

Measurements

Metric Abbreviations

Length

mm = millimeter

cm = centimeter

dm = decimeter

m = meter

dam = dekameter

hm = hectometer

km = kilometer

Volume

mL = milliliter

cL = centiliter

dL = deciliter

L = liter

daL = dekaliter

hL = hectoliter

kL = kiloliter

Weight

mg = milligram

cg = centigram

dg = decigram

g = gram

dag = dekagram

hg = hectogram

kg = kilogram

	<u>United States</u>	<u>Metric</u>
Length:	12 in = 1 ft 3 ft = 1 yd 5280 ft = 1 mi (mile)	Meter
Weight:	16 oz = 1 lb (pound) 2000 lbs = 1 ton	Gram
Capacity:	8 fl oz = 1 cup 2 cups = 1 pt (pint) 2 pts = 1 qt (quart) 4 qts = 1 gal (gallon)	Liter
Temperature:	Fahrenheit $F = \frac{9}{5}C + 32$	Centigrade $C = 1.8C + 32$

Equivalent Values

Length:	<u>American to Metric</u>	<u>Metric to American</u>
	1 in. = 2.54 cm	1 cm = 0.3937 in.
	1 ft. = 0.3048 m	1 m = 3.2808 ft.
	1 yd. = 0.9144 m	1 m = 1.0936 yd.
	1 mi. = 1.6093 km	1 km = 0.6214 mi.
Weights:	<u>American to Metric</u>	<u>Metric to American</u>
	1 oz. = 28.35 g	1 g = 0.035 oz.
	1 lb. = 0.454 kg	1 kg = 2.2 lb.
Capacities:	<u>American to Metric</u>	<u>Metric to American</u>
	1 fl. oz. = 0.030 L	1 L = 33.8 fl. oz.
	1 pt. = 0.473 L	1 L = 2.1 pt.
	1 qt. = 0.946 L	1 L = 1.06 qt.
	1 gal. = 3.785 L	1 L = 0.264 gal.

Metric Prefixes

1000	100	10	1	0.1	0.001	0.0001
Kilo	hecto	deka	Meter	deci	centi	milli
			Gram			
			Liter			

** King Henry Died (unit) Drinking Chocolate Milk

SECTION 9.2 LINEAR MEASUREMENT

To convert from one unit of length to another, unit fractions may be used.

The unit fraction should be in the form

$$\frac{\text{units converting to}}{\text{original units}}$$

LENGTH: U.S. SYSTEM OF MEASUREMENT

$$\begin{aligned} 12 \text{ inches (in.)} &= 1 \text{ foot (ft)} \\ 3 \text{ feet} &= 1 \text{ yard (yd)} \\ 5280 \text{ feet} &= 1 \text{ mile (mi)} \end{aligned}$$

$$\frac{12 \text{ inches}}{1 \text{ foot}} \cdot \frac{1 \text{ foot}}{12 \text{ inches}} \cdot \frac{3 \text{ feet}}{1 \text{ yard}}$$

Convert 6 feet to inches.

$$\begin{aligned} 6 \text{ feet} &= \frac{6 \text{ feet}}{1} \cdot \frac{12 \text{ inches}}{1 \text{ foot}} \leftarrow \begin{array}{l} \text{UNITS} \\ \text{CONVERTING TO} \\ \text{ORIGINAL} \\ \text{UNITS} \end{array} \\ &= 6 \cdot 12 \text{ inches} \\ &= 72 \text{ inches} \end{aligned}$$

CAPACITY: U.S. SYSTEM OF MEASUREMENT

$$\begin{aligned} 8 \text{ fluid ounces (fl oz)} &= 1 \text{ cup (c)} \\ 2 \text{ cups} &= 1 \text{ pint (pt)} \\ 2 \text{ pints} &= 1 \text{ quart (qt)} \\ 4 \text{ quarts} &= 1 \text{ gallon (gal)} \end{aligned}$$

Convert 5 pints to gallons.

$$\begin{aligned} 1 \text{ gal} &= 4 \text{ qt} = 8 \text{ pt} \\ 5 \text{ pt} &= \frac{5 \text{ pt}}{1} \cdot \frac{1 \text{ gal}}{8 \text{ pt}} = \frac{5}{8} \text{ gal} \end{aligned}$$

U.S. UNITS OF WEIGHT

$$16 \text{ ounces (oz)} = 1 \text{ pound (lb)}$$

$$2000 \text{ pounds} = 1 \text{ ton}$$

UNIT FRACTIONS

$$\frac{16 \text{ oz}}{1 \text{ lb}} = \frac{1 \text{ lb}}{16 \text{ oz}} = 1$$

$$\frac{2000 \text{ lb}}{1 \text{ ton}} = \frac{1 \text{ ton}}{2000 \text{ lb}} = 1$$

CELSIUS TO FAHRENHEIT

$$F = \frac{9}{5}C + 32 \quad \text{or} \quad F = 1.8C + 32$$

FAHRENHEIT TO CELSIUS

$$C = \frac{5}{9}(F - 32)$$

Convert 35°C to degrees Fahrenheit.

$$F = \frac{9}{5} \cdot 35 + 32 = 63 + 32 = 95$$

$$35^\circ\text{C} = 95^\circ\text{F}$$

Convert 50°F to degrees Celsius.

$$C = \frac{5}{9} \cdot (50 - 32) = \frac{5}{9} \cdot 18 = 10$$

$$50^\circ\text{F} = 10^\circ\text{C}$$

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$$\begin{aligned} C &= \frac{5}{9} \cdot (50 - 32) = \frac{5}{9} \cdot 18 = 10 \\ 50^\circ\text{F} &= 10^\circ\text{C} \end{aligned}$$