Name: _____ Date: _____

5-3 Systems of Equations – Algebraically

Ms. Moser

Solving System of Equations by Elimination

Main Ideas/Questions	Notes
WHAT IS IT?	An algebraic method to solve system of equations by adding equations to "cancel" or "eliminate" a variable.
STEPS TO SOLVE	**1.** Line up your variables. This is "Standard Form" → STANDARD FORM: $Ax + By = C$
	2. Determine which variable to "eliminate" → Look for opposite coefficients. ELIMINATE a variable! by adding.
	3. ADD the equations. → Solve for the variable!
	4. Plug back in to find other variable. → Substitute the value of the variable into one of the original equations.
	5. Check your solution! → Substitute your ordered pair into BOTH equations.

Directions: Solve the following systems using **ELIMINATION.**

1.) $x + y = 5$
$3x - y = 7$

ADD

$4x = 12$

$\frac{4x}{4} = \frac{12}{4}$

$x = 3$

$x + y = 5$

$3 + y = 5$

$-3 \quad -3$

$y = 2$

Solution: (3, 2)

i ♡ systems of equations!

2.) $4x + y = 7$
$-(4x - 2y = -2)$

change all signs in 2nd equation!

ADD

$4x + y = 7$
$-4x + 2y = 2$

$3y = 9$

$\frac{3y}{3} = \frac{9}{3}$

$y = 3$

$4x + y = 7$

$4x + 3 = 7$

$-3 \quad -3$

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

$x = 1$

Solution: (1, 3)

3.) $2x - 3y = -2$
$x + 3y = 17$

ADD

$3x = 15$

$\frac{3x}{3} = \frac{15}{3}$

$x = 5$

$x + 3y = 17$

$5 + 3y = 17$

$-5 \quad -5$

$3y = 12$

$\frac{3y}{3} = \frac{12}{3}$

$y = 4$

Solution: (5, 4)

4.) $y = 7 - 2x$
$4x + y = 5$

NOT IN STANDARD FORM!

$y = 7 - 2x$

$+2x \quad +2x$

$2x + y = 7$

$2x + y = 7$
$-(4x + y = 5)$

$2x + y = 7$
$-4x - y = -5$

$-2x = 2$

$\frac{-2x}{-2} = \frac{2}{-2}$

$x = -1$

$y = 7 - 2(-1)$

$y = 9$

Solution: (-1, 9)