

You are selling gift wrap and cookie dough for a fundraiser.

Gift wrap costs \$4 per roll and cookie dough cost \$7 per box. You sell a total of 14 items and collect \$83.

- a) Identify the variables. x: # rolls gift wrap  
y: # boxes cookie dough

- b) Write and solve a system to determine how much you sold of each item.

$$\begin{array}{rcl} (\cdot x + y = 14) - 4 & \rightarrow & x + 9 = 14 \\ \cdot 4x + 7y = 83 & & -9 - 9 \\ -4x + -4y = -56 & & \hline x = 5 \\ \underline{4x + 7y = 83} & & (5, 9) \\ 3y = 27 & & \\ y = 9 & & \end{array}$$

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- c) Explain your solution in the context of the problem.

$$\begin{array}{rcl} 2. \quad -12x + y = 15 \\ 4(3x + 2y = 3) & \rightarrow & \\ \hline -12x + y = 15 & & \\ 12x + 8y = 12 & & \\ \hline 9y = 27 & & \\ \frac{9y}{9} = \frac{27}{9} & & \\ y = 3 & & \end{array}$$

$$(-1, 3)$$

$$\begin{array}{rcl} 3x + 2(3) = 3 & & \\ 3x + 6 = 3 & & \\ -6 - 6 & & \\ \hline \frac{3x}{3} = \frac{-3}{3} & & x = -1 \end{array}$$

### Checklist:

1. Are Like Terms in Columns?
2. Do I have coefficients that are opposites?
3. Solve for one variable
4. Use substitution to solve for the other variable
5. Check your solution

$$3. \begin{aligned} & (x + 6y = 0) - | \\ & |x + 1y = 14 \quad x+2=14 \\ & -x + 6y = 0 \quad \frac{-2}{-2} \quad \frac{-2}{x=12} \\ & \underline{x + 1y = 14} \\ & \underline{7y = 14} \\ & \quad \frac{7}{7} \\ & \quad y = 2 \end{aligned}$$

(12, 2)

## Checklist:

- |   |                          |
|---|--------------------------|
| 1. Are Like Terms in Columns?                       | <input type="checkbox"/> |
| 2. Do I have coefficients that are opposites?       | <input type="checkbox"/> |
| 3. Solve for one variable                           | <input type="checkbox"/> |
| 4. Use substitution to solve for the other variable | <input type="checkbox"/> |
| 5. Check your solution                              | <input type="checkbox"/> |

$$\left. \begin{array}{l} 4. (5y - 3x = 1)2 \\ (4y + 2x = 80)3 \end{array} \right\} \begin{aligned} & (18, 11) \\ & 10y - 6x = 2 \\ & 12y + 6x = 240 \\ & \underline{22y = 242} \quad y = 11 \end{aligned}$$

$$\left. \begin{array}{l} 5. 6x - 2y = 18 \\ 3x - y = 9 \end{array} \right\} \begin{aligned} & (18, 11) \\ & 6x - 2y = 18 \\ & -6x + 2y = -18 \\ & \underline{0 = 0} \end{aligned}$$

Infinite many solutions

$$6. \begin{aligned} & y = 3x + 2 \\ & (y = 4x - 4) - | \\ & y = 3x + 2 \\ & -y = -4x + 4 \\ & \underline{0 = -1x + 6} \\ & \quad \frac{-6}{-1} \quad x = 6 \\ & \quad \frac{-1}{-1} \end{aligned}$$

(6, 20)

$$\begin{aligned} & y = 3(6) + 2 \\ & y = 18 + 2 \\ & y = 20 \end{aligned}$$

$$7. \begin{aligned} & (3x + 5y = 6)4 \\ & (-4x + 2y = 5)3 \end{aligned}$$

Infinite many solutions

$$\left. \begin{array}{l} 12x + 20y = 24 \\ -12x + 6y = 15 \end{array} \right\} \begin{aligned} & 26y = 39 \\ & \frac{26}{26} \quad y = 1.5 \end{aligned}$$

$$\begin{aligned} & -4x + 2(1.5) = 5 \\ & -4x + 3 = 5 \\ & \quad \frac{-3}{-3} \quad x = -0.5 \end{aligned}$$

(-0.5, 1.5)

$$\begin{aligned} & -4x = 2 \\ & \quad \frac{-4}{-4} \quad x = -0.5 \end{aligned}$$