Name: _____

Solving Systems of Linear Equations

Substitution Method:

- solve for *x* or *y* in either equation
- substitute value in other equation and continue until there is a single *x* and *y* value

example: $4x - 5y = -23$
$2x + y = -1$

solve $2x + y = -1$ for y	substitute to find x	substitute to find y
$2x + y = -1$	$4x - 5(-1 - 2x) = -23$	$y = -1 - 2(-2)$
$y = -1 - 2x$	$4x + 5 + 10x = -23$	$y = -1 + 4$
	$14x + 5 = -23$	$y = 3$
	$14x = -28$	
	$x = -2$	

$x =$ **-2**

$y =$ **3**

x = _____

y = _____

solution: _____

2. $5x + y = 12$
$2x - 3y = -2$

x = _____

y = _____

solution: _____

Solving Systems of Linear Equations

3. $2x + y = 20$
$6x - 5y = 12$

$x =$ _____

$y =$ _____

solution: _____

4. $4x - 3y = -21$
$x + 5y = 12$

$x =$ _____

$y =$ _____

solution: _____

6. $8x + 4y = -24$
$5x + y = -18$

$x =$ _____

$y =$ _____

solution: _____

ANSWER KEY

Solving Systems of Linear Equations

1. $8x + y = -16$
$-3x + y = -5$

$x =$ **-1**

$y =$ **-8**

solution: **(-1,-8)**

$y = -16 - 8x$

$-3x - 16 - 8x = -5$
$-11x - 16 = -5$
$-11x = 11$
$x = -1$

$y = -16 - 8(-1)$
$y = -16 + 8$
$y = -8$

$5x + y = -18$

$x =$ **-4**

$y =$ **2**

solution: **(-4,2)**

$8x - 72 - 20x = -24$
$-12x - 72 = -24$
$-12x = 48$
$x = -4$

$y = -18 + 20$
$y = 2$