

Converting from one set of units to another is something that scientists do every day. We have made this easier by adopting metric units wherever possible, and redefining our standard units of measure so that they are compatible with the new metric units wherever possible.

In the western world, certain older units have been replaced by the modern ones, which are now adopted the world over. (see Wikipedia under 'English Units' for more examples). In this exercise, you will convert from...

Conversion Table:

| 4 Gallons = 1 Bucket | 142.065 cubic cm = 1 Noggin |
|---------------------------|-----------------------------|
| 9 Gallons = 1 Firkin | 1.296 grams = 1 Scruple |
| 126 Gallons = 1 Butt | 201.168 meters = 1 Furlong |
| 34.07 Liters = 1 Firkin | 14 days = 1 Fortnight |
| 0.0685 Slugs = 1 Kilogram | 0.2 grams = 1 Carat |

1) A typical aquarium holds 25 gallons of water. Convert this to A) Firkins; B) Liters, and C) Buckets.

2) John weighs 7.2 Slugs, and Mary weighs 53 kilograms. Who weighs the most kilograms?

3) The passenger volume of a car is about 5.4 cubic meters. How many Noggins can fit inside the car?

4) Sven weighs 105 kilograms and finished a diet of pickled herring, losing 3.8 kilograms. A) How many Scruples did he lose? B) How many Scruples did he start out with?

5) The density of water is 1.0 grams/cm³. How many Scruples per Noggin is this?

6) Evelyn finished the Diamond Man Marathon by walking 400 kilometers in 18 days. What was her average speed in Furlongs per Fortnight?

7) A swimming pool holds 50,000 gallons of water. How many Butts were in the pool?

8) If a Fathom is 72 inches, and there are 2.5 centimeters per inch, how many kilometers are there in 3.6 Leagues if 1 League = 2640 Fathoms?

9) The original Cullinan Diamond was discovered in 1904 and weighs 3,106.75 Carats. A) How many grams is this? B) The polished Cullinan Diamond I (Great Star of Africa) weighs 530.2 Carats and is worth \$386 million. What is the approximate worth of the original Cullinan Diamond? C) What is the going rate for diamonds in terms of dollars per Carat? D) Dollars per gram?

Answer Key:

Conversion Table:

| 4 Gallons = 1 Bucket | 142.065 cubic centimeters = 1 Noggin | |
|---------------------------|--------------------------------------|--|
| 9 Gallons = 1 Firkin | 1.296 grams = 1 Scruple | |
| 126 Gallons = 1 Butt | 201.168 meters = 1 Furlong | |
| 34.07 Liters = 1 Firkin | 14 days = 1 Fortnight | |
| 0.0685 Slugs = 1 Kilogram | 200 milligrams = 1 Carat | |

1) A typical aquarium holds 25 gallons of water. Convert this to

A) Firkins; 25 Gallons x (1 Firkin/9 Gallons) = **2.8 Firkins**

B) Liters, and 2.8 Firkins x (34.07 Liters/ 1 Firkin) = 95.4 Liters

C) Buckets. 25 Gallons x (1 Bucket/4 gallons) = 6.3 Buckets.

2) John weighs 7.2 Slugs, and Mary weighs 53 kilograms. Who weighs the most kilograms?
 John = = 7.2 Slugs x (1 kg/0.0685 Slugs) = 105 kg so John weighs the most kilograms.

3) The passenger volume of a car is about 5.4 cubic meters. How many Noggins can fit inside the car?
 5.4 cubic meters x (1,000,000 cubic cm/1 cubic meter) x(1 Noggin/142.065 cubic cm) = 38,028 Noggins!

4) Sven weighs 105 kilograms and finished a diet of pickled herring, losing 3.8 kilograms.

- A) How many Scruples did he lose? 3.8 kg x (1,000 gm/ 1kg) x (1 Scruple/1.296 grams) = 2,932 Scruples.
- B) How many Scruples did he start out with? 105 kg x(1,000 gm/1 kg) x 1 Scruple/1.296 grams) = 81,018 Scruples

5) The density of water is 1.0 grams per cubic centimeter. How many Scruples per Noggin is this?
1 gram x (1 Scruple/1.296 grams) = 0.771 Scruples.
1 cubic centimeter x (1 Noggin/142.065 cubic cm) = 0.007 Noggins.

Dividing the two you get 0.771 Scruples/0.007 Noggins = **110 Scruples/Noggin**.

6) Evelyn finished the Diamond Man Marathon by walking 400 kilometers in 18 days. What was her average speed in Furlongs per Fortnight?

400 kilometers x (1,000 meters/ 1 km) x (1 Furlong/201 meters) = 1,990 Furlongs.

18 days x (1 Fortnight/14 days) = 1.28 Fortnights.

Dividing the two you get 1,990 Furlongs/1.28 Fortnights = 1,555 Furlongs per fortnihght.

7) A swimming pool holds 50,000 gallons of water. How many Butts were in the pool?

50,000 gallons x (1 Butt / 126 gallons) = 397 Butts.

8) If a Fathom is 72 inches, and there are 2.5 centimeters per inch, how many kilometers are there in 3.6 Leagues if 1 League = 2640 Fathoms?

3.6 Leagues x (2640 Fathoms/ 1 League) x (72 Inches / 1 Fathom) = 684,288 inches.

684,288 inches x (2.5 cm/1 inch) x (1 meter/100 cm) x (1 kilometer/1000 meters) = 17.1 kilometers.

9) The original Cullinan Diamond was discovered in 1904 and weighs 3,106.75 Carats.

A) How many grams is this? 3,106.75 carats x (0.2 grams / 1 carat) = **621.2 grams**.

B) The polished Cullinan Diamond I (Great Star of Africa) weighs 530.2 Carats and is worth \$386 million. What is the approximate worth of the original Cullinan Diamond?

386 million dollars x (3106.75 carats / 530.2 carats) = \$2.26 billion.

C) What is the going rate for diamonds in terms of dollars per Carat? 386 million dollars / 530.2 carats = **\$728,027 per carat.**

D) Dollars per gram?

728,027 dollars / carat x (1 carat / 0.2 grams) = 3.6 million / gram.