Name _____ Class _____ Date _____

Practice 6-3

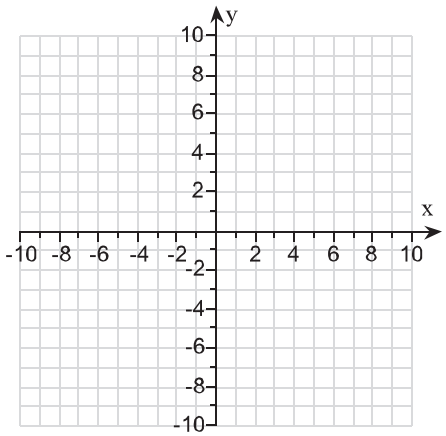
Solving Systems of Linear Equations by Graphing

1. a) Graph each equation.

$$y = \frac{1}{5}x + 2$$

$$y = -x + 8$$

b) Determine the solution of the system of equations.

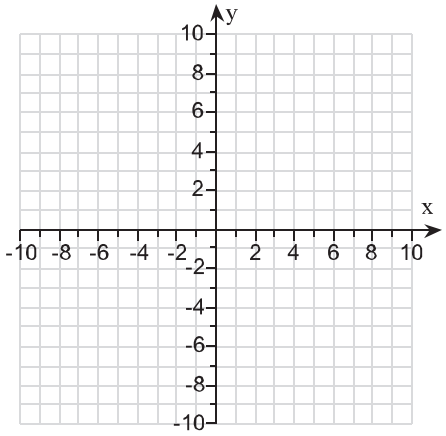


2. a) Graph each equation.

$$x + 4y = 8$$

$$3x + 4y = 0$$

b) Determine the solution of the system of equations.



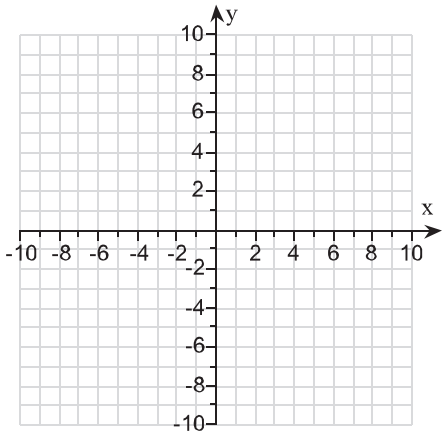
3. a) Graph each equation.

$$y - 2x = 0$$

$$y = 8x - 9$$

b) Estimate the solution of the system of equations.

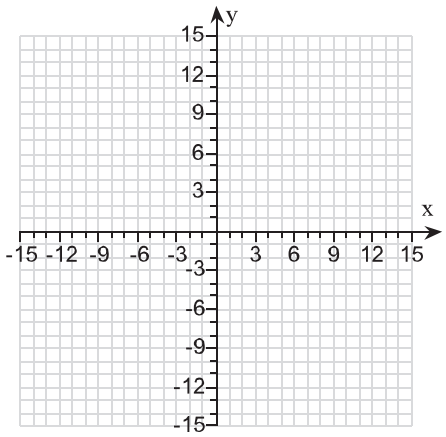
- ❍ A. (–1.5, –3)
- ❍ B. (3, 1.5)
- ❍ C. (1.5, 3)
- ❍ D. (–1.5, 3)



4. a) Graph each equation.

$y = 3x - 4$

$y = -3x + 5$



b) Estimate the solution of the system of equations.

- ❍ A. (1.5, 0.5)
- ❍ B. (–1.5, –0.5)
- ❍ C. (0.5, 1.5)
- ❍ D. (–1.5, 0.5)

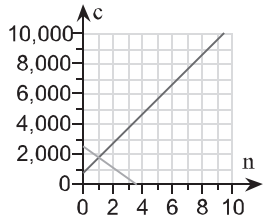
5. A broken furnace will cost $700 to repair. A new, more efficient furnace will cost $2,500. The present furnace averages about $1,000 per year for energy cost and the new furnace would average about $700 per year. The total cost, c, of repair or replacement, plus energy cost over n years can be represented by a system of equations.

a) Which system of equations could be used to find how many years it would take for the total cost of repair to equal the total cost of replacement?

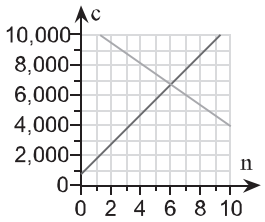
- ❍ A. Repair $c = 2{,}500 + 700n$
  Replacement $c = 700 + 1{,}000n$
- ❍ B. Repair $c = 2{,}500 + 1{,}000n$
  Replacement $c = 700 + 700n$
- ❍ C. Repair $c = 700 + 1{,}000n$
  Replacement $c = 2{,}500 + 700n$
- ❍ D. Repair $c = 700 + 700n$
  Replacement $c = 2{,}500 + 1{,}000n$

b) Which graph shows the system of equations correctly?

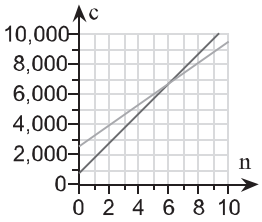
❍ A.



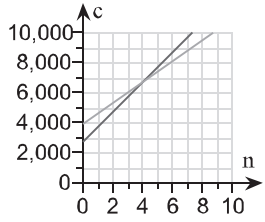
❍ C.



❍ B.



❍ D.



c) How many years would it take for the total cost of repair to equal the total cost of replacement?

6. Renting a canoe to use on River Y costs $33. Renting a canoe to use on River Z costs $5 per hour plus a $13 deposit. The total cost, c, of renting a canoe, for n hours can be represented by a system of equations.

a) Which system of equations could be used to find out how many hours the canoe can be rented?

❍ A. River Y $c = 33$
River Z $c = 5n + 13$

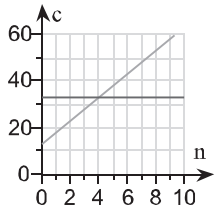
❍ B. River Y $c = 5n - 33$
River Z $c = 13$

❍ C. River Y $c = 33$
River Z $c = 5n - 13$

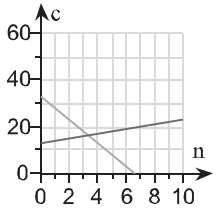
❍ D. River Y $c = 5n + 13$
River Z $c = 33$

b) Which graph shows the system of equations correctly?

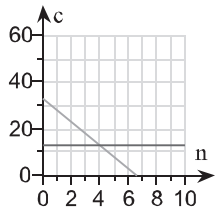
❍ A.



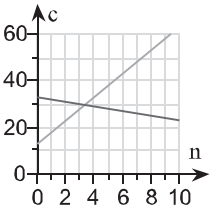
❍ C.



❍ B.



❍ D.



c) How many hours could you rent the canoe for the cost to be the same on both rivers?

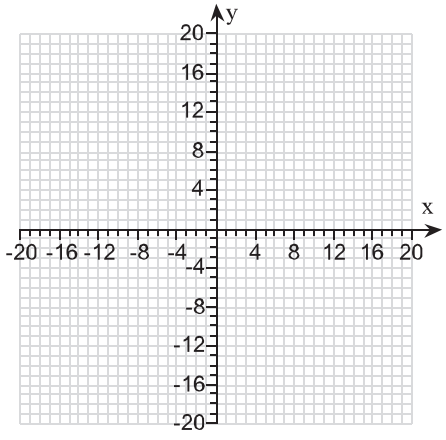
7. a) Writing Graph each equation.

$x = y$

$2x = y - 3$

b) Determine the solution of the system of equations.

c) Explain how to find the equation of a line that intersects the system of equations at the same point.



8. **Reasoning** The cost of making copies at Store W is $5 regardless of the number of copies. The cost of making copies at Store Z is 20¢ per copy plus a $2 charge for the use of the machine. The total cost, c, of making n copies can be represented by a system of equations.

a) Which system of equations could be used to find out the cost of making copies?

❍ A. Store W $c = 5$
Store Z $c = 0.2n + 2$

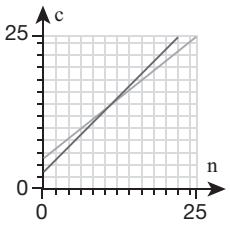
❍ B. Store W $c = 5$
Store Z $c = 0.2n - 2$

❍ C. Store W $c = 0.2n + 2$
Store Z $c = 5$

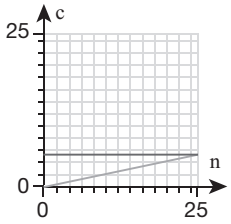
❍ D. Store W $c = 0.2n - 5$
Store Z $c = 2$

b) Which graph shows the system of equations correctly?

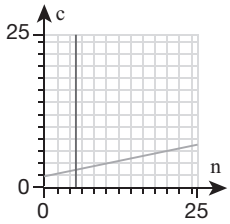
❍ A.



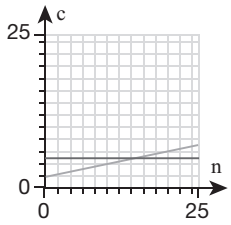
❍ C.



❍ B.



❍ D.

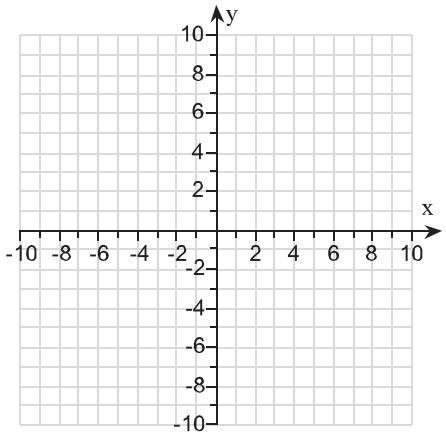


c) How many copies do you have to make for the cost to be the same at both stores?

d) If you have to make a smaller number of copies which store should you go to? If you have to make a large number of copies which store should you go to? Explain.

9. **Error Analysis** Holly was asked to estimate the solution of the system of equations. She incorrectly said the solution is (–5, –2.5).

$$y - 2x = 0$$
$$y = 6x + 10$$



a) Graph the equations.

b) Estimate the solution of the system of equations.

❍ A. (2.5, 5)

❍ B. (2.5, –5)

❍ C. (–5, 2.5)

❍ D. (–2.5, –5)

c) What mistake might Holly have made?

- ❍ A. She switched the x- and y-coordinates.
- ❍ B. She made the x-coordinates negative, but it should be positive.
- ❍ C. She found a point that is only a solution in one of the equations.
- ❍ D. She made the y-coordinate negative, but it should be positive.

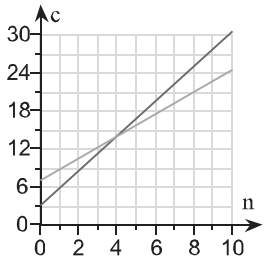
10. Bike Rentals At Bike Shop X it costs $2.75 per hour plus a $3.00 deposit to rent a bike. At Bike Shop Z it costs $1.75 per hour plus a $7.00 deposit to rent a bike. The total cost, c, of renting a bike for n hours can be represented by a system of equations.

a) Which system of equations could be used to find the cost of renting a bike?

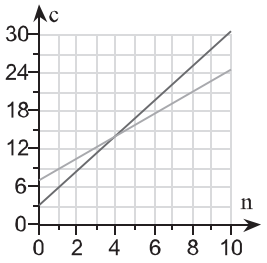
- ❍ A. Bike Shop X $c = 2.75n + 3$
  Bike Shop Z $c = 1.75n + 7$
- ❍ B. Bike Shop X $c = 2.75n - 3$
  Bike Shop Z $c = 1.75n - 7$
- ❍ C. Bike Shop X $c = 1.75n + 3$
  Bike Shop Z $c = 2.75n + 7$
- ❍ D. Bike Shop X $c = 1.75n + 7$
  Bike Shop Z $c = 2.75n + 3$

b) Which graph shows the system of equations correctly?

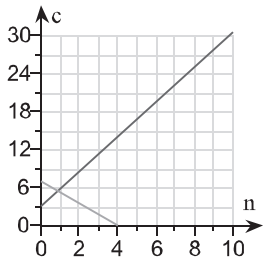
❍ A.



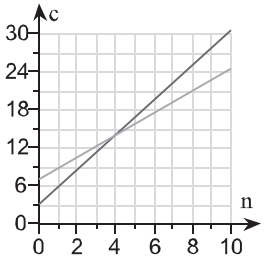
❍ C.



❍ B.



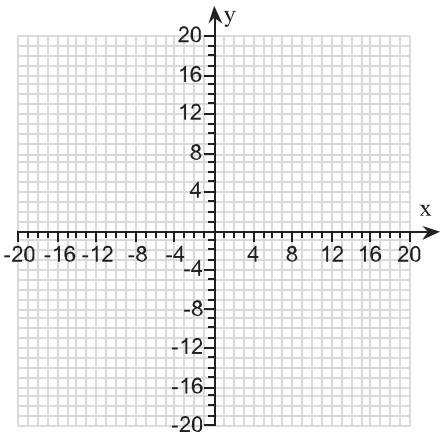
❍ D.



c) How many hours do you have to rent the bike for the cost to be the same at both shops?

11. a) Open-Ended Estimate the solution of the system by graphing the equations.

$$y - 5x = 0$$
$$y = 15x + 16$$



❍ A. (–1.6, –8)

❍ B. (1.6, 8)

❍ C. (–8, 1.6)

❍ D. (1.6, –8)

b) Find an example of a system of equations with infinitely many solutions. Describe what the graph would look like for that system.

12. The cost of endless chicken wings at Restaurant X is $10. The cost of chicken wings at Restaurant Z is 60¢ per wing plus a $2 charge for sauce. The total cost, c, of n chicken wings can be represented by a system of equations.

a) Write the system of equations. Choose the correct answer below.

❍ A. Restaurant X $c = 10$
Restaurant Z $c = 0.6n + 2$

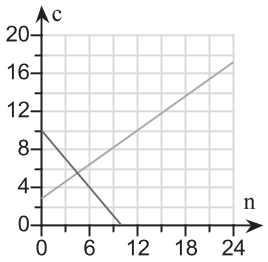
❍ B. Restaurant X $c = 0.6n - 10$
Restaurant Z $c = 2$

❍ C. Restaurant X $c = 0.6n + 2$
Restaurant Z $c = 10$

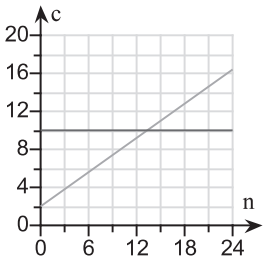
❍ D. Restaurant X $c = 10$
Restaurant Z $c = 0.6n - 2$

b) Graph the system of equations. Choose the correct answer below.

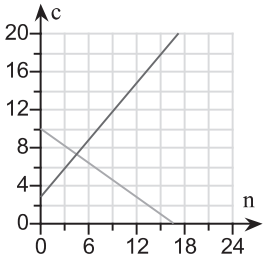
❍ A.



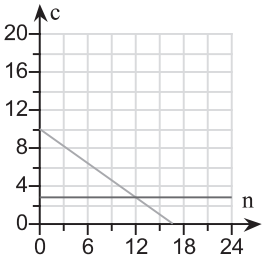
❍ C.



❍ B.



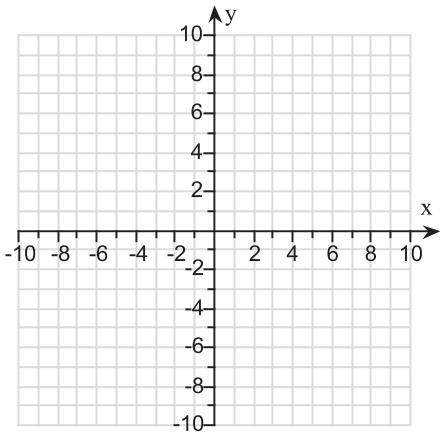
❍ D.



c) How many chicken wings do you have to have for the cost to be the same at both restaurants?

13. a) Graph each equation.

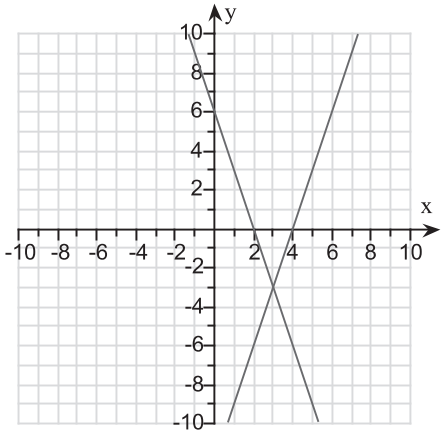
$$4x - 7y = 21$$
$$2x + 4y = 18$$



b) What is the solution to the system of equations?

14. Think About the Process You are given the following system of equations.

$$y = -3x + 6$$
$$y + 3 = 3(x - 3)$$



a) Which point on the graph is the solution of the system of equations?

- ❍ A. The point where the lines intersect the x-axis
- ❍ B. The point where the lines intersect the y-axis
- ❍ C. The point where the lines intersect the origin
- ❍ D. The point where the lines intersect each other

b) What is the solution of the system of equations?

15. Think About the Process

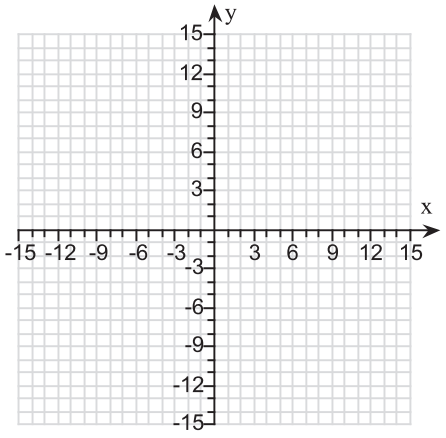
a) What is the first step to graph each equation?

$$y = \frac{3}{2}x - 2$$

$$y = \frac{3}{2}x + 2.5$$

- ❍ A. Plot the y-intercept.
- ❍ B. Plot the point of intersection.
- ❍ C. Plot the slope.
- ❍ D. Plot the point (0,0).

b) Graph each equation.

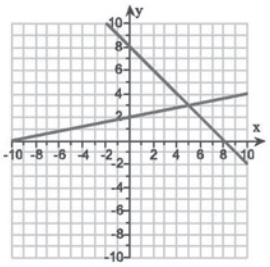


c) Estimate the solution of the system of equations.

- ❍ A. (−1.5, 0.25)
- ❍ B. (−1.5, −0.25)
- ❍ C. (0.25, 1.5)
- ❍ D. (1.5, 0.25)

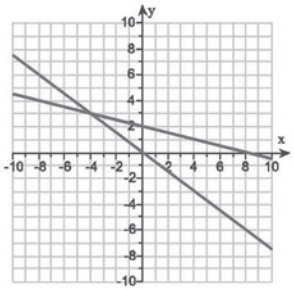
Practice 6-3: ***Solving Systems of Linear Equations by Graphing***

1. a)



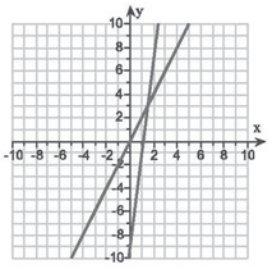
b) (5, 3)

2. a)



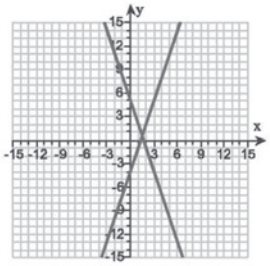
b) (–4, 3)

3. a)



b) C

4. a)



b) A

5. a) C

b) B

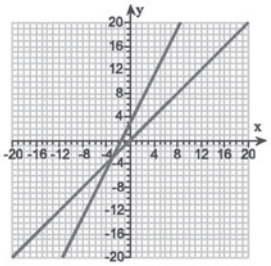
c) 6

6. a) A

b) A

c) 4 hr

7. a)



b) (–3, –3)

c) Answers will vary

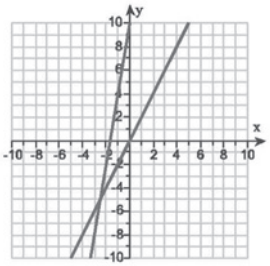
8. a) A

b) D

c) 15

d) Answers will vary

9. a)



b) D

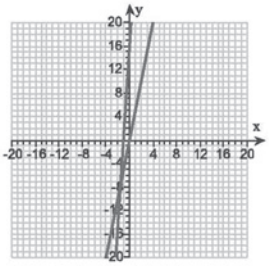
c) A

10. a) A

b) A

c) 4 hr

11. a)



A

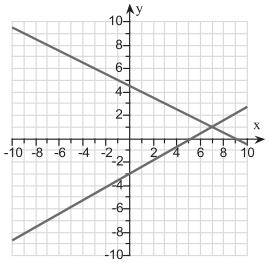
b) Answers will vary

12. a) A

b) C

c) 12

13. a)



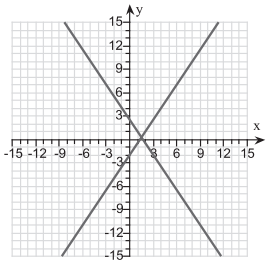
b) (7, 1)

14. a) D

b) (3, − 3)

15. a) A

b)



c) D