

# Lesson 5-5

Objective - To convert units of measure within and between given systems.

## Rate Conversions

How many inches are in 5 feet?

$$\frac{5 \text{ feet}}{1} \times \frac{12 \text{ inches}}{1 \text{ foot}} = \frac{60}{1} = 60 \text{ inches}$$

How many feet are in  $\frac{1}{3}$  of a mile?

$$\frac{1}{3} \text{ mile} \times \frac{5280 \text{ feet}}{1 \text{ mile}} = \frac{5280}{3} = 1760 \text{ feet}$$

## Rate Conversions

Your heart beats 75 beats/min. How many beats per day is this?

$$\frac{75 \text{ beats}}{1 \text{ min.}} \times \frac{60 \text{ min.}}{1 \text{ hr.}} \times \frac{24 \text{ hr.}}{1 \text{ day}} = \frac{108000}{1} \frac{\text{beats}}{\text{day}}$$

108,000 beats / day

## Customary Units

### Distance

1 foot = 12 inches

1 yard = 3 feet

1 mile = 5280 feet

1 mile = 1760 yards

1 mile = 63,360 inches

$$1 \text{ mile} \times \frac{5280 \text{ feet}}{1 \text{ mile}} \times \frac{1 \text{ yard}}{3 \text{ feet}} = \frac{5280}{3} \text{ yards} = 1760 \text{ yards}$$

$$1 \text{ mile} \times \frac{5280 \text{ feet}}{1 \text{ mile}} \times \frac{12 \text{ inches}}{1 \text{ foot}} = \frac{5280 \cdot 12}{1} \text{ inches} = 63,360 \text{ inches}$$

### Volume

### Weight (Mass)

## Customary Units

### Distance

1 foot = 12 inches

1 yard = 3 feet

1 mile = 5280 feet

1 mile = 1760 yards

1 mile = 63,360 inches

### Volume

1 cup = 8 fl. oz.

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 gallon = 16 cups

1 quart = 32 fl. oz.

$$1 \text{ gallon} \times \frac{4 \text{ quarts}}{1 \text{ gallon}} \times \frac{2 \text{ pints}}{1 \text{ quart}} \times \frac{2 \text{ cups}}{1 \text{ pint}} = \frac{4 \cdot 2 \cdot 2}{1} \text{ cups} = 16 \text{ cups}$$

$$1 \text{ quart} \times \frac{2 \text{ pints}}{1 \text{ quart}} \times \frac{2 \text{ cups}}{1 \text{ pint}} \times \frac{8 \text{ fl. oz.}}{1 \text{ cup}} = \frac{2 \cdot 2 \cdot 8}{1} \text{ fl. oz.} = 32 \text{ fl. oz.}$$

## Customary Units

### Distance

1 foot = 12 inches

1 yard = 3 feet

1 mile = 5280 feet

1 mile = 1760 yards

1 mile = 63,360 inches

### Volume

1 cup = 8 fl. oz.

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 gallon = 16 cups

1 quart = 32 fl. oz.

### Weight (Mass)

1 pound = 16 dry oz.

1 ton = 2000 pounds

1 ton = 32,000 dry oz.

$$1 \text{ ton} \times \frac{2000 \text{ lbs.}}{1 \text{ ton}} \times \frac{16 \text{ dry oz.}}{1 \text{ lb.}} = \frac{2000 \cdot 16}{1} \text{ dry oz.} = 32,000 \text{ dry oz.}$$

## Rate Conversions

Convert 6 decades to years.

$$6 \text{ decades} \times \frac{10 \text{ years}}{1 \text{ decade}} = \frac{6 \cdot 10}{1} = 60 \text{ years}$$

Convert 3 gallons to pints.

$$3 \text{ gallons} \times \frac{4 \text{ quarts}}{1 \text{ gallon}} \times \frac{2 \text{ pints}}{1 \text{ quart}} = \frac{3 \cdot 4 \cdot 2}{1} \text{ pints} = 24 \text{ pints}$$

## Lesson 5-5 (cont.)

### Rate Conversions

Convert 200 meters to inches  
(1 meter = 39.37 inches)

$$200 \text{ meters} \times \frac{39.37 \text{ inches}}{1 \text{ meter}} = 200(39.37)\text{inches}$$

7,874 inches