

What you need to know ... you ALREADY know.

Everything divided by itself equals one.

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

Everything divided by one equals itself.

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

Everything multiplied by one equals itself.

$$N * 1 = N$$

Simple examples of the “conversion rules”

Everything divided by itself equals one.

$$\frac{15 \text{ mol}}{15 \text{ mol}} = 1$$

Everything divided by one equals itself.

$$\frac{19 \text{ cm}}{1} = 19 \text{ cm}$$

Everything multiplied by one equals itself.

$$43 \text{ kg} * 1 = 43 \text{ kg}$$

A slightly weird concept ... at first.

Everything divided by itself equals one.

You already know there are 12 inches in a foot.

You may know there are 1,760 yards in a mile.

You should know there are 100 centimeters in a meter.

You should know there are 1,000 meters in a kilometer.

Abbreviations ...

inches is “in”

foot or feet is “ft”

yards is “yd”

miles is “mi”

centimeters is “cm”

meters is “m”

kilometers is “km”

Example conversion factors ... dividing a number “by itself”

$$\frac{12 \text{ in}}{1 \text{ ft}} = 1 \quad \frac{1 \text{ ft}}{12 \text{ in}} = 1$$

$$\frac{1760 \text{ yd}}{1 \text{ mi}} = 1 \quad \frac{1 \text{ mi}}{1760 \text{ yd}} = 1$$

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

$$\frac{1000 \text{ m}}{1 \text{ km}} = 1 \quad \frac{1 \text{ km}}{1000 \text{ m}} = 1$$

So ... since $N * 1 = N$

Then ... $N * \frac{12 \text{ in}}{1 \text{ ft}} = N$

And ... since $N * 1 = N$

Then ... $N * \frac{1 \text{ km}}{1000 \text{ m}} = N$

Practice the skill with some normal and odd examples.

Express these as a “conversion fraction” ...

$$1 \text{ inch equals } 2.54 \text{ cm} \qquad \frac{1 \text{ in}}{2.54 \text{ cm}}$$

$$1 \text{ meter equals } 1,000 \text{ mm} \qquad \frac{\text{m}}{1000 \text{ mm}}$$

$$12 \text{ eggs equals } 1 \text{ dozen eggs} \qquad \frac{\text{eggs}}{1 \text{ dozen eggs}}$$

$$1 \text{ dollar equals } 100 \text{ cents} \qquad \frac{1 \text{ dollar}}{\text{cents}}$$

$$4 \text{ innings equals } 1 \text{ game} \qquad \frac{4 \text{ innings}}{\text{game}}$$

$$8 \text{ pistons equals } 1 \text{ engine} \qquad \frac{\text{pistons}}{\text{engine}}$$

$$1 \text{ hand equals } 5 \text{ fingers} \qquad \frac{\text{hands}}{5 \text{ fingers}}$$

$$7 \text{ sets equals } 1 \text{ match} \qquad \frac{\text{sets}}{1 \text{ match}}$$

$$1000 \text{ ml equals } 1 \text{ liter} \qquad \frac{\text{ml}}{\text{liter}}$$

Answers to previous page

Express these as a “conversion fraction” ...

$$1 \text{ inch equals } 2.54 \text{ cm} \qquad \frac{1 \text{ in}}{2.54 \text{ cm}}$$

$$1 \text{ meter equals } 1,000 \text{ mm} \qquad \frac{1 \text{ m}}{1000 \text{ mm}}$$

$$12 \text{ eggs equals } 1 \text{ dozen eggs} \qquad \frac{12 \text{ eggs}}{1 \text{ dozen eggs}}$$

$$1 \text{ dollar equals } 100 \text{ cents} \qquad \frac{1 \text{ dollar}}{100 \text{ cents}}$$

$$4 \text{ innings equals } 1 \text{ game} \qquad \frac{4 \text{ innings}}{1 \text{ game}}$$

$$8 \text{ pistons equals } 1 \text{ engine} \qquad \frac{8 \text{ pistons}}{1 \text{ engine}}$$

$$1 \text{ hand equals } 5 \text{ fingers} \qquad \frac{1 \text{ hands}}{5 \text{ fingers}}$$

$$7 \text{ sets equals } 1 \text{ match} \qquad \frac{7 \text{ sets}}{1 \text{ match}}$$

$$1000 \text{ ml equals } 1 \text{ liter} \qquad \frac{1000 \text{ ml}}{1 \text{ liter}}$$

Solve these using a conversion fraction ...

How many inches in 5.08 cm?

$$1 \text{ inch equals } 2.54 \text{ cm} \quad \frac{5.08 \cancel{\text{cm}}}{1} * \frac{1 \text{ in}}{2.54 \cancel{\text{cm}}} = \frac{5.08 \text{ in}}{2.54}$$

Answer is 2 inches

How many dollars in 250 cents?

$$1 \text{ dollar equals } 100 \text{ cents} \quad \frac{250 \cancel{\text{cents}}}{1} * \frac{1 \text{ dollar}}{100 \cancel{\text{cents}}} = \frac{250 \text{ dollars}}{100}$$

Answer is 2.5 dollars

How many engines use 24 pistons

How many hands associated with 19 fingers

How many matches are there in 21 sets

How many liters in 2,340 milliliters