GHCI/MFM2P **Name: _____**

Date: _____

Measurement Unit Conversions Using Conversion Factors

1. One kilogram is approximately 2.2 pounds. A man weighs 150 pounds. How many kilograms does he weigh?

Conversion Factor: $1\,\text{kg} = 2.2\,\text{lb}$

$$\frac{1\,\text{kg}}{2.2\,\text{lb}} = 1 = \frac{2.2\,\text{lb}}{1\,\text{kg}}$$

Solution:
$$150\,\cancel{\text{lb}} \times \frac{1\,\text{kg}}{2.2\,\cancel{\text{lb}}}$$
$$= \frac{150}{2.2}\,\text{kg}$$
$$= 68.18\,\text{kg}$$

The man weighs 68.18 kg.

2. There are 12 inches in a foot. A man is 5 and a half feet tall. How any inches tall is he?

Conversion Factor: $1\,\text{ft} = 12\,\text{in}$

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

Solution:
$$5.5\,\cancel{\text{ft}} \times \frac{12\,\text{in}}{1\,\cancel{\text{ft}}}$$
$$= 5.5 \times 12\,\text{in}$$
$$= 66\,\text{in}$$

The man is 66 inches tall.

3. A pint is 2 cups. 1 gallon is 16 cups. A pint is 16 fluid ounces. How many fluid ounces are in 6 gallons?

Conversion Factor: $\frac{1\,\text{pt}}{2\,\text{cups}} = 1 = \frac{2\,\text{cups}}{1\,\text{pt}}$ $\frac{1\,\text{gal}}{16\,\text{cups}} = 1 = \frac{16\,\text{cups}}{1\,\text{gal}}$ $\frac{1\,\text{pt}}{16\,\text{fl.oz.}} = 1 = \frac{16\,\text{fl.oz.}}{1\,\text{pt}}$

Solution:
$$6\,\cancel{\text{gal}} \times \frac{16\,\cancel{\text{cups}}}{1\,\cancel{\text{gal}}} \times \frac{1\,\cancel{\text{pt}}}{2\,\cancel{\text{cups}}} \times \frac{16\,\text{fl.oz.}}{1\,\cancel{\text{pt}}}$$
$$= \frac{6 \times 16 \times 16}{2}$$
$$= 768\,\text{fl.oz.}$$

There are 768 fl.oz. in 6 gallons.

4. Convert the following measurements. Round to the nearest tenth if needed.

(a) 68 cups = ? gallons

(b) 3 qt = ? fl.oz.

(c) 5000 g = ? metric ton (1 ton = 1000 kg)

(d) 12 oz. = ? kg (1000 kg = 2204 lb)

(e) 2 miles/h = ? km/h (1 mile = 1.61 km)

(f) 10 km = ? miles

5. Convert temperatures using the following formulas. Round to nearest tenth if needed.

$F° = 1.8 \times C° + 32$ $C° = (F° - 32) \times 5.5$

(a) $37\,C° = ?\,F°$

(b) $100\,F° = ?\,C°$