

8.8 Part 3 Solving Multi-Step Word Problems

Let f be the price for food

Example: Mariella's parents have budgeted at most \$575 for her Quinceanera celebration. The cost of the party room is \$75. How much can the family spend per guest on food if each of the 40 guests receives a \$5 favor?

$$40(f + 5) + 75 \leq 575$$

$$40f + 200 + 75 \leq 575$$

$$40f + 275 \leq 575$$

$$\begin{array}{r} -275 \\ -275 \end{array}$$

$$\frac{40f}{40} \leq \frac{300}{40}$$

$$f \leq 7.50$$

$$\begin{array}{r} 7.5 \\ 4 \overline{)30.0} \\ \underline{-28} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

Example: Sofia recycled 3 pounds less than the amount that James recycled. Hannah recycled 3 times the amount that Sofia recycled. If they recycled a total of 53 pounds, how many pounds did Sofia recycle?

Let r be the amount Sofia recycled.
 Sofia Hannah James

$$\underbrace{r}_{\text{Sofia}} + \underbrace{3r}_{\text{Hannah}} + \underbrace{r+3}_{\text{James}} = 53$$

$$5r + 3 = 53$$

$$\begin{array}{r} -3 \\ -3 \end{array}$$

$$\frac{5r}{5} = \frac{50}{5}$$

$$r = 10 \text{ pounds}$$

Example: The Carleton Company budgeted \$1825 for a banquet. The cost of the facility is \$225. How much can the company spend per guest on food if there is a \$3 charge per guest for linens and there are 80 guests coming to the banquet? Let g be the cost of food per guest.

$$80(g+3) + 225 \leq 1825$$

$$80g + 240 + 225 \leq 1825$$

$$80g + 465 \leq 1825$$

$$-465 \quad -465$$

$$\frac{80g \leq 1360}{80 \quad 80}$$

$$g \leq 17$$

$$\begin{array}{r} 17 \\ 8 \overline{)136} \\ \underline{-80} \\ 56 \\ \underline{-56} \\ 0 \end{array}$$

4 people
Example: You and three friends are going to the fair. The cost for parking is \$5 per car and admission to the fair is \$19 per person. If you have a total of \$113, what is the maximum amount each person can spend on food?

Let f be the amount each can spend on food.

$$4(19+f) + 5 \leq 113$$

$$76 + 4f + 5 \leq 113$$

$$\begin{array}{r} 81 + 4f \leq 113 \\ -81 \qquad \qquad -81 \end{array}$$

$$\frac{4f \leq 32}{4 \qquad \qquad 4}$$

$$f \leq 8$$