TODAY'S DATE: 11/25/19

Homework
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Learning Target: **I can solve a system of equations using the substitution method.**

Warm Up: Is (5, 8) a solution to the following equation: $y = 2x + 1$

x y
(5, 8)
ordered pair,
- coordinate
(x, y)

$8 = 2(5) + 1$

$8 \neq 11$

Not a solution!

Guided Practice: Solving a system of equations by substitution

Important: to use substitution method, one equation must be in the form $y =$ or $x =$

Exercise 1- Solve the following system of equations-

$y = 2x - 3$
$y = -2x + 5$

Step 1: Substitute the x = or the y = expression into the other equation.

$2x - 3 = -2x + 5$
$+2x \quad +2x$

Step 2: Now that you have one equation with **one variable**, you can solve for that variable.

$4x - 3 = 5$
$+3 \quad +3$
$4x = 8$
$x = 2$

Step 3: **To find the second variable,** substitute the first value that was found into the one of the **original** equations. Then solve for the other variable.

$y = 2x - 3$
$y = 2(2) - 3$
$y = 1$

Solution: (2, 1)
x, y

Step 4: CHECK! *(2 equations means 2 checks)*

Check:

① $y = 2x - 3$
$1 = 2(2) - 3$
$1 = 1$ ✓

② $y = -2x + 5$
$1 = -2(2) + 5$
$1 = 1$ ✓

Exercise 2- Solve the system algebraically by the substitution method.

$3x + y = -24$
$x = y + 4$

$3(y+4) + y = -24$

$3y + 12 + y = -24$

$4y + 12 = -24$

$-12 \quad -12$

$\frac{4y}{4} = \frac{-36}{4}$

$y = -9$

$x = y + 4$

$x = -9 + 4$

$x = -5$

Solution $(-5, -9)$

Check

Check $(-5, -9)$

$3(-5) + (-9) = -24$

$-15 - 9 = -24$

$-24 = -24$ ✓

$-5 = -9 + 4$

$-5 = -5$ ✓

Exercise 3- Solve the system algebraically by the substitution method.

$2x + 4y = 16$
$y = 2x - 6$

$(4, 2)$

$2x + 4(2x - 6) = 16$

$2x + 8x - 24 = 16$

$10x - 24 = 16$

$+24 \quad +24$

$\frac{10x}{10} = \frac{40}{10}$

$x = 4$

$y = 2(4) - 6$

$y = 8 - 6$

Check

$2x + 4y = 16$

$2(4) + 4(2) = 16$

$8 + 8 = 16$

$16 = 16$ ✓

$y = 2x - 6$

$2 = 2(4) - 6$

$2 = 8 - 6$

$2 = 2$ ✓

Problem Set: *Solve each of the systems below by the substitution method. Check your solution*

1) $y = 2x - 3$
$y = -3x + 2$

Check

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

Check