

Algebra I

Lesson 7-3

- I can solve systems of equations by using elimination with addition.
- I can solve systems of equations by using elimination with subtraction.

Sometimes adding two equations together will eliminate one variable. Using this step to solve a system of equations is called elimination.

$$\begin{array}{r}
 3x - 5y = -16 \\
 (+) \quad 2x + 5y = 31 \\
 \hline
 5x = 15 \\
 \frac{5x}{5} = \frac{15}{5} \\
 x = 3
 \end{array}$$

(3,5)

$$\begin{array}{r}
 3(3) - 5y = -16 \\
 9 - 5y = -16 \\
 \underline{-9} \qquad \underline{-9} \\
 -5y = -25 \\
 \frac{-5y}{-5} = \frac{-25}{-5} \\
 y = 5
 \end{array}$$

Twice one number added to another number is 18. Four times the first number minus the other number is 12. Find the numbers.

$$\begin{array}{r} 2x + y = 18 \\ (+) 4x - y = 12 \\ \hline 6x = 30 \\ \frac{6x}{6} = \frac{30}{6} \end{array}$$

$$x = 5$$

5 and 8

$$\begin{array}{r} 2(5) + y = 18 \\ 10 + y = 18 \\ \underline{-10} \quad \underline{-10} \\ y = 8 \end{array}$$

Sometimes Subtracting one equation from another will eliminate one variable. This is also called elimination.

$$5r + 2t = 6$$

$$(-) 9r + 2t = 22$$

$$\begin{array}{r} -4r = -16 \\ \underline{-4} \quad \underline{-4} \end{array}$$

$$9(4) + 2t = 22$$

$$r = 4$$

$$36 + 2t = 22$$

$$\underline{-36} \quad \underline{-36}$$

$$\frac{2t}{2} = \frac{-14}{2}$$

$$t = -7$$

(4, -7)

$$\frac{2}{3}x + \frac{-1}{2}y = 14$$

$$(-) \frac{5}{6}x + \frac{-1}{2}y = 18$$

$$-6 \cdot \frac{-1}{6}x = -4(-6)$$

$$x = 24$$

$$(24, 4)$$

$$\frac{2}{3}(24) - \frac{1}{2}y = 14$$

$$16 - \frac{1}{2}y = 14$$

$$\frac{-16}{-2} - \frac{1}{2}y = \frac{-16}{-2}$$

$$-2 \cdot \frac{1}{2}y = -2 \cdot -2$$

$$y = 4$$

Assignment:

Pg. 385 #12-28 even, 30-36