

## 7.5 Using Dimensional Analysis

Changing units

Converting units

$$\frac{60 \text{ mi}}{1 \text{ hr}} \cdot 10 \text{ hr}$$

$$60 \frac{\text{mi}}{\text{hr}} \cdot 10 \frac{\text{hr}}{1}$$

$$60 \cdot 10 \frac{\text{mi}}{\cancel{\text{hr}}} \cdot \frac{\cancel{\text{hr}}}{1}$$

$$600 \text{ mi}$$

$$\frac{\text{ft}}{\text{hr}} : \text{hr} = \text{ft}$$

$$\frac{1 \text{ gal}}{4 \text{ qt}} \cdot \frac{1 \text{ qt}}{2 \text{ qt}} \cdot \frac{1 \text{ qt}}{2 \text{ qt}} \cdot \frac{1 \text{ qt}}{8 \text{ fl oz}} = \frac{1 \text{ gal}}{128 \text{ fl oz}}$$

Changing units

Labels

eliminate/rename

$$\frac{\text{mi}}{\text{hr}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} = \frac{5280 \text{ ft}}{3600 \text{ sec}}$$

$$\frac{1.46 \text{ ft}}{\text{sec}}$$

## Conversion Factors

$$\frac{2.54 \text{ cm}}{1 \text{ in}} \cdot 18 \text{ in} = 45.72 \text{ cm}$$

$$\frac{1 \text{ in}}{2.54 \text{ cm}} \cdot 75 \text{ cm} = 29.5 \text{ in}$$