

## Warm – Up: Applications of Substitution

Two Lourdes students are purchasing grad wear. Lucas purchases three shirts and two hats for \$79.75. Amara buys four shirts and one hat for \$85.50. How much does each shirt and each hat cost?

Let  $x$  represent the cost of each shirt.

Let  $y$  represent the cost of each hat.

## Introduction to Solving Linear Systems using Elimination

1. Rearrange each equation so that they are in  $Ax + By = C$  form.
2. Eliminate one variable by adding or subtracting the equations.

### Examples

Solve each linear system using elimination.

a) 
$$\begin{aligned} 3x + 2y &= 19 \\ x + 2y &= 9 \end{aligned}$$

b) 
$$\begin{aligned} 3x - 4y &= 18 \\ -3x - 2y &= 0 \end{aligned}$$

c) 
$$\begin{aligned} 2x + 4y &= 18 \\ 2x &= 4 + 3y \end{aligned}$$

## Solving Linear Systems Using Elimination

1. Determine the point of intersection by using elimination.

$$\begin{aligned} \text{a) } 2x + 3y &= 13 \\ 4x + 3y &= 23 \end{aligned}$$

$$\begin{aligned} \text{b) } 3x + 5y &= 1 \\ 3x - 2y &= -13 \end{aligned}$$

$$\begin{aligned} \text{c) } 5x + 2y &= 7 \\ 3x - 2y &= -15 \end{aligned}$$

$$\begin{aligned} \text{d) } 2x + 4y &= 16 \\ 5y &= 2 + 2x \end{aligned}$$

2. Two friends purchase lunch in the cafeteria. Emily purchases four slices of pizza and two pop for \$12. Anna buys 2 slices of pizza and two pop for \$7.50. Create two equations and use them to determine the cost of each slice of pizza and each pop.

Let  $x$  represent the cost of one slice of pizza.

Let  $y$  represent the cost of one pop.

Answers: 1a) (5, 1), b) (-3, 2), c) (-1, 6), d) (4, 2), 2. Pizza = \$2.25, Pop = \$1.50