Elimination

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

16.1 Which Three Go Together: Systems of Equations

Which three go together? Why do they go together?

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

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

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16.2 Examining Equation Pairs

1. Here are some equations in pairs. For each equation, find the x-intercept, y-intercept, and slope of a graph of the equation.
   a. $x + y = 6$ and $2x + 2y = 12$

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

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

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

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

3. 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.