**Unit conversions**

**Unit**: a fixed quantity used as a standard of measurement, e.g.

 Time: seconds (s), \_\_\_\_\_\_\_\_\_\_ (\_\_\_\_), \_\_\_\_\_\_\_\_\_\_ (\_\_\_\_),

\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_)

 Distance: meters (m), \_\_\_\_\_\_\_\_\_\_ (\_\_\_\_), \_\_\_\_\_\_\_\_\_\_ (\_\_\_\_),

\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_)

 Mass: kilograms (kg), \_\_\_\_\_\_\_\_\_\_ (\_\_\_\_), \_\_\_\_\_\_\_\_\_\_ (\_\_\_\_),

\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_)

It is often necessary to convert between units. This process is called **unit conversion.** Unit conversions involve the use of **conversion factors** or “**magic ones**”, e.g.

1. 1 m = 100 cm b. 1 km = \_\_\_\_\_\_\_\_ m

 $\frac{1 m}{100 cm}=\frac{100 cm}{1 m}=1$ $\frac{ }{ }=\frac{ }{ }=1$

 c. 1 hr = \_\_\_\_\_\_\_\_ s d. 1 yr = \_\_\_\_\_\_\_\_\_ days

 $\frac{ }{ }=\frac{ }{ }=1$ $\frac{ }{ }=\frac{ }{ }=1$

Using unit conversions is in essence, multiplying a value by “1”. In doing this, you will change the unit without changing the actual value. Unit conversion should be set up with the intent to cancel the starting unit, and introducing the “goal” unit.

**Example 1**: Convert 2.5 m to mm

**Example 2**: Convert 35 days to hours

**Example 3**: 5000 cm3 to m3

You can also approach conversion factors as “links” between units. This approach is helpful when problems involve more than one step.

**Example 4**: Convert 5 kg of water to cm3 (1 cm3 of water weighs 1 g)

Your turn:

1. 250 cm to meters
2. How many minutes are in 6 days?
3. How many km in 1500 mm?
4. 25 cm to km
5. 5 min to seconds
6. 45 cm to m
7. 47 days to seconds
8. 0.632 km to cm
9. 32.4 kg to g

10. There are 17 bamboodles (bd) in 308 kwapernies (kwp) and 53 kwapernies in 2 falluncles (fn). How many falluncles are there in 516 bamboodles?

**Bonus:** The speed of light is 3 x 108m/s. Make the conversions to light years (km/year). This is how far light will travel in one year.