

## Lesson 16: Elimination

- Let's learn how to check our thinking when using elimination to solve systems of equations.

### 16.1: Which One Doesn't Belong: Systems of Equations

Which one doesn't belong?

A:

$$\begin{cases} 3x + 2y = 49 \\ 3x + 1y = 44 \end{cases}$$

B:

$$\begin{cases} 3y - 4x = 19 \\ -3y + 8x = 1 \end{cases}$$

C:

$$\begin{cases} 4y - 2x = 42 \\ -5y + 3x = -9 \end{cases}$$

D:

$$\begin{cases} y = x + 8 \\ 3x + 2y = 18 \end{cases}$$

### 16.2: Examining Equation Pairs

Here are some equations in pairs. For each equation:

- Find the  $x$ -intercept and  $y$ -intercept of a graph of the equation.
- Find the slope of a graph of the equation.

1.  $x + y = 6$  and  $2x + 2y = 12$

2.  $3y - 15x = -33$  and  $y - 5x = -11$

3.  $5x + 20y = 100$  and  $4x + 16y = 80$

4.  $3x - 2y = 10$  and  $4y - 6x = -20$

5. What do you notice about the pairs of equations?

6. Choose one pair of equations and rewrite them into slope-intercept form ( $y = mx + b$ ). What do you notice about the equations in this form?

### 16.3: Making the Coefficient

For each question,

- What number did you multiply the equation by to get the target coefficient?
- What is the new equation after the original has been multiplied by that value?

1. Multiply the equation  $3x + 4y = 8$  so that the coefficient of  $x$  is 9.

2. Multiply the equation  $8x + 4y = -16$  so that the coefficient of  $y$  is 1.

3. Multiply the equation  $5x - 7y = 11$  so that the coefficient of  $x$  is -5.

4. Multiply the equation  $10x - 4y = 17$  so that the coefficient of  $y$  is -8.

5. Multiply the equation  $2x + 3y = 12$  so that the coefficient of  $x$  is 3.

6. Multiply the equation  $3x - 6y = 14$  so that the coefficient of  $y$  is 3.