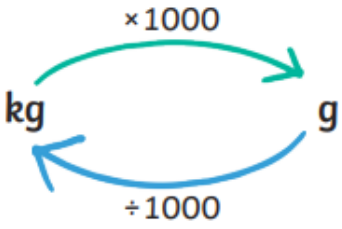
Converting Units of Measure

Hopefully you are starting to feel confident with the different units of measure we use within the metric system. Sometimes we have to convert between units of measure. For example, 3600m could be written as 3.6km. To do this, we need to be confident in multiplying and dividing by 10, 100 and 1000. We practiced this with decimals in our last unit of work, so you may want to have a quick look back at some of the methods we used.

Grams and Kilograms

Stem sentence: I know that there are 1000 grams in 1 kilogram.

Now that I have my key sentence, I can adapt it to help me solve a range of problems. For example, I could change it to say 'I know that there are 2000 grams in 2 kilograms'. But it is important that we remember that we need to use the number 1000 when we are converting between the two.



1000g = 1kg

$\frac{1}{10}$kg = 0.1kg = 100g

$\frac{1}{4}$kg = 0.25kg = 250g

$\frac{1}{2}$kg = 0.5kg = 500g

$\frac{3}{4}$kg = 0.75kg = 750g

Compare the measurements using <, > or =

5 kg ◯ 4,500 g 12 kg ◯ 12,000 g

These measurements are quite tricky to compare as they are using different units of measure. Therefore, I will make it easier by making the units of measure the same.

I know that there are 1000g in 1 kilogram.

So, 4000g will give me 4 kg and I will have 500g left over.

This is written as 4.5kg, which is smaller than 5kg

5kg › 4.5kg

I could also use division to reach the same answer.

4500 ÷ 1000 = 4.5

What if I converted 5kg to grams instead?

I know that there are 1000g in 1 kilogram.

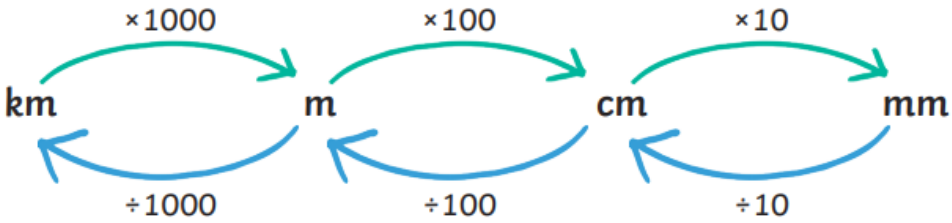
So, 5kg will be equivalent to 5000g.

I could also use multiplication to reach the same answer.

5 x 1000 = 5000

Your turn: Compare 12kg and 12000g

Converting units of length



Stem sentences:

I know that there are 1000m in 1km.

I know that there are 100 cm in 1m.

I know that there are 10mm in 1 cm.

Can you think of any more?

Stem sentences are also really helpful when converting units of length and you can adapt them the more confident you become. Just like when we converted grams and kilograms, you can use multiplication to help you. The diagram above is a helpful reminder.

Example 1

37,000 m ◯ 3.7 km

I know that there are 1000m in 1km.

37,000 ÷ 1000 = 37

So, 37,000m is equivalent to 37km, which is larger than 3.7km

37,000 > 3.7km

Example 2

Whitney 1.3 m

Jack 124 cm

Whitney and Jack are having a debate over who is taller. Can you help them solve it?

I know that there are 100cm in 1m.

I could convert Jack's height to metres

124 ÷ 100 = 1.24

Jack is 1.24 metres tall

OR I could convert Whitney's height to centimetres

1.3 x 100 = 130

Whitney is 130 cm tall.

When I converted both measurements to cm, Whitney is 130 cm tall and Jack is 124cm. Therefore, Whitney is taller than Jack.

Millilitres and Litres

Stem sentence: I know that there are 1000ml in 1l.

×1000

l ml

÷1000

1000ml = 1 litre

$\frac{1}{10}$l = 0.1l = 100ml

$\frac{1}{4}$l = 0.25l = 250ml

$\frac{1}{2}$l = 0.5l = 500ml

$\frac{3}{4}$l = 0.75l = 750ml

$\frac{1}{100}$l = 0.01l = 10ml

Compare the measurements using <, > or =

2 l ◯ 1,500 ml 60 l ◯ 6,000 ml

I know that there are 1000ml in 1l.

So, there must be 2000ml in 2l and this is more than 1,500ml.

I could also convert litres to millilitres using a calculation

2 x 1000 = 2000

If I wanted to convert ml into l I would do the inverse.

1500 ÷ 1000 = 1.5

So 1500 ml is equivalent to 1.5 l

2l > 1,500 ml

Your turn: compare 60l and 6, 000 ml.

Useful Videos

Grams and kilograms:
https://www.bbc.co.uk/bitesize/clips/zbvgkqt

Measuring length:

https://www.bbc.co.uk/bitesize/clips/zntn34j

Detailed demonstration of how the metric system works:

https://www.youtube.com/watch?v=ZNX-a-5jGeM

A reminder of how to multiply and divide by 10, 100 and 1000:

https://www.bbc.co.uk/bitesize/articles/z7r492p

It is a good idea to have a place value grid to use when converting units of measurement. Remember, it's very easy to draw your own!

What if I find the work tricky?

For this unit of work you have been set tasks both on Purple Mash and Mathletics. These websites both have a help option that you can click on if you are struggling with a task.

Read through the examples on this guide carefully as it might give you a clue as to how you should be doing your working out.

Have a look at our Units of Measure Knowledge Organiser. It would be helpful to have this on hand to remind you of the key conversions when you are completing your learning.

Converting Units of Measure: Challenge Problems

If you have felt confident when completing your online tasks, why not try some of these challenge problems? We'd love to hear how you got on.

Eva is converting measurements.
She says,

I have divided by 1,000 to convert the measurements.

Which conversions could Eva have completed?

- 3 km → 3,000 m
- 3,000 m → 3 km
- 5,500 g → 5.5 kg
- 2.8 kg → 2,800 g

Amir buys 2,500 grams of potatoes and 2,000 grams of carrots.

He pays with a £5 note.
How much change does he get?

Dora says,

One metre is 100 times bigger than one centimetre. One centimetre is 10 times bigger than one millimetre. So, one metre is 110 times bigger than one millimetre

Is Dora correct?
Explain your answer.

A plank of wood is 5.8 metres long.

5.8 m

Two lengths are cut from the wood.

175 cm

$3\frac{4}{5}$ m

How much of the wood is left?

Ribbon is sold in 225 mm pieces.
Teddy needs 5 metres of ribbon.
How many pieces does he need to buy?

Teddy would like to make either a bookmark or a rosette with his left over ribbon. Which can he make?

To make 5 bookmarks you will need:
1.2 metres of ribbon
1 pair of scissors

To make 1 mini rosette you will need:
4 pieces of ribbon cut to 35 mm
A stapler

Remember to read the question carefully to work out exactly what it is asking you to do.

Think carefully about how you present your answer. Have you fully explained your chosen method and what you have found? Would a diagram or drawing help to explain your answer? Have you used mathematical vocabulary?

These challenges were taken from the White Rose Maths Hub. Each Friday, they release a new challenge onto their website which we are sure some of you would really enjoy. Once you are on the website, go to the Home Learning section and then select Year Five. You will also be able to see previous challenges.

https://whiterosemaths.com/homelearning/year-5/