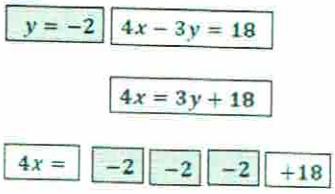
Solving Systems of Equations with LEGO BRICKS



STANDARD: TEKS M.A.5.C solve systems of two linear equations with two variables for mathematical and real-world problems.

PLAYERS: 1-4

MATERIALS: Set of cards with "LEGO" portion folded back
- 10 light-colored, 2-studded LEGO bricks [positive y]
- 10 dark-colored, 2-studded LEGO bricks [negative y]
- 25, 2-colored counters
- Felt Mat
- Paper and Pencil
- Recording Sheet

DIRECTIONS:

1. Place the cards face up in the middle of the table with a blank sheet covering the top card.
2. Make sure players or pairs have separated their negative y bricks, their positive y bricks, and their constants into piles.
3. Each pair/player has their empty felt mat in front of them.
4. All players put their hands on their shoulders.
5. The Leader pulls away the cover sheet and says, GO.
6. Pairs/players race to see who can be first to concretely create the 2nd equation using LEGO bricks.
7. 1st pair/player to correctly represent the 2nd equation wins 10 points. All pairs/players who represented the equation correctly win 5 points.
8. The 2nd portion of the card is flipped up to confirm.
9. Continue with the remaining cards. The pair/player with the most points wins the game.
10. Players record the steps they took to solve for at least 3 of the cards.

Substituting with LEGO® Bricks and Cards! EXAMPLE 2

$y = -2$

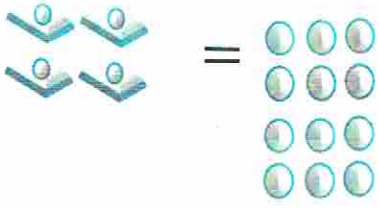
$4x - 3y = 18$

$4x = 3y + 18$

Substitute Using Bricks & 2-color counters

$y =$  $x =$ 

$4x = 3y + 18$



$x = 3$

Check

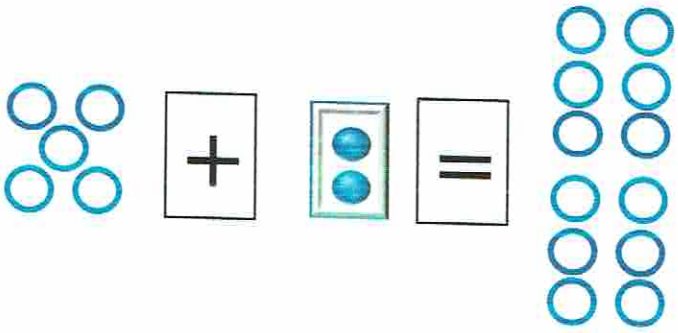
$4x - 3y = 18$

$4(3) - 3(-2) = 18$

$12 + 6 = 18$

$$x = 5$$

$$x + y = 12$$

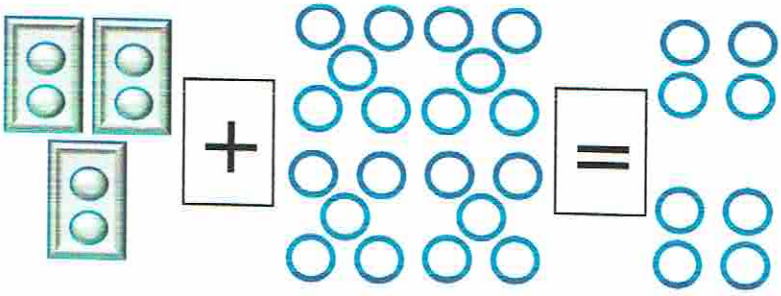


$$x = -2$$

$$x + 3y = 4$$

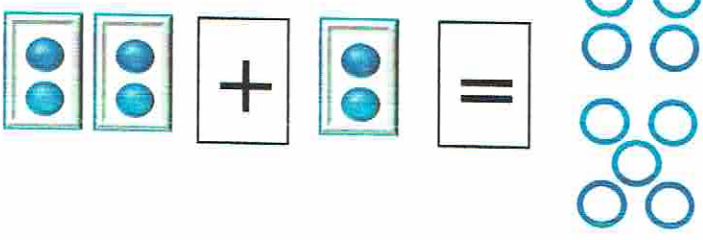
$$x = 5$$

$$-3y + 4x = 8$$



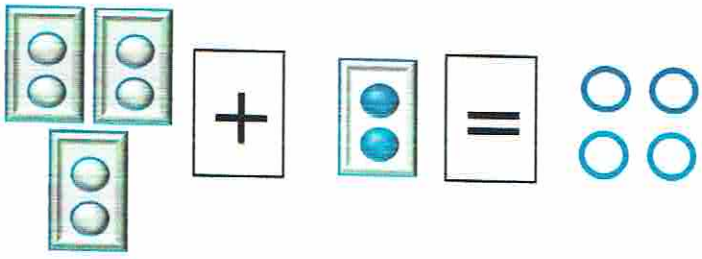
$$x = 2y$$

$$x + y = 9$$



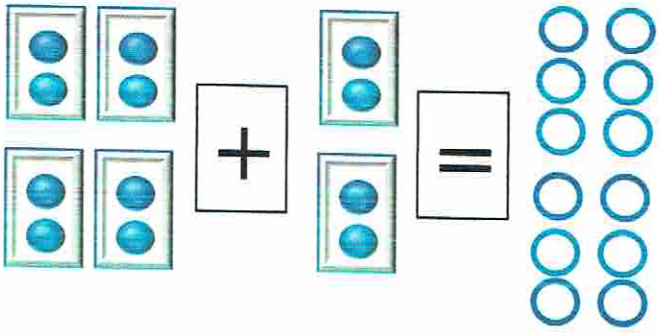
$$x = -3y$$

$$x + y = 4$$



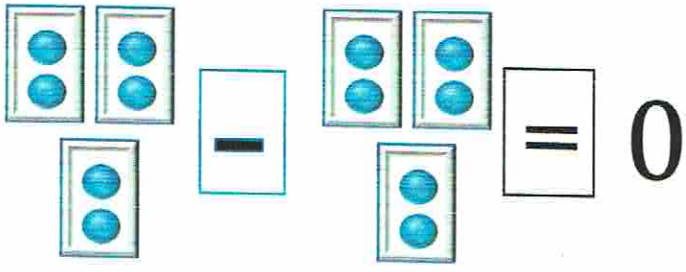
$$x = 2y$$

$$2x + 2y = 12$$



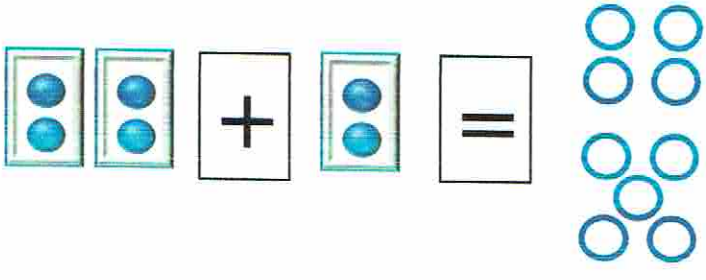
$$x = 3y$$

$$x - 3y = 0$$



$$x = 2y$$

$$x + y = 9$$



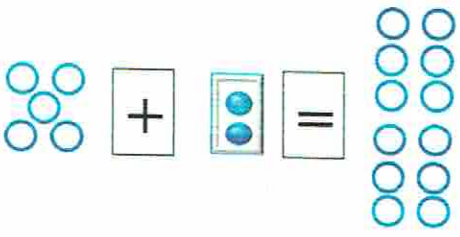
$y =$	$-y =$
$=$	$+$
$-$	$=$
$x =$	$-x =$

Solving Systems of Equations WITH LEGO BRICKS Recording Sheet
Name_____

Directions: Select 2 cards. Write the system of equations in the smaller box. Draw the bricks and counters you used to concretely represent the equation. Use what you know to find the value of x and y in the 3rd box.

$x = 5$

$x + y = 12$



$5 + y = 12$

$y = 7$

$x = 5$

$5 + 7 = 12$

Name

Solving Systems of Equations by Substitution

Circle the correct solution. Show your work beside the problem.

A drummer and a guitarist each wrote songs for their band. The guitarist wrote 8 fewer than twice the number of songs that the drummer wrote. They wrote a total of 46 songs.

Which system of equations models this situation if the drummer wrote d songs and the guitarist wrote g songs?

F $g = 2d - 8$
$g + d = 46$

G $g = 8 - 2d$
$g = 46 - d$

H $d = 2g - 8$
$d = 46 - g$

J $d = 8 - 2g$
$d + g = 46$

What is the value of x in the solution to this system of equations?

$$y + 2x = -1$$

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

F $\frac{6}{5}$

G -2

H $-\frac{10}{3}$

J 3

Match the system of equations with the modified equation that can be used to solve the system of equations by substitution. Show your work. Select one to solve for x and y.

$$2x + y = 1$$
$$3x - 3y = 18$$

$$x = -6y + 5$$

$$y - 3x = 5$$
$$5x - 4y = -3$$

$$x = -y + 2$$

$$2x - 6y = 4$$
$$x + 6y = 5$$

$$y = 4x + 6$$

$$-4x + y = 6$$
$$-5x - y = 21$$

$$y = -3x + 5$$