8.4 More Two-Step Equations: Word Problems

Example: DeAndre is ordering tickets to a concert. He buys 3 tickets that all have the same price. There is a service charge of $4.75 per ticket. The total cost of his order is $111.75. What is the price of each ticket?

Let m be the price of each ticket.

$$\frac{3(m+4.75)}{3} = \frac{111.75}{3}$$

$$37.25$$
$$3\overline{)111.75}$$
$$-9\downarrow$$
$$21$$
$$-21$$
$$07$$
$$-6$$
$$15$$
$$-15$$
$$0$$

$$m + 4.75 = 37.25$$
$$-4.75 \quad -4.75$$
$$m = 32.50$$

Example: Natasha buys 5 bottles of orange juice. She has coupons of $0.65 off the regular price of each bottle of juice. After using the coupons, the total cost of the orange juice is $6.20. What is the regular price of a bottle of orange juice?

Let C be the regular price of a bottle of orange juice.

$$\frac{5(C-0.65)}{5} = \frac{6.20}{5}$$

$$1.24$$
$$5\overline{)6.20}$$
$$-5\downarrow$$
$$12$$
$$-10\downarrow$$
$$20$$
$$0$$

$$C - 0.65 = 1.24$$
$$+0.65 \quad +0.65$$
$$C = 1.89$$

Example: Tony buys 4 shirts at a clearance sale. Each shirt is discounted $3.50 off the regular price. The total cost is $65. What is the regular price of a shirt?

Let s be the regular price of the shirt.

$4(s-3.50)=65$

$4s-14=65$

$+14 \quad +14$

$\frac{4s}{4}=\frac{79}{4}$

$s=19.75$

$3.50 \times 4 = 14.00$

19.75
$4\overline{)79.00}$
$-4\downarrow$
39
-36
30
-28
20
-20
0

Example: Mr. Vargas takes his class of 24 students ice skating. Each student pays an entrance fee to enter the rink and a $4 fee to rent skates. The total cost for the students to enter the rink and rent skates is $216. What is the ice-skating rink's entrance fee?

Let k be the rink's entrance fee.

$\frac{24(k+4)}{24}=\frac{216}{24}$

$k+4=9$

$-4 \quad -4$

$k=\$5$

$24 \times 4 = 96$

$24 \times 9 = 216$

Example: Vanessa makes 7 identical flower arrangements for the tables at a banquet. Each arrangement contains some roses and 9 tulips. Vanessa uses a total of 147 flowers to make the arrangements. How many roses are in each arrangement?

Let r be the roses in each arrangement.

$$\frac{7(r+9)}{7} = \frac{147}{7}$$

$$r + 9 = 21$$
$$-9 \quad -9$$

$$r = 12 \text{ roses}$$

Example: Brody drives the same distance to and from work each day. He also drives an additional 1.5 miles each day to go to the gym. During a 5-day workweek, Brody drives a total of 71.25 miles. What is the distance to and from work?

Let w be the distance to & from work.

$$\frac{5(w+1.5)}{5} = \frac{71.25}{5}$$

$$\begin{array}{r} 14.25 \\ 5\overline{)71.25} \\ -5\downarrow \\ \hline 21 \\ -20\downarrow \\ \hline 12 \\ -10\downarrow \\ \hline 25 \\ -25 \\ \hline 0 \end{array}$$

$$w + 1.5 = 14.25$$
$$-1.5 \quad -1.50$$

$$w = 12.75 \text{ miles}$$