

Units of Measurement

Distances (Metric):

One meter (1 *m*) is approximately twice the height from the floor to an average chair.

One centimeter (1 *cm*) is slightly smaller than the diameter of a dime.

A millimeter (1 *mm*) is approximately the thickness of a dime.

1 millimeter = 1 *mm* = 0.001 meter

1 centimeter = 1 *cm* = 0.01 meter

1 decimeter = 1 *dm* = 0.1 meter

1 kilometer = 1 *km* = 1000 meters

Distances (Imperial):

A foot (1' or 1 *ft*) is about the length of an average male foot.

A yard (1 *yd*) is a little less than a meter.

An inch (1" or 1 *in*) is approximately the distance from the tip of a person's thumb to the nearest knuckle.

1 foot = 1 *ft* = 12 inches

1 yard = 1 *yd* = 3 feet

1 mile = 5280 feet

Area:

100 *m*² is the area enclosed by a square with $\sqrt{100} = 10$ meter-long sides.

200 *m*² is the area enclosed by a square with $\sqrt{200}$ meter-long sides.

A rectangular room that is 3' × 5' has a 3 ft width, 5 ft length, and area equal to

$3 \times 5 = 15 \text{ ft}^2 = 15$ square feet.

1 acre (imperial) = 43,560 *ft*²

Volume (Metric):

A 1000 cubic centimeters is the volume enclosed in a cube with 10 centimeter-long sides.

A millileter is approximately a fifth of the volume held by a teaspoon.

$$1 \text{ Liter} = 1 L = 1000 \text{ cubic centimeters} = 1000 \text{ cm}^3$$

$$1 \text{ milliliter} = 1 \text{ ml} = 0.001 \text{ liter}$$

$$1 \text{ centiliter} = 1 \text{ cl} = 0.01 \text{ liter}$$

$$1 \text{ deciliter} = 1 \text{ dl} = 0.1 \text{ liter}$$

$$1 \text{ kiloliter} = 1 \text{ kl} = 1000 \text{ liters}$$

Volume (Imperial):

A single measuring cup (1 *cup*) contains the same volume as 16 tablespoons.

$$1 \text{ fluid ounce (1 fl oz)} = 1.7339 \text{ in}^3$$

$$1 \text{ cup} = 8 \text{ fl oz}$$

$$1 \text{ pint} = 1 \text{ pt} = 20 \text{ fl oz}$$

$$1 \text{ quart} = 1 \text{ qt} = 40 \text{ fl oz}$$

$$1 \text{ gallon} = 1 \text{ gal} = 160 \text{ fl oz}$$

Small Volumes:

$$1 \text{ teaspoon} = 1 \text{ tsp} = 5 \text{ milliliters}$$

$$1 \text{ tablespoon} = 1 \text{ tbsp} = 15 \text{ milliliters} = 3 \text{ teaspoons}$$

$$1 \text{ cup} = 250 \text{ milliliters}$$

Mass (Metric):

A gram (1 *g*) is approximately the mass of a paper clip.

One kilogram (1 *kg*) is about the mass of one liter (1 *L*) of water.

$$1 \text{ milligram} = 1 \text{ mg} = 0.001 \text{ gram}$$

$$1 \text{ centigram} = 1 \text{ cg} = 0.01 \text{ gram}$$

$$1 \text{ decigram} = 1 \text{ dg} = 0.1 \text{ gram}$$

$$1 \text{ kilogram} = 1 \text{ kg} = 1000 \text{ grams}$$

Mass (Imperial): Four ounces (4 *oz*) is approximately the mass of a half-cup of yogurt or a small apples.

$$1 \text{ pound} = 1 \text{ lb} = 16 \text{ ounces}$$

$$1 \text{ stone} = 1 \text{ st} = 14 \text{ pounds}$$

$$1 \text{ ton} = 2000 \text{ pounds (US)} \text{ or } 2240 \text{ pounds (UK)}$$

Imperial To Metric Conversion:

n inches = $n \times 2.5$ centimeters

n feet = $n \times 30.5$ centimeters

n feet = $n \times 0.305$ meters

n quarts = $n \times 5$ cups = $n \times 1.25$ liters

Metric To Imperial Conversion:

n centimeters = $n \times 0.4$ inches

n meters = $n \times 3.28$ feet

n liters = $n \times 0.8$ quarts

Metric Prefixes:

<u>Prefix</u>	<u>Multiply By</u>
milli-	0.001
centi-	0.01
deci-	0.1
deka-	10
hecto-	100
kilo-	1000

For example, 3.8 *kilometers* = 3.8×1000 meters = 3800 meters.

Similarly, 29 *centiliters* = 29×0.01 liters = 0.29 liters.