

Systems of Linear Equations – Word Problems

Name: _____ Date: _____

4-Step Method:

1. Define variables
2. Write the system of equations
3. Solve showing all steps
4. State your solution in sentence form

1. You sell tickets for admission to your school play and collect a total of \$104. Admission prices are \$6 for adults and \$4 for children. You sold 21 tickets. How many adult tickets and how many children tickets did you sell?

$x = \text{adult ticket}$
 $y = \text{child ticket}$

$$6x + 4y = 104$$

$$\begin{array}{r} x + y = 21 \\ -y \quad -y \\ \hline x = 21 - y \end{array}$$

10 adult tickets
 & 11 child tickets
 sold.

$$6(21 - y) + 4y = 104$$

$$\begin{array}{r} 126 - 6y + 4y = 104 \\ -2y + 126 = 104 \end{array}$$

$$\begin{array}{r} -2y = -22 \\ \frac{-2y}{-2} = \frac{-22}{-2} \\ y = 11 \end{array}$$

$$\begin{array}{r} x + 11 = 21 \\ -11 \quad -11 \\ \hline x = 10 \end{array}$$

2. Your family goes to a restaurant for dinner. There are 6 people in your family. Some order the chicken dinner for \$14.80 and some order the steak dinner for \$17. If the total bill was \$91, how many people ordered each type of dinner?

$x = \text{chicken}$
 $y = \text{steak}$

$$14.80x + 17y = 91$$

$$(x + y = 6) - 17$$

$$\begin{array}{r} 14.80x + 17y = 91 \\ -17x \quad -17y = -102 \\ \hline -2.2x = -11 \end{array}$$

$$\begin{array}{r} 5 + y = 6 \\ -5 \quad -5 \\ \hline y = 1 \end{array}$$

$$\begin{array}{r} -2.2x = -11 \\ \frac{-2.2x}{-2.2} = \frac{-11}{-2.2} \\ x = 5 \end{array}$$

5 people ordered
 chicken
 1 person ordered
 steak

3. You bought the meat for Saturday's cookout. A package of hot dogs cost \$1.60 and a package of hamburger cost \$5. You bought a total of 8 packages of meat and you spent \$23. How many packages of hamburger meat did you buy?

$x = \text{hot dogs}$
 $y = \text{hamburgers}$

$$1.60x + 5y = 23$$

$$(x + y = 8) - 5$$

$$1.60x + 5y = 23$$

$$\begin{array}{r} -5x \quad -5y = -40 \\ \hline -3.4x = -17 \end{array}$$

$$\begin{array}{r} 5 + y = 8 \\ -5 \quad -5 \\ \hline y = 3 \end{array}$$

$$\begin{array}{r} -3.4x = -17 \\ \frac{-3.4x}{-3.4} = \frac{-17}{-3.4} \\ x = 5 \end{array}$$

3 packages
 of
 hamburger