Name: _____

Sec. 7.2: Solve Linear Systems by Substitution

Using Substitution to Solve a Linear System:

- Solve one equation for one variable. (Hint: Look for an equation that has a coefficient of _____ or _____ for one of the variables.)
- Use the expression for the variable you solved for in the _____ step and substitute it into the other equation. Then solve for the other variable in that equation.
- Take the value of the variable you just solved for in the _____ step and substitute it back into the equation you used in the _____ step, in order to solve for the first variable.

Examples

Solve each system using substitution.

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

3. $y = 2x + 4$ $y = -x - 1$	4. $y = x + 4$ $18x + 3y = -9$
5. $1 - 2x = -y$ $8 = -2x - 2y$	6. $-6x + 6y = -18$ $5x + 2y = 22$

7. A group of 40 people went to an amusement park. There were 4 times as many children as adults. Write a system of equations to represent the situation. Then solve the system to determine how many adults and how many children there were.

Name_____

Sec. 7.2 Practice Problems

Solve each system by substitution.

1) $y = 3x - 4$
$y = 5x - 10$

2) $y = 6x + 10$
$y = 3x + 4$

3) $y = -3x - 7$
$y = -7x - 19$

4) $y = -3x + 16$
$y = -4x + 21$

5) $y = 4x - 20$
$8x + 3y = 20$

6) $y = x + 4$
$8x - 5y = -14$

7) $y = 3x + 3$
$-4x - 5y = 23$

8) $-4x - 6y = 22$
$y = 2x + 7$

9) $x + y = -4$
$-3x - y = 0$

10) $y = 2$
$-8x + 4y = 8$

11) $-5x - 4y = -21$
$y = 5x - 1$

12) $2x + 4y = -12$
$y = x - 15$

13) $6x + 6y = -12$
$x - 3y = 10$

14) $x + y = -1$
$-7x - 5y = 13$

15) $-x - y = -2$
$-2x + 2y = 16$

16) $-6x + 2y = 24$
$-2x + 6y = 24$

17) Amy is 13 years less than twice as old as Bob. Their ages combined add to 50. Write a system of equations to represent this situation. Then solve the system using substitution to determine the ages of Amy and Bob.

Answers to Sec. 7.2 Practice Problems

1) $(3, 5)$ 2) $(-2, -2)$ 3) $(-3, 2)$ 4) $(5, 1)$
5) $(4, -4)$ 6) $(2, 6)$ 7) $(-2, -3)$ 8) $(-4, -1)$
9) $(2, -6)$ 10) $(0, 2)$ 11) $(1, 4)$ 12) $(8, -7)$
13) $(1, -3)$ 14) $(-4, 3)$ 15) $(-3, 5)$ 16) $(-3, 3)$
17) A = 2B - 13; A + B = 50; Amy is 29 years old; Bob is 21 years old.