

# Systems of Equations – Elimination

## Bell Work:

1. What is substitution?
2. What type of answer do you have if you have intersecting lines?
3. Find the intersection. Show all work.
4. What is the name of parent function with an equation of  $f(x) = x$ ?

$$y = \frac{3}{4}x - 5$$
$$2x - 3y = 13$$

# Systems of Equations – Elimination

## 1. Solve by using elimination.

$$5x - 6y = -9$$

$$3x + 6y = 33$$

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$$8x = 24$$

$$\frac{8x}{8} = \frac{24}{8}$$

$$x = 3$$

*Eliminate the variable with the same coefficient by adding.*

*Solve.*

*Substitute the answer into one of the equations to find the other answer.*

$$3(3) + 6y = -9$$

$$9 + 6y = -9$$

$$6y = -18$$

$$y = -3$$

The answer:  $(3, -3)$

# Systems of Equations – Elimination

## 2. Solve by using elimination.

$$3x + 8y = 8$$

$$7x - 8y = -88$$

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$$10x = -80$$

$$\frac{10x}{10} = \frac{-80}{10}$$

$$x = -8$$

*Eliminate the variable with the same coefficient by adding.*

*Solve.*

*Substitute the answer into one of the equations to find the other answer.*

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

$$-24 + 8y = 8$$

$$8y = 32$$

$$y = 4$$

The answer:  $(-8, 4)$

# Systems of Equations – Elimination

## 3. Solve by using elimination.

$$5x - 2y = -6$$

$$11x + 2y = -58$$

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$$16x = -64$$

$$\frac{16x}{16} = \frac{-64}{16}$$

$$x = -4$$

*Eliminate the variable with the same coefficient by adding.*

*Solve.*

*Substitute the answer into one of the equations to find the other answer.*

$$11(-4) + 2y = -58$$

$$-44 + 2y = -58$$

$$2y = -14$$

$$y = -7$$

The answer:  $(-4, -7)$

# Systems of Equations – Elimination

## 4. Solve by using elimination.

$$2x - 9y = 120$$

$$2x + 3y = -24$$

$$2x - 9y = 120$$

$$\underline{-2x - 3y = 24}$$

$$-12y = 144$$

$$\frac{-12y}{-12} = \frac{144}{-12}$$

$$y = -12$$

*Change the signs of one of the equations so one is + and one is -.*

*Solve.*

*Substitute the answer into one of the equations to find the other answer.*

$$2x + 3(-12) = -24$$

$$2x - 36 = -24$$

$$2x = 12$$

$$x = 6$$

The answer: (6, -12)

# Systems of Equations – Elimination

## 5. Solve by using elimination.

$$x + 3y = 17$$

$$7x + 3y = 65$$

$$-x - 3y = -17$$

$$7x + 3y = 65$$

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$$6x = 48$$

$$\frac{6x}{6} = \frac{48}{6}$$

$$y = 8$$

*Change the signs of one of the equations so one is + and one is -.*

*Solve.*

*Substitute the answer into one of the equations to find the other answer.*

$$x + 3(8) = 17$$

$$x + 24 = 17$$

$$x = -7$$

The answer:  $(8, -7)$

# Systems of Equations – Elimination

## 6. Solve by using elimination.

$$6x + 7y = -16$$

$$6x + y = -28$$

$$6x + 7y = -16$$

$$\underline{-6x - y = 28}$$

$$6y = 12$$

$$\frac{6y}{6} = \frac{12}{6}$$

$$y = 2$$

*Change the signs of one of the equations so one is + and one is -.*

*Solve.*

*Substitute the answer into one of the equations to find the other answer.*

$$6x + 2 = -28$$

$$6x = -30$$

$$x = -5$$

The answer:  $(-5, 2)$

# Systems of Equations – Elimination

**Assignment:**

**FLEUNCY PRACTICE: Systems of Equations :  
Elimination A Worksheet**