Warm Up 11/26/18

1. Solve using substitution:

$3x + y = 13$

$5x - 2y = 18$

$y = -3x + 13$

$(4, 1)$

$3(4) + y = 13$

$12 + y = 13$

$y = 1$

$5x - 2(-3x + 13) = 18$

$5x + 6x - 26 = 18$

$11x - 26 = 18$

$+26 \quad +26$

$\frac{11x}{11} = \frac{44}{11}$ $x = 4$

2. Twice a number added to four is the same as one subtracted from the number. What is the number?

•2 variable + 4 = 1

$2x + 4 = x - 1$

$-4 \quad -4$

$2x = x - 5$

$-x \quad -x$

$\boxed{x = -5}$

3. Write in slope-intercept form: $3x - 4y = 28$

$y = mx + b$

$-3x \quad -3x$

$-4y = -3x + 28$

$\frac{-4y}{-4} = \frac{-3x}{-4} + \frac{28}{-4}$

$\boxed{y = \frac{3}{4}x - 7}$

Systems of Equations

ELIMINATION METHOD

Steps to Solve

1. Make sure the equations are lined up!
2. ADD or SUBTRACT the equations to eliminate the variable with common coefficients.
3. Solve for the remaining variable.
4. Plug in your answer into either original equation and Solve for the other variable.

WATCH.....then we'll discuss & copy down

#2

$$\begin{cases} \cancel{x} + 4y = 13 \\ \cancel{x} - y = 3 \end{cases}$$

$$\frac{5y}{5} = \frac{10}{5}$$

$$y = 2$$

$$x + 4(2) = 13$$

$$x + 8 = 13$$

$$-8 \quad -8$$

$$x = 5$$

$$\boxed{(5, 2)}$$

WATCH again.....then we'll copy down

#3

$$\begin{cases} \cancel{3x} - 10y = 14 \\ \cancel{3x} - 9y = 15 \end{cases}$$

$$-$$

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

$$y = 1$$

$$3x - 9(1) = 15$$

$$3x - \cancel{9} = 15$$

$$\cancel{+9} \quad +9$$

$$\frac{3x}{3} = \frac{24}{3}$$

$$x = 8$$

$$\boxed{(8, 1)}$$

#4

$$-\begin{cases} 4x + \cancel{2y} = 6 \\ -2x + \cancel{2y} = 18 \end{cases}$$

$$\frac{6x}{6} = \frac{-12}{6}$$

$$x = -2$$

$$\boxed{(-2, 7)}$$

Identical Terms

↓

SUBTRACT

$$4(-2) + 2y = 6$$

$$\cancel{-8} + 2y = 6$$

$$\cancel{+8} \qquad +8$$

$$2y = 14$$

$$y = 7$$

*Opposite or Identical Terms?

#5

$$\begin{array}{rl} & \cancel{4x} + 9y = 5 \\ + & \cancel{-4x} + 7y = 11 \\ \hline \end{array}$$

$$\frac{16y}{16} = \frac{16}{16}$$

$$y = 1$$

$$4x + 9(1) = 5$$

$$4x + 9 = 5$$

$$-9 \quad -9$$

$$\frac{4x}{4} = \frac{-4}{4}$$

$$x = -1$$

$$\boxed{(-1, 1)}$$

*Opposite or Identical Terms?

#6

$$\boxed{(3,4)}$$

$$\begin{array}{rl} & 10x - \cancel{3y} = 18 \\ + & -2x + \cancel{3y} = 6 \\ \hline & \frac{8x}{8} = \frac{24}{8} \\ & x = 3 \end{array}$$

$$-2(3) + 3y = 6$$

$$-6 + 3y = 6$$

$$+6 \qquad +6$$

$$3y = 12$$

$$y = 4$$

*Opposite or Identical Terms?

Opposite Terms

↓

ADD

~~#8~~ #7

$$\boxed{(7,-3)}$$

$$\begin{array}{r} x - \cancel{y} = 10 \\ + \quad 3x + \cancel{y} = 18 \\ \hline \end{array}$$

$$\frac{4x}{4} = \frac{28}{4}$$

$$x = 7$$

$$3(7) + y = 18$$

$$21 + y = 18$$

$$-21 \qquad -21$$

$$y = -3$$

*Opposite or Identical Terms?

8

$$x = 3y + 11$$
$$-3y \quad -3y$$
$$x - 3y = 11$$

$$5 = 3y + 11$$
$$-11 \quad\quad -11$$
$$\frac{-6}{3} = \frac{3y}{3}$$
$$y = -2$$

$$x - \cancel{3y} = 11$$
$$-\ 2x - \cancel{3y} = 16$$
$$\frac{-x}{-1} = \frac{-5}{-1}$$
$$x = 5$$

$$\boxed{(5, -2)}$$