



A squirrel eating nuts. In English 'nuts' rhymes with 'units'.

In science and other subjects it is common that one has to convert between different units of measurement. It is common in many places to use metric units, for example meters or kilograms. Different units such as gallons or acres, can be found in other areas of science, so unit conversion is a skill that one has to practice.

Below is a table of different units used long ago. In the following problems, perform the indicated unit conversion.

Conversion Table:

4 Gallons = 1 Bucket	142 cubic cm = 1 Noggin
9 Gallons = 1 Firkin	1.296 grams = 1 Scruple
126 Gallons = 1 Butt	201 meters = 1 Furlong
34.1 Liters = 1 Firkin	14 days = 1 Fortnight
0.0685 Slugs = 1 Kilogram	

- 1) A fish aquarium holds 25 gallons of water. How many liters is this?
- 2) John weighs 7.2 Slugs, and Mary weighs 53 kilograms. Who weighs the most kilograms? (In english, a 'slug' is a garden pest!)
- 3) The volume of space inside a car is about 5.4 cubic meters. How many Noggins can fit inside the car? (In english, a noggin is another word for your head!)
- 4) The density of water is 1.0 grams/cm^3 . How many Scruples per Noggin is this? (In english, a scruple is a feeling of doubt.)
- 5) Evelyn finished the Diamond Man Marathon by walking 400 kilometers in 18 days. What was her average speed in Furlongs/Fortnight?

Answers:

$$1) \text{ 25 Gallons} \times \frac{1 \text{ Firkin}}{9 \text{ Gallons}} \times \frac{34.1 \text{ Liters}}{1 \text{ Firkin}} = \mathbf{94.7 \text{ Liters}}$$

$$2) \text{ John} = 7.2 \text{ Slugs} \times \frac{1 \text{ kg}}{0.0685 \text{ Slugs}} = \mathbf{105 \text{ kg John weighs the most.}}$$

$$3) \text{ 5.4 cubic meters} \times \frac{1,000,000 \text{ cm}^3}{1 \text{ meter}^3} \times \frac{1 \text{ Noggin}}{142 \text{ cm}^3} = \mathbf{38,028 \text{ Noggins!}}$$

$$4) \text{ 1 gram} \times (1 \text{ Scruple}/1.296 \text{ grams}) = 0.771 \text{ Scruples.}$$

$$\text{ 1 cubic centimeter} \times (1 \text{ Noggin}/142.065 \text{ cubic cm}) = 0.007 \text{ Noggins.}$$

Dividing the two you get

$$0.771 \text{ Scruples}/0.007 \text{ Noggins} = \mathbf{110 \text{ Scruples/Noggin.}}$$

$$5) \text{ 400 kilometers} \times (1,000 \text{ meters}/1 \text{ km}) \times (1 \text{ Furlong}/201 \text{ meters}) = 1,990 \text{ Furlongs.}$$

$$18 \text{ days} \times (1 \text{ Fortnight}/14 \text{ days}) = 1.28 \text{ Fortnights.}$$

Dividing the two you get

$$1,990 \text{ Furlongs}/1.28 \text{ Fortnights} = \mathbf{1,555 \text{ Furlongs per fortnight.}}$$