

Warm Up

1. How do you know when to use **substitution** to solve a system of equations? *variable alone!*
2. How should the **solution** of a system of equations always be written? *coordinate (x, y)*
3. Once you've solved for one variable in a system of equations, how can you **solve for the other variable?**

plug in answer into original equation, then solve!

SUBSTITUTION

- Replacing a variable with something that is *equivalent*
- Used when there's a *variable* alone.
- *Don't forget to use parentheses!*

ELIMINATION

- Adding or subtracting to make one variable *cancel out*
- Used when the coefficients of one variable *match*
- *Don't forget to watch your negatives!*

Example #1: Solve.

SUBSTITUTION $y = -2x + 4$
 $-2x + y = -4$

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

$$-2x + -2x + 4 = -4$$

$$-4x + 4 = -4$$

$$-4x - 4 = -4$$

$$-4x = -8$$

$$\frac{-4x}{-4} = \frac{-8}{-4}$$

$$x = 2$$

$$y = -2x + 4$$

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

$$y = -4 + 4 = 0$$

$$(2, 0)$$

Example #2: Solve.

ELIMINATION $9x + 6y = 78$

$(+)$ $3x - 6y = -30$

$$12x + 10y = 48$$

$$12x = 48$$

$$x = 4$$

$$9(4) + 6y = 78$$

$$36 + 6y = 78$$

$$-36 \quad -36$$

$$6y = 42$$

$$\frac{6y}{6} = \frac{42}{6}$$

$$y = 7$$

$$(4, 7)$$