Useful Conversion Factors

Length:

1 mm = 0.1 cm = 0.001 m

1 cm = 0.394 in = 0.01 m

1 m = 100 cm = 1000 mm = 3.28 ft = 39.4 in

1 Kilometer = 1000 m = 0.622 miles

1 in = 2.54 cm = 0.0254 m

1 ft = 12 in = 30.48 cm = 0.3048 m

1 mile = 5280 ft = 1609 m = 1.609 kilometers

1 yard = 3 ft

Mass/Weight:

1 gram = 0.001 Kg

1 Kg = 1000 grams = 2.2 lbs = 9.8 Newtons*

1 slug = 32 lbs = 14.6 Kg

1 oz = 0.0625 lbs

1 lb = 0.455 Kg. = 16 ozs

Time:

1 sec = 0.0167 min = 0.000278 hr

1 min = 60 sec = 0.0167 hr

1 hr = 60 min = 3600 s

1 day = 24 hrs = 1440 min = 86,400 s

1 year = 365 days = 8760 hrs = 526,000 min = 31,600,000 s

*(Near the earth's surface we can specify these relationships but we should remember that weight is due to the pull of gravity on the masses involved and is really a force.)

Volume:

1 sq cm = 0.155 sq in = 0.0001 sq m.

1 sq m = 10,000 sq cm = 5.20 sq ft

1 sq Kilometer = 1,000,000 sq m = 0.387 sq miles

Velocity:

1 mi/hr	1.47 ft/sec = 1.609 Km/hr = 0.447 m/s
60 mi/hr	88 ft/s
1 ft/sec	0.682 mi/hr = 0.305 m/s

Pressure:

1 atm	= 14.7 lb / in^2
	= 1.013 x 10^5 N/m^2
	= 1.013 x 10^6 dyne/cm^2
	= 30 in Hg
	= 76 cm Hg
1 bar	= 106 dyne/cm^2
1 millibar	= 103 dyne/cm^2
1 lb/in^2	= 2.04 in Hg
1 in Hg	= 0.490 lb/ in^2

Example: convert 152 meters in centimeters.

Solution:

the value you are converting →

$$152m \times \frac{100 \ cm}{1 \ meter} = 15,200cm$$

this fraction is an equivalency that features the unit you are converting from as the denominator - and your target unit as the numerator

this is the answer obtained by canceling the meter units - leaving centimeters - which was your target unit

Practice Questions:

Before answering the questions you may want to consider the example on the previous page

1. How long is a page of your writing paper (take regular letter sheet) in meters?

2. Convert the following length into meters.

   a. 280 cm   = _____ m
   b. 56100 mm = _____ m
   c. 3.7 km   = _____ m

3. How long is a football field in meters? (A football field is 100 yards long.)

4. Which is greater: 45 miles or 63 km?

5. What is the height in meters of a 5'3" person?

6. What is the mass of a 120 lb. person in grams?

7. How many milligrams are there in 11 grams?

8. How many seconds are in one hour?

9. How many seconds are in 2 days?