Name _____ Date _____ Class _____

LESSON 3-1

Practice B

Using Graphs and Tables to Solve Linear Systems

Classify each system, and determine the number of solutions.

1. $\begin{cases} y = -4x + 7 \\ 12x + 3y = 21 \end{cases}$ _____

2. $\begin{cases} 5y = x - 10 \\ y = \frac{x}{5} + 3 \end{cases}$ _____

3. $\begin{cases} x + 6y = -2 \\ 12x - 6y = 0 \end{cases}$ _____

Use substitution to determine if the given ordered pair is an element of the solution set for the system of equations. If it is not, give the correct solution.

4. $(-4, 8)$ $\begin{cases} y = -2x \\ 3x + y = -4 \end{cases}$ _____

5. $(11, 3)$ $\begin{cases} y = x - 8 \\ x + 4y = -2 \end{cases}$ _____

6. $(4, 1)$ $\begin{cases} y = 5x - 1 \\ 8 = 4x + y \end{cases}$ _____

7. $(5, -5)$ $\begin{cases} x + y = 10 \\ x - y = 0 \end{cases}$ _____

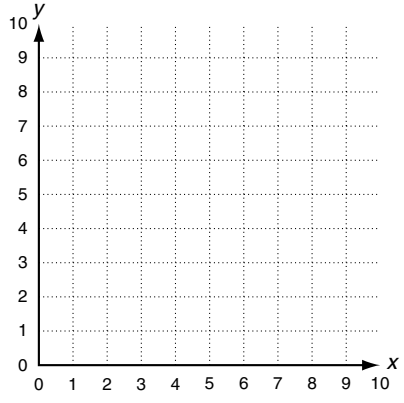
8. $(2, -1)$ $\begin{cases} 2x + 3y = -8 \\ 3x - 4y = 5 \end{cases}$ _____

9. $(0, 3)$ $\begin{cases} 3x + 5y = 15 \\ x - y = -3 \end{cases}$ _____

Solve by graphing a system of equations.

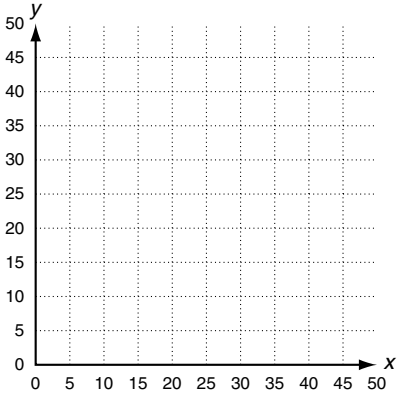
10. A puppy pen is 1 foot longer than twice its width. John wants to increase the length and width by 5 feet each to enlarge the area by 90 square feet. What will be the area of the new pen?

_____



11. Keesha has 10 more quarters than dimes, which, together, total $11.25. How many coins does she have in quarters and dimes?

_____



LESSON 3-1

Practice A

Using Graphs and Tables to Solve Linear Systems

Does the given ordered pair solve the system of equations? Substitute each value for *x* and *y* into the equations. Write *yes* or *no*.

1. $(2, -1)$ $\begin{cases} 3x + y = 3 \\ x - y = 5 \end{cases}$

$3(2) + (-1) \stackrel{?}{=} 3$

$(2) - (-1) \stackrel{?}{=} 5$

No

2. $(4, 5)$ $\begin{cases} x - 6y = -26 \\ 2x + y = 13 \end{cases}$

Yes

3. $(-3, -7)$ $\begin{cases} -x + 2y = 1 \\ 4x - 3y = 19 \end{cases}$

No

Use a table and a graph to solve the system.

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

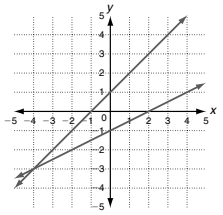
a. Make a table of values for each equation.

$y = x + 1$

x	y
-2	-1
-1	0
0	1
1	2
2	3

$x = 2y + 2$

x	y
-2	-2
-1	$-\frac{3}{2}$
0	-1
1	$-\frac{1}{2}$
2	0

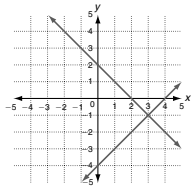


b. Use the values in the tables to graph each equation.

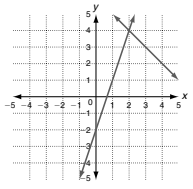
c. Which ordered pair solves both equations? $(-4, -3)$

Use a graph to solve each system.

5. $\begin{cases} x + y = 2 \\ x - y = 4 \end{cases}$ $(3, -1)$



6. $\begin{cases} y = 3x - 2 \\ x + y = 6 \end{cases}$ $(2, 4)$



LESSON 3-1

Practice B

Using Graphs and Tables to Solve Linear Systems

Classify each system, and determine the number of solutions.

1. $\begin{cases} y = -4x + 7 \\ 12x + 3y = 21 \end{cases}$

Consistent, dependent; infinitely many solutions

2. $\begin{cases} 5y = x - 10 \\ y = \frac{x}{5} + 3 \end{cases}$

Inconsistent; no solutions

3. $\begin{cases} x + 6y = -2 \\ 12x - 6y = 0 \end{cases}$

Consistent, independent; one solution

Use substitution to determine if the given ordered pair is an element of the solution set for the system of equations. If it is not, give the correct solution.

4. $(-4, 8)$ $\begin{cases} y = -2x \\ 3x + y = -4 \end{cases}$ It is the solution.

5. $(11, 3)$ $\begin{cases} y = x - 8 \\ x + 4y = -2 \end{cases}$ $(6, -2)$

6. $(4, 1)$ $\begin{cases} y = 5x - 1 \\ 8 = 4x + y \end{cases}$ $(1, 4)$

7. $(5, -5)$ $\begin{cases} x + y = 10 \\ x - y = 0 \end{cases}$ $(5, 5)$

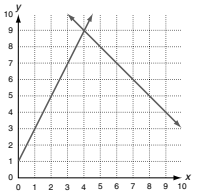
8. $(2, -1)$ $\begin{cases} 2x + 3y = -8 \\ 3x - 4y = 5 \end{cases}$ $(-1, -2)$

9. $(0, 3)$ $\begin{cases} 3x + 5y = 15 \\ x - y = -3 \end{cases}$ It is the solution.

Solve by graphing a system of equations.

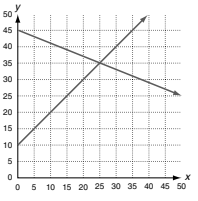
10. A puppy pen is 1 foot longer than twice its width. John wants to increase the length and width by 5 feet each to enlarge the area by 90 square feet. What will be the area of the new pen?

126 square feet



11. Keesha has 10 more quarters than dimes, which, together, total $11.25. How many coins does she have in quarters and dimes?

35 quarters + 25 dimes = 60 coins



LESSON 3-1

Practice C

Using Graphs and Tables to Solve Linear Systems

Match each system of equations with the corresponding conditions that it satisfies.

1. The system is consistent and dependent. → $\begin{cases} y = \frac{2}{3}x + 10 \\ 6y - 4x = 60 \end{cases}$

2. The system is inconsistent. → $\begin{cases} y = \frac{2}{3}x + 10 \\ y = 3x + 1 \end{cases}$

3. The system is consistent and independent. → $\begin{cases} y = \frac{2}{3}x + 10 \\ 3y + 9 = 2x \end{cases}$

Solve.

4. A tub containing 16 gallons of water is draining at a rate of 1 gallon per hour. A basin of 3.5 gallons of water is draining at a rate of 1 gallon every 6 hours.

a. Write a system of equations that represents *y*, the number of gallons left in the container after *x* hours.

$$\begin{cases} y = -x + 16 \\ y = -\frac{1}{6}x + 3.5 \end{cases}$$

b. If both containers began draining at the same time, how soon will the tub and basin hold the same amount of water?

15 h

c. When the amounts are equal, how much water will be in each container?

1 gallon

5. Jenna has $1500 in a savings account. She adds $30 to her account each month. Luis has $2400 in his savings account. He withdraws $30 from his account each month.

a. In how many months will they have the same balance in their savings accounts? 15 months

b. What will be the balance in each account? $1950

LESSON 3-1

Reteach

Using Graphs and Tables to Solve Linear Systems

A **linear system** of equations is a set of two or more linear equations. To **solve a linear system**, find all the ordered pairs (x, y) that make both equations true. Use a table and a graph to solve a system of equations.

$\begin{cases} y + x = 2 \\ y - 2x = 5 \end{cases}$ Solve each equation for y. → $\begin{cases} y = -x + 2 \\ y = 2x + 5 \end{cases}$

Make a table of values for each equation.

$y = -x + 2$	
x	y
-2	4
-1	3
0	2
1	1

↔

$y = 2x + 5$	
x	y
-2	1
-1	3
0	5
1	7

When $x = -1$, $y = 3$ for both equations.

On a graph, the point where the lines intersect is the solution.

Use the table to draw the graph of each equation.

The lines appear to intersect at $(-1, 3)$.

Substitute $(-1, 3)$ into the original equations to check.

$y + x = 2$

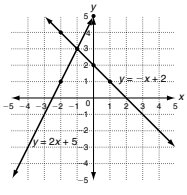
$3 + (-1) \stackrel{?}{=} 2$

$2 = 2$✓

$y - 2x = 5$

$3 - 2(-1) \stackrel{?}{=} 5$

$5 = 5$✓



Solve the system using a table and a graph. Give the ordered pair that solves both equations.

1. $\begin{cases} x + y = 1 \\ 2x - y = 5 \end{cases}$

Solution: $(2, -1)$

$y = -x + 1$	
x	y
0	1
1	0
2	-1
3	-2

$y = 2x - 5$	
x	y
0	-5
1	-3
2	-1
3	1