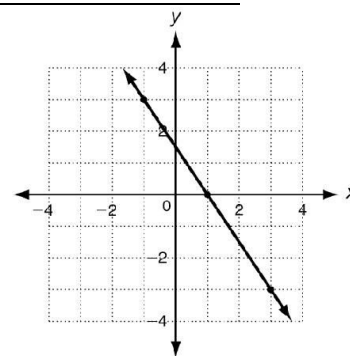


## Linear Functions, Equations, and Inequalities

1. What are the x- and y-intercepts of the line graphed right?



2. What are the slope and y-intercept of the line described by  $y = 3x - 6$ ?

3. Evaluate the statements below for  $f(x) = 4x$ ,  $g(x) = -4x$ , and  $h(x) = \frac{1}{4}x$ .

A The line for  $f(x)$  is steeper than the line for  $h(x)$ .

True                  False

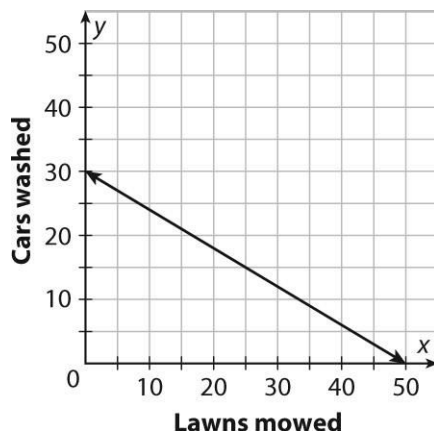
B The line for  $f(x)$  goes down and to the right.

True                  False

C The line for  $g(x)$  goes down and to the right.

True                  False

4. Kurt does chores in his neighborhood. The graph shows Kurt's savings goal for the summer. If he washes 15 cars, how many lawns will he have to mow to meet his goal?



A 15

C 30

B 25

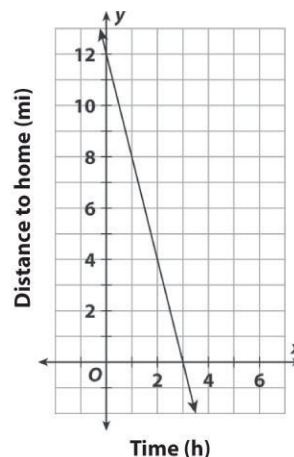
D 50

5. Leslie joins a fitness club that has an initial fee of \$20 plus a monthly fee of \$15. Rashad's club charges \$40 initially plus \$10 per month. In how many months will the clubs cost the same?



## Linear Functions, Equations, and Inequalities

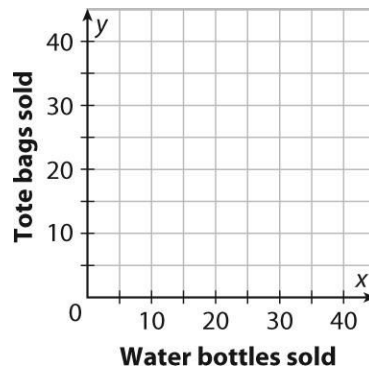
6. Opal walked from school to home, which was a distance of 12 miles. She walked at a rate of 4 miles per hour. The graph represents the remaining distance Opal had to walk.



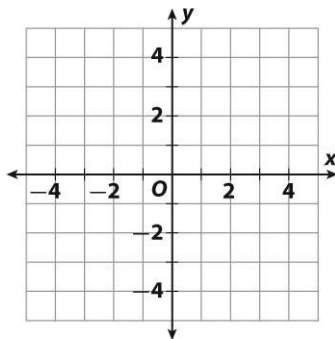
- a. Find the slope of the line.
  - b. Find the x-intercept, and explain what it represents in the context.
  - c. Find and interpret the y-intercept.
  - d. Write an equation for the line in slope-intercept form.
7. An accountant charges an initial fee of \$100 plus a rate of \$40 per hour. The function that shows the total fees charged is  $f(x) = 40x + 100$ . How would the graph of the function change if the accountant raised his rate to \$45 per hour?
8. a. The Environmental Club is selling water bottles for \$8 and tote bags for \$12 to raise \$240 to donate to charity. Write the linear equation for the fundraising goal.
- b. Complete the table.

Water Bottles	Tote Bags

- c. Graph the equation.



9. a. Graph the solutions to the inequality  $y < 3x + 2$ .



- b. List two ordered pairs that are solutions to the inequality and two ordered pairs that are not solutions.

Solutions:

Nonsolutions:

## Statistical Models

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1.

Do you Read More than 30 Minutes Per Day?		
Gender	Yes	No
Male	107	21
Female	86	9

How many people surveyed read less than 30 minutes per day?

2.

What Types of Music do you Like?			
Classical			
Pop	Yes	No	Total
Yes	82	42	124
No	15	61	76
Total	97	103	200

What is the joint relative frequency that a person surveyed likes classical music and pop music?

- A 0.41                      C 0.76  
B 0.82                      D 0.97

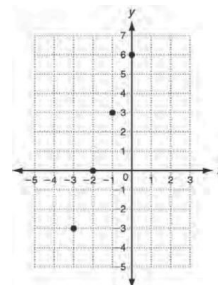
3. One hundred eighty people filled out a survey about their favorite color. Of those people 95 of the respondents were female; 21 males responded that their favorite color is red. What is the approximate conditional frequency that a person surveyed was a male whose favorite color is red?

- A 0.12                      C 0.25  
B 0.22                      D 0.33

4. What is the mean of the data set {5, 5, 2, 6, 8, 9, 12, 13}?

5. Which correlation coefficient best matches the data shown on the graph to the right?

- A  $-1$                       C  $1$   
B  $0.8$                       D  $3$



6. Ana's data set has a normal distribution. What percent of the data points are within 1 standard deviation of the mean?
7. Data set **A** has a correlation coefficient of  $-0.93$ , and data set **B** has a correlation coefficient of  $0.09$ . Choose True or False for each statement.
- A The variables from set **A** have a low negative correlation.  
True      False
- B The variables from set **A** have a strong negative correlation.  
True      False
- C The variables from set **B** have a strong positive correlation.  
True      False

8. The frequency table below shows the age and gender of the students at Hilton High School.
- a. Complete the frequency table.

Age	Gender		
	Male	Female	
13–14	61	60	
15–16	62	52	114
17–18	45		
19–20	15	13	
Total		175	

- b. How many 15–16 year old female students attend Hilton High?
- c. In all, how many students are male?
- d. Are there more 13–14 year old students or 15–16 year old students? How many more?

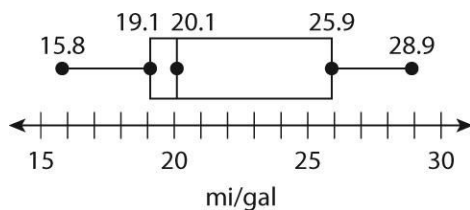
9. The table below shows the results of a survey of the primary mode of transportation of residents of Sarasota, Florida.

Bus	Bike	Car	Walking
31	35	119	25

- a. What is the relative frequency that a resident who was surveyed primarily takes the bus? Round to the nearest hundredth.
10. a. Complete the tables.

$s = 2r - 6$			
$r$	$s$ (actual)	$p$ (predicted)	residuals
1	-7	-8	
0	-7		
1	-3		
2	0		
$s = 2r - 5$			
$r$	$s$ (actual)	$p$ (predicted)	residuals
1	-7	-7	
0	-7		
1	-3		
2	0		

- b. Find the sum of the squared residuals for both lines of fit.
- c. Which line is a better fit to the data? Explain why.
11. Based on the box-and-whisker plot below, what is the range of the data?



# Linear Systems

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1. For which system of equations is the solution  $x = 4$ ,  $y = -3$ ?

A  $\begin{cases} y = -3x + 9 \\ 2y = x + 5 \end{cases}$

B  $\begin{cases} x + y = 1 \\ 2x = y - 4 \end{cases}$

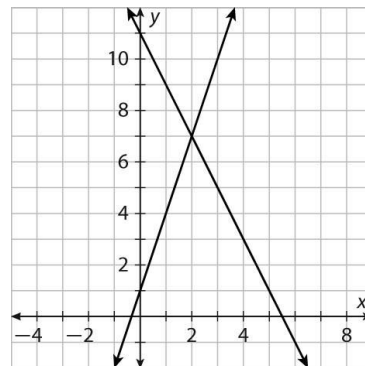
C  $\begin{cases} 3y = 2x + 3 \\ x - 3y = 12 \end{cases}$

D  $\begin{cases} y = 2x - 11 \\ 2x - 3y = 17 \end{cases}$

2. Solve  $\begin{cases} y = x + 5 \\ 2x - 3y = 4 \end{cases}$ .

3. The lines  $y = 3x + 1$  and  $y = -2x + 11$  are graphed. What is the solution to the system  $\begin{cases} y = 3x + 1 \\ y = -2x + 11 \end{cases}$ ?

- A (2, 0)
- B (0, 11)
- C (2, 7)
- D (6, 0)



4. For which value of  $k$  does the system  $\begin{cases} x + y = 4 \\ kx + y = 5 \end{cases}$  have no solutions?

- A 1
- B 1
- C 4
- D 5

5. Bax invested a total of \$2000 in two simple interest accounts. Account A earns 3% interest and Account B earns 5% interest. Bax earned a total of \$75 interest after one year. How much did Bax invest in each account?

- A \$750 in A, \$1250 in B
- B \$1000 in A, \$1000 in B



C \$1250 in A, \$750 in B

D \$1500 in A, \$500 in B

6. Solve  $\begin{cases} x = 2y + 4 \\ y = x - 2 \end{cases}$ .

7. Leslie joins a fitness club that has a membership fee of \$20 plus \$15 per month. Rashad's club has a fee of \$40 and charges \$10 per month. After how many months will the total cost be the same?

8. Solve  $\begin{cases} 2x - 3y = 1 \\ 3x + 2y = 8 \end{cases}$ .

9. What is the solution of the system  $\begin{cases} x + y = 11 \\ 2x + 3y = 26 \end{cases}$ ?

10. Alec is buying pots and pans. Pots cost \$25 and pans cost \$30. He plans on spending no more than \$100 and wants to buy at least 4 items. Which two inequalities model this situation?

11. Solve  $\begin{cases} 3x - 2y = 7 \\ 5x + 2y = 17 \end{cases}$ .

12. Cherries cost \$2.50 per pound and mangoes cost \$3 per pound. Kal bought a total of 7 pounds of cherries and mangoes for \$20.

a. Write a system of equations to represent the situation.

b. How many pounds of each fruit did Kal buy?

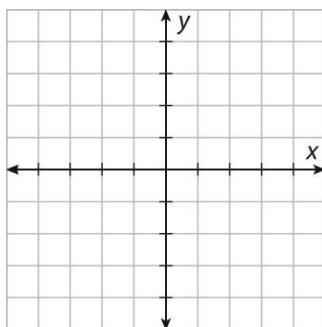
13. The sum of two numbers is 32, and the difference of the numbers is 14, where  $x$  is the greater of the two numbers. The situation is represented by the following system:

$$\begin{cases} x + y = 32 \\ x - y = 14 \end{cases}$$

What are the two numbers?

14. a. Graph the solutions to the system

of inequalities:  $\begin{cases} y \leq 1 \\ y \leq 2x \end{cases}$ .



- b. List two ordered pairs that are solutions to the system and two ordered pairs that are not solutions.

Solutions: \_\_\_\_\_

Not solutions: \_\_\_\_\_