8.7 Writing and Solving Inequalities

Example: Juanita is going bowling and has $25 to spend. Write and solve an inequality to find the maximum number of games she can bowl if each game costs $3.75 and she buys a snack for $2.

Let g be the number of games she can bowl.

$$3.75g + 2 \leq 25$$
$$-2 \quad -2$$
$$3.75g \leq 23$$
$$\frac{3.75g}{3.75} \leq \frac{23}{3.75}$$

$$g \leq 6$$

$$\begin{array}{r} 6.1 \\ 3.75\overline{)23.00} \\ -2250 \\ \hline 1250 \\ -375 \\ \hline 875 \end{array}$$

Example: Keiko prepared 28 bags of granola to sell at a school fundraiser. She also received a $10 donation. Write and solve an inequality to find the price she should charge for each bag of granola if she wants to raise at least $115.

Let b be the price of each bag of granola.

$$28b + 10 \geq 115$$
$$-10 \quad -10$$
$$28b \geq 105$$
$$\frac{28b}{28} \geq \frac{105}{28}$$

$$b \geq 3.75$$

$$\begin{array}{r} 3.75 \\ 28\overline{)105.00} \\ -84 \\ \hline 210 \\ -196 \\ \hline 140 \\ -140 \\ \hline 0 \end{array}$$

Example: Montel pays a $2 entrance fee and $0.75 every time he plays his favorite video game. If he has $10, write and solve an inequality to find how many video games he can play.

Let v be the number of video games he can play.

$$0.75v + 2 \leq 10$$
$$-2 \quad -2$$
$$0.75v \leq 8$$
$$\frac{0.75v}{0.75} \leq \frac{8}{0.75}$$

$$v \leq 10$$

$0.75 \overline{)8.00}$

10.6

$75 \overline{)800.0}$

$-75\downarrow$

$50\ 0$

$-45\ 0$

$5\ 0$

Example: Alfonzo works for a lawn service company. It takes Alfonzo $\frac{3}{4}$ hour to mow a lawn. If he works more than 8 hours, he gets a $\frac{1}{2}$ hour lunch. Write and solve an inequality to find the number of lawns he can mow if he works at least 14 hours.

Let m be the number of lawns he can mow.

$$\frac{3}{4}m + \frac{1}{2} \geq 14$$
$$-\frac{1}{2} \quad -\frac{1}{2}$$

$14 \cdot 2 \quad 1 \cdot 2 \quad \frac{1}{2} = \frac{28}{2} - \frac{1}{2}$

$= \frac{27}{2}$

$13\frac{1}{2}$

$$\frac{4}{3} \cdot \frac{3}{4}m \geq \frac{27}{2} \cdot \frac{4^2}{3_1}$$

$$m \geq 18$$