

# Systems of Linear Equations – Word Problems Homework

Name Key Class Period \_\_\_\_\_

## 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. Casey orders 3 pizzas and 2 orders of breadsticks for a total of \$29.50. Rachel orders 2 pizzas and 3 orders of breadsticks for a total of \$23. How much does a pizza cost?

$p = \text{pizzas}$   
 $b = \text{breadsticks}$

$$\begin{aligned} 2(3p + 2b) &= 29.50 \\ -3(2p + 3b) &= 23 \end{aligned}$$

$$2p + 3(2) = 23$$

$$2p + 6 = 23$$

$$\frac{2p}{2} = \frac{17}{2}$$

$$p = 8.5$$

$$\begin{aligned} + \quad 6p + 4b &= 59 \\ - \quad 6p - 9b &= -69 \\ \hline -5b &= -10 \\ -5 & \quad -5 \end{aligned}$$

$$b = 2$$

A pizza costs \$8.50.

2. Rent-A-Car rents compact cars for a fixed amount per day plus a fixed amount for each mile driven. Benito rented a car for 6 days, drove it 550 miles, and spent \$337. Lisa rented the same car for 3 days, drove it 350 miles, and spend \$185. What is the charge per day and the charge per mile for the compact car?

$d = \text{days}$

$m = \text{miles}$

$$3d + 350(0.22) = 185$$

$$\begin{aligned} 3d + 77 &= 185 \\ -77 & \quad -77 \end{aligned}$$

$$\frac{3d}{3} = \frac{108}{3}$$

$$d = 36$$

$$\begin{aligned} 6d + 550m &= 337 \\ -2(3d + 350m) &= 185 \end{aligned}$$

$$\begin{aligned} + \quad -6d - 700m &= -370 \\ \quad 6d + 550m &= 337 \\ \hline -150m &= -33 \end{aligned}$$

$$\frac{-150m}{-150} = \frac{-33}{-150}$$

$$m = 0.22$$

\$36 per day + \$0.22 per mile

3. Beach Hotel in Cancun is offering two weekend specials. One includes a 2-night stay with 3 meals and cost \$195. The other includes a 3-night stay with 5 meals and cost \$300. What is the cost of a single meal?

$n = \text{night stay}$

$m = \text{meals}$

$$\begin{array}{r}
 3(2n + 3m = 195) \\
 -2(3n + 5m = 300) \\
 \hline
 + \quad \cancel{6n} + 9m = 585 \\
 \quad \quad \quad \cancel{-6n} - 10m = -600 \\
 \hline
 \quad \quad \quad -m = -15 \\
 \quad \quad \quad m = 15
 \end{array}$$

A single meal is \$15

4. Tickets for the theater are \$5 for the balcony and \$10 for the orchestra. If 600 tickets were sold and the total receipts were \$4750, how many tickets of each type were sold?

$b = \text{balcony}$

$r = \text{orchestra}$

$$b + r = 600$$

$$5b + 10r = 4750$$

$$b + r = 600$$

$$\underline{-r \quad -r}$$

$$b = -r + 600$$

$$b = -350 + 600$$

$$b = 250$$

$$5(-r + 600) + 10r = 4750$$

$$-5r + 3000 + 10r = 4750$$

$$5r + 3000 = 4750$$

$$\underline{-3000 \quad -3000}$$

$$\frac{5r}{5} = \frac{1750}{5}$$

$$r = 350$$

250 balcony tickets were sold + 350 orchestra tickets were sold



5. You bought 5 pairs of socks for \$19. The wool socks you bought cost \$5 per pair. The cotton socks you bought cost \$3 per pair. How many of each type of sock did you buy?

$W =$  wool socks

$C =$  cotton socks

$$W + C = 5$$

$$\begin{array}{r} 2 + C = 5 \\ -2 \quad -2 \\ \hline C = 3 \end{array}$$

$$-3(W + C = 5)$$

$$\begin{array}{r} + 5W + 3C = 19 \\ -3W - 3C = -15 \\ \hline \end{array}$$

$$\frac{2W}{2} = \frac{4}{2}$$

$$W = 2$$

2 pairs of wool socks + 3 pairs of cotton socks were bought.

6. A sporting good store sells right-handed and left-handed baseball gloves. In one month, 12 gloves were sold for a total revenue of \$528. Right-handed gloves cost \$48 and left-handed gloves cost \$36. How many right-handed gloves were sold?

$r =$  right-handed glove

$L =$  left-handed glove

$$-36(r + L = 12)$$

$$\begin{array}{r} + 48r + 36L = 528 \\ -36r - 36L = -432 \\ \hline \end{array}$$

$$\frac{12r}{12} = \frac{96}{12}$$

$$r = 8$$

8 right-handed gloves were sold