

## Converting US Units of Measurement

Name Solutions

### Conversion factors

1 foot = 12 inches  
 1 yard = 3 feet  
 1 mile = 5280 feet  
 1 minute = 60 seconds  
 1 hour = 60 minutes  
 1 day = 24 hours

1 pound = 16 ounces  
 1 ton = 2000 pounds  
 1 cup = 8 fluid ounces  
 1 pint = 2 cups  
 1 quart = 2 pints  
 1 gallon = 4 quarts

### Example 1: Convert 3 yards to feet.

Start with your given units and place them over one to make it a fraction. Then multiply by unit fractions. Set up your units to cancel out. For example, if you have yards in the numerator, place yards in the denominator.

$$3 \text{ yards} = \frac{3 \text{ yards}}{1} \cdot \frac{3 \text{ feet}}{1 \text{ yard}} = 9 \text{ feet}$$

### Example 2: Convert 5 days into minutes.

$$5 \text{ days} = \frac{5 \text{ days}}{1} \cdot \frac{24 \text{ hours}}{1 \text{ day}} \cdot \frac{60 \text{ minutes}}{1 \text{ hour}} = 7200 \text{ minutes}$$

### Try it! Fill in the missing parts to convert 2 quarts to cups.

$$2 \text{ quarts} = \frac{2 \text{ quarts}}{1} \cdot \frac{2 \text{ pints}}{1 \text{ quart}} \cdot \frac{2 \text{ cups}}{1 \text{ pt}} = 8 \text{ cups}$$

### Practice:

1. 33 yards to feet

$$\frac{33 \text{ yards}}{1} \cdot \frac{3 \text{ feet}}{1 \text{ yards}} = 99 \text{ feet}$$

unit fraction

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2. 80 ounces to pounds

$$\frac{80 \cancel{\text{oz}}}{1} \cdot \frac{1 \text{ lb}}{16 \cancel{\text{oz}}} = \frac{80 \text{ lbs}}{16} = 5 \text{ lbs}$$

3. 10,000 feet to miles

$$\frac{10,000 \cancel{\text{ft}}}{1} \cdot \frac{1 \text{ mile}}{5280 \cancel{\text{ft}}} = \frac{10,000}{5280} = 1.89 \text{ miles}$$

4. 128 fluid ounces to gallons

$$\frac{128 \cancel{\text{oz}}}{1} \cdot \frac{1 \cancel{\text{cup}}}{8 \cancel{\text{oz}}} \cdot \frac{1 \cancel{\text{pt}}}{2 \cancel{\text{cups}}} \cdot \frac{1 \cancel{\text{qt}}}{2 \cancel{\text{pts}}} \cdot \frac{1 \text{ gallon}}{4 \cancel{\text{qts}}} = \frac{128}{128} = 1 \text{ gallon}$$

5. 2.5 tons to ounces

$$\frac{2.5 \cancel{\text{tons}}}{1} \cdot \frac{2000 \cancel{\text{lbs}}}{1 \cancel{\text{ton}}} \cdot \frac{16 \text{ oz}}{1 \cancel{\text{lb}}} = 80,000 \text{ oz.}$$

6. How many seconds are there in one year?

$$\frac{1 \cancel{\text{year}}}{1} \cdot \frac{365 \cancel{\text{days}}}{1 \cancel{\text{yr}}} \cdot \frac{24 \cancel{\text{hrs}}}{1 \cancel{\text{day}}} \cdot \frac{60 \cancel{\text{min}}}{1 \cancel{\text{hr}}} \cdot \frac{60 \text{ sec}}{1 \cancel{\text{min}}} = 31,536,000 \text{ seconds}$$