

## Lesson 6-2A Solving Systems by Substitution

### Problem 1 Using Substitution

What is the solution of the system? Use substitution.

$$\begin{aligned}y &= 3x \\ x + y &= -32\end{aligned}$$

**Got It?** 1. What is the solution of the system? Use substitution. Check your answer.

$$\begin{aligned}y &= 2x + 7 \\ y &= x - 1\end{aligned}$$

Solve the system using substitution. Check your answer.

2. 
$$\begin{aligned}4y &= x \\ 3x - y &= 77\end{aligned}$$

3. 
$$\begin{aligned}y &= 2x - 3 \\ 3x - 2y &= 2\end{aligned}$$

## HW p 375: 2, 11, 12, 15 Solve and check!!

Solve each system using substitution. Check your answer.

$$\begin{aligned} 2. \quad & -2x + 5y = 19 \\ & 3x - 4 = y \end{aligned}$$

$$\begin{aligned} 11. \quad & x + y = 8 \\ & y = 3x \end{aligned}$$

$$\begin{aligned} 12. \quad & 2x + 2y = 38 \\ & y = x + 3 \end{aligned}$$

$$\begin{aligned} 15. \quad & y = -2x + 6 \\ & 3y - x + 3 = 0 \end{aligned}$$

## Lesson 6-2B More Solving by Substitution

### Problem 2 Solving for a Variable and Using Substitution

What is the solution of the system? Use substitution.  $3y + 4x = 14$   
 $-2x + y = -3$

**Got It?** 2. a. What is the solution of the system? Use substitution.  $6y + 5x = 8$   
 $x + 3y = -7$

b. **Reasoning** In your first step in part (a), which variable did you solve for? Which equation did you use to solve for the variable?

### Problem 3 Using Systems of Equations

**Snack Bar** A snack bar sells two sizes of snack packs. A large snack pack is \$5, and a small snack pack is \$3. In one day, the snack bar sold 60 snack packs for a total of \$220. How many small snack packs did the snack bar sell?

**Got It?** 3. You pay \$22 to rent 6 video games. The store charges \$4 for new games and \$2 for older games. How many new games did you rent?



Solving a system by graphing makes it easy to visualize the solution. Sometimes, though, the graphing grid must be extremely large to accommodate the numbers, and it is very difficult to make a graph that is accurate enough to determine non-integer solutions. For these reasons, we need to develop our skill with algebraic methods for solving systems. One of the methods we have already worked with earlier in this unit is the method of **substitution**.



**Solving a system of linear equations by substitution.** (Part of Skill 10.)

Step 1: Solve one of the equations for either  $x$  or  $y$ .

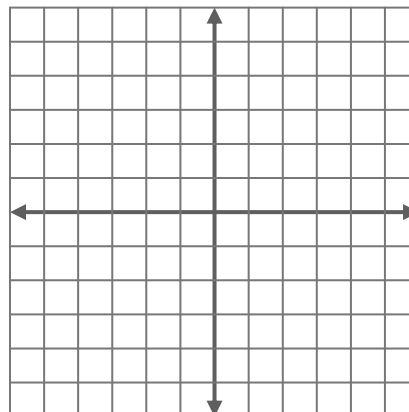
Step 2: Substitute the expression from step 1 into the other equation, for the appropriate variable.

Step 3: Solve the resulting equation for the one remaining variable, either  $x$  or  $y$ .

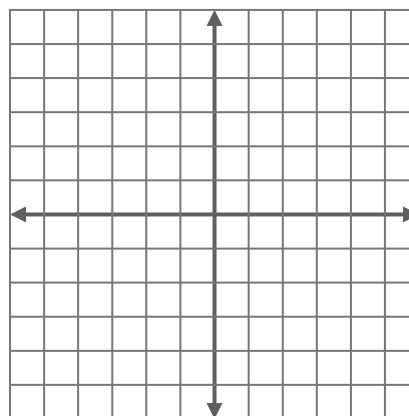
Step 4: Substitute this value back into either of the original equations and solve for the other variable.

Solve each *system* by the *substitution method*, and check the answer by the *graphing method*.

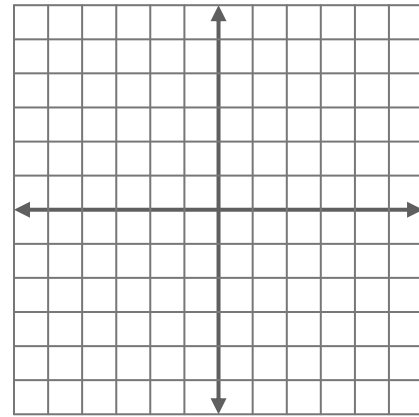
1.  $y = x - 6$   
 $y = -2x + 3$



2.  $y = x + 4$   
 $x = 2y$



3.  $x + y = 6$   
 $-2x + y = 3$



4.  $y = \frac{3}{5}x - 1$   
 $2x + 5y = 20$

