Name: _____

Sec. 7.3: Solve Linear Systems by Adding or Subtracting

Using Elimination to Solve a Linear System:

- Add or subtract equations to _____ one variable.

- Solve the equation formed in Step 1 for the _____ variable.

- Substitute the _____ variable into either equation to solve for the _____ variable.

- Hint: Look for a variable that has coefficients in the two equations that are either identical or exact opposites.

Examples

Solve each system using elimination.

1. $6x + 2y = 14$
   $-6x + 3y = 21$

2. $3x - 4y = 15$
   $5x + 4y = 9$

3. $3x + 8y = 12$
   $3x + 7y = 9$

4. $-7x - 2y = 11$

    $0 = -y - 9 - 7x$

5. Al and Leah are selling cookie dough to raise funds for their math club. They are selling two flavors—sugar and chocolate chip. Al sold 12 packages of sugar cookie dough and 10 packages of chocolate chip cookie dough for a total of $98. Leah sold 12 packages of sugar cookie dough and 14 packages of chocolate chip cookie dough for a total of $118. Set up a system of equations to represent this situation. Then solve the system using elimination to determine how much a package of each type of cookie dough costs.

Answers to Sec. 7.3 Practice Problems

1) $(1, 3)$

2) $(2, -2)$

3) $(-3, -3)$

4) $(-1, -3)$

5) $(-7, -3)$

6) $(0, 5)$

7) $(4, -10)$

8) $(10, 0)$

9) $(1, -2)$

10) $(-1, -3)$

11) $(-9, 3)$

12) $(6, 1)$

13) $(-1, 3)$

14) $(2, 6)$

15) adult ticket: $14, child ticket: $15

16) senior citizen ticket: $3, child ticket: $7

Algebra I

Sec. 7.3 Practice Problems

Solve each system by elimination.

1) $-3x + 7y = 18$
   $10x - 7y = -11$

2) $2x - y = 6$
   $5x + y = 8$

3) $-5x + 9y = -12$
   $3x - 9y = 18$

4) $7x - 5y = 8$
   $-7x + y = 4$

5) $-4x + 3y = 19$
   $4x - 10y = 2$

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

7) $4x + 2y = -4$
   $8x + 2y = 12$

8) $x + 7y = 10$
   $x + 10y = 10$

9) $-6x + 8y = -22$
   $-6x - 2y = -2$

10) $-4x - 6y = 22$
    $-5x - 6y = 23$

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

12) $2x - 7y = 5$
    $-3x - 7y = -25$

13) $-3y = -14 - 5x$
    $-19 + 3y = 10x$

14) $2x - 6y = -32$
    $3y = 2x + 14$

15) The school that Scott goes to is selling tickets to the annual dance competition. On the first day of ticket sales the school sold 2 adult tickets and 9 child tickets for a total of $163. The school took in $193 on the second day by selling 2 adult tickets and 11 child tickets. Find the price of an adult ticket and the price of a child ticket.

16) Alberto's school is selling tickets to a choral performance. On the first day of ticket sales the school sold 10 senior citizen tickets and 14 child tickets for a total of $128. The school took in $131 on the second day by selling 11 senior citizen tickets and 14 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.