

Answers

Name: Key

Unit 2: Linear Functions

Date: _____ Bell: _____

Homework 5: Solving Systems of Equations
by Elimination & Applications

**** This is a 2-page document! ****

Directions: Solve each system of equations by elimination. Clearly identify your solution.

1. $3x + y = 11$
 $5x - y = 21$

$$8x = 32$$

$$x = 8$$

$$3(8) + y = 11$$

$$24 + y = 11$$

$$y = -13$$

$$\boxed{(8, -13)}$$

2. $2x - 9y = -51$

$2x - 3y = -9$

$$-6y = -42$$

$$y = 7$$

$$2x - 9(7) = -51$$

$$2x - 63 = -51$$

$$2x = 12$$

$$x = 6$$

$$\boxed{(6, 7)}$$

3. $5x + 12y = -34$

$3(2x + 4y = -12) \rightarrow 6x + 12y = -36$

$$-x = 2$$

$$x = -2$$

$$5(-2) + 12y = -34$$

$$-10 + 12y = -34$$

$$12y = -24$$

$$y = -2$$

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

4. $-3x + 8y = 73$

$-3(x - 7y = -46) \rightarrow -3x + 21y = 138$

$$-13y = -65$$

$$y = 5$$

$$-3x + 8(5) = 73$$

$$-3x + 40 = 73$$

$$-3x = 33$$

$$x = -11$$

$$\boxed{(-11, 5)}$$

5. $9x + 4y = -72$

$9(2x - 3y = -16) \rightarrow 18x - 27y = -144$

$$35y = 0$$

$$y = 0$$

$$9x + 4(0) = -72$$

$$9x = -72$$

$$x = -8$$

$$\boxed{(-8, 0)}$$

6. $4x - 11y = 68$

$4(6x + 5y = -27) \rightarrow 24x + 20y = -108$

$$-86y = 516$$

$$y = -6$$

$$4x - 11(-6) = 68$$

$$4x + 66 = 68$$

$$4x = 2$$

$$x = \frac{1}{2}$$

$$\boxed{(\frac{1}{2}, -6)}$$

7. $5x = 15 - 5y$

$8y + 26 = 2x$

$5(2x + 8y = -26) \rightarrow 10x + 40y = -130$

$$-10x - 10y = -30$$

$$-10x + 40y = -130$$

$$-50y = 100$$

$$y = -2$$

$$5x + 5(-2) = 15$$

$$5x - 10 = 15$$

$$5x = 25$$

$$x = 5$$

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

8. $14x + 7y = -7$

$y = -2x - 1$

$14x + 7y = -7$

$7(2x + y = -1) \rightarrow 14x + 7y = -7$

$$14x + 7y = -7$$

$$14x + 7y = -7$$

$$0 = 0$$

$$\boxed{\text{Infinite Solutions}}$$