

Self-Check for Tutorial 4

Metric and English Unit Conversions and Dimensional Analysis

1. Convert 500 grams to ounces.

$$1 \text{ oz.} = 28.4 \text{ g}$$

3. Convert 523 millimeters to inches.

$$1 \text{ cm} = 10 \text{ mm}$$

$$1 \text{ in.} = 2.54 \text{ cm}$$

2. Convert 40 hours to minutes.

$$1 \text{ hour} = 60 \text{ minutes}$$

4. Convert 2 tablespoons to liters.

$$1 \text{ cup} = 16 \text{ Tbsp}$$

$$1 \text{ qt} = 4 \text{ cups}$$

$$1 \text{ L} = 1.06 \text{ qt}$$

5. Convert the speed of light, 300,000,000 meters per second into feet per second.

$$1 \text{ m} = 100 \text{ cm}$$

$$1 \text{ in.} = 2.54 \text{ cm}$$

$$1 \text{ ft} = 12 \text{ in}$$

Solutions to Self-Check for Tutorial 4

Metric and English Unit Conversions and Dimensional Analysis

1. Convert 500 grams to ounces.

$$1 \text{ oz.} = 28.4 \text{ g}$$

$$500 \text{ g} \times \frac{1 \text{ oz}}{28.4 \text{ g}} \approx 17.6 \text{ oz}$$

3. Convert 523 millimeters to inches.

$$1 \text{ cm} = 10 \text{ mm}$$

$$1 \text{ in.} = 2.54 \text{ cm}$$

$$523 \text{ mm} \times \frac{1 \text{ cm}}{10 \text{ mm}} \times \frac{1 \text{ in.}}{2.54 \text{ cm}} \approx 20.6 \text{ in.}$$

2. Convert 40 hours to minutes.

$$1 \text{ hour} = 60 \text{ minutes}$$

$$40 \text{ hr} \times \frac{60 \text{ min}}{1 \text{ hr}} = 2400 \text{ min}$$

4. Convert 2 tablespoons to liters.

$$1 \text{ cup} = 16 \text{ Tbsp}$$

$$1 \text{ qt} = 4 \text{ cups}$$

$$1 \text{ L} = 1.06 \text{ qt}$$

$$2 \text{ Tbsp} \times \frac{1 \text{ cup}}{16 \text{ Tbsp}} \times \frac{1 \text{ qt}}{4 \text{ cups}} \times \frac{1 \text{ L}}{1.06 \text{ qt}} \approx 0.029 \text{ L}$$

5. Convert the speed of light, 300,000,000 meters per second into feet per second.

$$1 \text{ m} = 100 \text{ cm}$$

$$1 \text{ in.} = 2.54 \text{ cm}$$

$$1 \text{ ft} = 12 \text{ in}$$

$$\frac{300,000,000 \text{ m}}{1 \text{ sec}} \times \frac{100 \text{ cm}}{1 \text{ m}} \times \frac{1 \text{ in.}}{2.54 \text{ cm}} \times \frac{1 \text{ ft}}{12 \text{ in.}} \approx 984,251,968.5 \frac{\text{ft}}{\text{sec}}$$