

Lesson Plan

Choosing appropriate units

The commonly used metric units of length include:

- kilometres (*km*)
- metres (*m*)
- centimetres (*cm*)
- millimetres (*mm*)

The commonly used metric units of mass include:

- gram (*g*)
- kilogram (*kg*)
- tonne (*t*)
- milligram (*mg*)

The commonly used metric units of capacity include:

- litre (*l*)
- millilitre (*ml*)
- cubic centimetre (*cc*)

Estimating

To find a suitable unit to measure something in, you should first estimate how big it is. So, for example, do you think it's better to measure the distance between London and Manchester in metres or kilometres, or should the length of an insect be measured in metres or millimetres?

Imagine the length of the objects you are estimating or imagine measuring them in relation to other objects. For example:

- Imagine a metre ruler next to a tall man. You would expect him to be taller than **1** ruler, but not as tall as **3** rulers.
- Imagine a bag of sugar on some weighing scales. You would expect the needle to move round a little, but not to whizz round to **50 kg**.
- Imagine a **1**-litre bottle of cola. You would expect it to hold less than a bucket full of water.

Question

Q1. Which unit of measurement (*km*, *m*, *cm* or *mm*) would you use for the following?

- a) the length of the span of your hand
- b) the length of a football pitch

- c) the thickness of a notebook
- d) the distance from London to Manchester

Q2.

- a) Is the height of a tall man likely to be *90 cm*, *180 cm* or *360 cm*?
- b) Is the weight of a bag of sugar about *1 kg*, *10 kg* or *50 kg*?
- c) Does a kettle hold roughly *200 ml*, *1 l* or *10 l* of liquid?

Reading scales

Scale 1



In this scale the difference between *5* and *6* is *1*. And, the space has been divided into *4*, so each division represents:

$$1 \div 4 = 0.25$$

The arrow is pointing to:

$$5 + 0.25 + 0.25 + 0.25 = 5.75$$

Scale 2



The difference between *50* and *60* is *10* and the space has been divided into *5*. So, each division represents:

$$10 \div 5 = 2$$

The arrow is pointing to:

$$50 + 2 + 2 = 54$$

Converting between units

The table shows some of the most common units and their equivalents. Make sure you know these conversions.

Converting measurements			
Length	$1\text{ km} = 1,000\text{ m}$	$1\text{ m} = 100\text{ cm}$	$1\text{ cm} = 10\text{ mm}$
Weight	$1\text{ tonne} = 1,000\text{ kg}$	$1\text{ kg} = 1,000\text{ g}$	$1\text{ g} = 1,000\text{ mg}$
Capacity	$1\text{ l} = 100\text{ cl}$	$1\text{ cl} = 10\text{ ml}$	$1\text{ l} = 1,000\text{ ml}$

Converting larger units to smaller units

To convert a larger unit to a smaller unit (eg m to cm), first check the number of smaller units needed to make **1** larger unit. Then, multiply that number by the number of larger units.

Converting smaller units to larger units

To convert a smaller unit to a larger unit (eg cm to m), divide it by the number of smaller units which are needed to make **1** larger unit.

To convert from a larger unit to a smaller one, multiply. To convert from a smaller unit to a larger one, divide.

Example

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

So, to convert from m to cm multiply by **100**, and to convert from cm to m divide by **100**.

For example:

$$3.2\text{ m} = 320\text{ cm} \quad (3.2 \times 100 = 320)$$

$$400\text{ cm} = 4\text{ m} \quad (400 \div 100 = 4)$$

Question

Convert the following to the units given in brackets:

a) $5,120\text{ g}$ (kg)

b) 15 cl (ml)

c) **245** mm (m)