home and  $t$  is the time in hours he has been driving.

9. Mr. Suarez's brother moved 40 miles closer to Mr. Suarez's house. Write an equation that represents this new situation.

9

**MODULE**  
**6**

**Forms of Linear Equations**

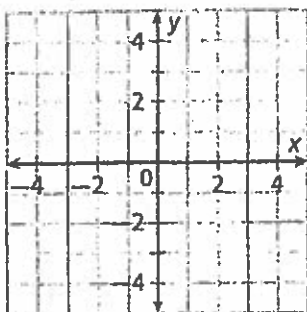
**Module Quiz: B**

10. Find the x- and y-intercepts of  $5x - 3y = 12$ .

x-intercept: \_\_\_\_\_

y-intercept: \_\_\_\_\_

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



12. Write an equation in point-slope form for a line that includes the origin and (9, -3).

\_\_\_\_\_

13. A computer programmer charges \$45 an hour for coding projects plus a start-up fee of \$150.

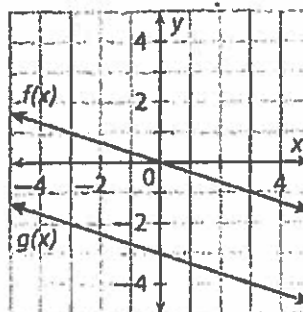
- a. Write an equation in standard form to represent the total cost  $t$  of a project that takes  $h$  hours.

\_\_\_\_\_

- b. How much does the programmer charge for a coding project that takes 25 hours?

\_\_\_\_\_

14. The graphs of  $f(x)$  and  $g(x)$  are shown below.



- a. Write equations in slope-intercept form for  $f(x)$  and  $g(x)$ .

\_\_\_\_\_  
\_\_\_\_\_

- b. Are the x terms or the constant terms equal in the equations of  $f(x)$  and  $g(x)$ ?

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15. Kim is a math and science tutor. She offers tutoring sessions that are 1, 1.5, 2, 2.5, or 3 hours long. The equation  $m = 15h + 30$  represents her charge in dollars for a math session that is  $h$  hours long. For science, she charges the same one-time fee but a different hourly rate. She charges \$105 for a 3-hour science tutoring session.

Write an equation in slope-intercept form that represents the total charge  $s$  of a science tutoring session that is  $h$  hours long, and find the reasonable range of that equation.

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## MODULE

9

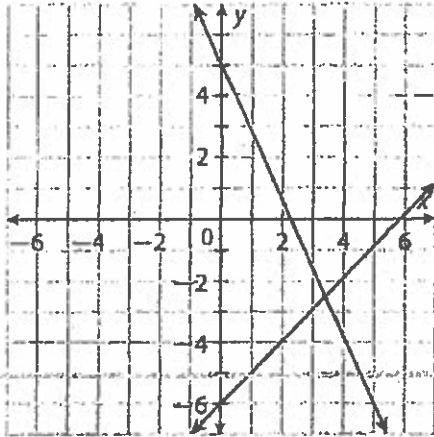
## Solving Systems of Linear Equations

## Module Quiz: B

1. Which number could be a correlation coefficient indicating a strong negative correlation?

A -4.5                      C -0.21  
B -0.95                     D 0.35

2. Which ordered pair is the solution for the system graphed below?



3. A linear system is classified as inconsistent. Choose True or False for each statement about the graph of the system.
- A The slopes of the lines are the same.  
 True  False
- B The lines are parallel.  
 True  False
- C The slopes and y-intercepts of the lines are different.  
 True  False
- D The slopes and x-intercepts of the lines are the different.  
 True  False

4. Solve  $\begin{cases} y = 4x - 1 \\ y = 3x + 6 \end{cases}$  by substitution.

What is the solution?

5. Solve  $\begin{cases} 3x + 5y = 27.5 \\ 2x + 3y = 16 \end{cases}$  by elimination.

What is the solution?

6. How many solutions does the system

$$\begin{cases} y = 2x + 1 \\ -4x + 2y = 2 \end{cases} \text{ have?}$$

7. A system of two equations includes the equation  $y = -\frac{2}{5}x - \frac{1}{2}$ . If the system has infinitely many solutions, can each of the following be the second equation of the system?

A  $4x + 10y = -5$                        Yes  No

B  $y = -\frac{2}{5}x + 8$                           Yes  No

C  $2x + y = -1$                           Yes  No

D  $y + 1 = -\frac{2}{5}\left(x - \frac{5}{4}\right)$                        Yes  No

8. Helen spent \$7.75 to purchase 23 snack-sized bags of chips  $c$  and pretzels  $p$  for a club meeting. The following system represents this situation.

$$\begin{cases} c + p = 23 \\ 0.25c + 0.5p = 7.75 \end{cases}$$

How many of each type of snack did Helen buy?

13  
15

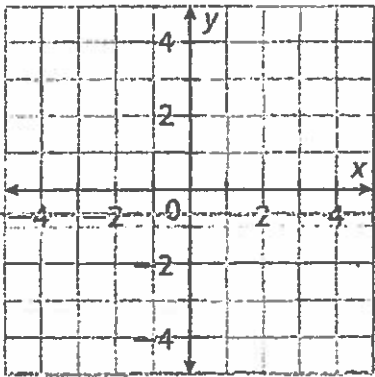
**MODULE 9** Solving Systems of Linear Equations  
**Module Quiz: B**

9. The line  $y = 2.5x - 7$  is a line of fit for the data below.

	-4	-2	0	2
	-15	-13	-6.5	-2

Find the sum of the squared residuals.

10. Graph and solve: 
$$\begin{cases} y - 3x = 3 \\ y = -\frac{1}{2}x - 4 \end{cases}$$



11. Solve using substitution:

$$\begin{cases} y = -6x + 10 \\ y = -6x + 3 \end{cases}$$

12. Solve using elimination: 
$$\begin{cases} x - 2y = -7 \\ 4x + 2y = 22 \end{cases}$$

13. 
$$\begin{cases} 7x + 5y = 40 \\ 2x + 4y = -4 \end{cases}$$

a. Which method will you use to solve the system, and why?

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b. Solve the system of equations.

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14. At Healthy Hair, the cost of a child's haircut is \$4 and the cost of an adult haircut is \$14. The sales from the 42 haircuts given on Friday were \$588. How many adults and children had haircuts on Friday? The answer is the solution to the following system.

$$\begin{cases} 4c + 14a = \$588 \\ c + a = 42 \end{cases}$$

a. Which method will you use to solve this system: graphing, substitution, or elimination? Explain why.

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b. Solve the system and answer the original question.

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