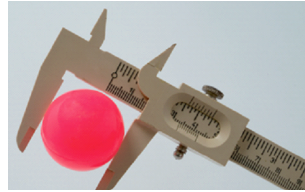


Chapter 34 - Measurements and Units

Length is measured using a Metre stick, measuring tape, callipers, Vernier callipers, opisometer and Trundle wheel.



Vernier Callipers - measures spheres



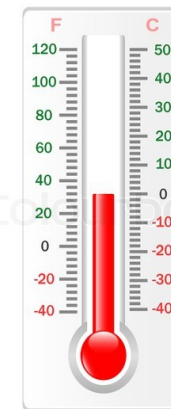
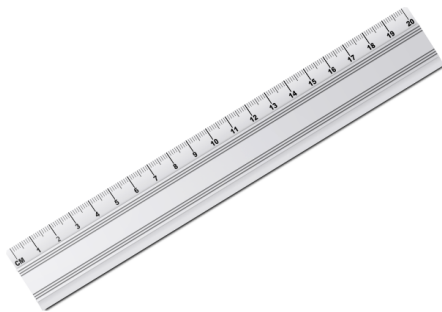
Opisometer - measures curved lines

Length is measured in metres (m), millimetres - mm, centimetres - cm, and kilometers - km.

There are 1000 millimetres in a Metre
100 centimetres in a Metre
and there are 1000 metres in a Kilometre.

Units and Prefixes

QUANTITY	UNIT	SYMBOL
Length	Metre	m
Mass	Kilogram	kg
Time	Second	s
Temperature	Celcius	$^{\circ}\text{C}$



Callipers

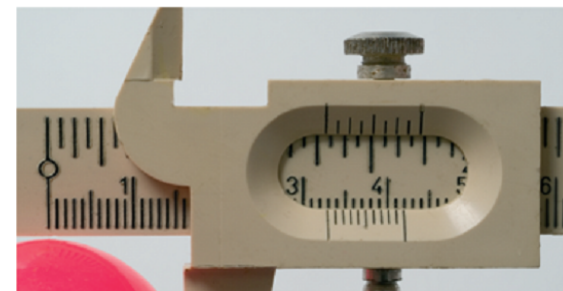
- shaped like a C.
Used for measuring the thickness of pipes or beakers.



The inside length is subtracted from the outside length and the result is divided by 2.

Vernier Callipers

- shaped a little like a V.
Used for measuring the thickness of round objects.
A digital callipers tells us the size straight away.
A manual callipers has to be read carefully.



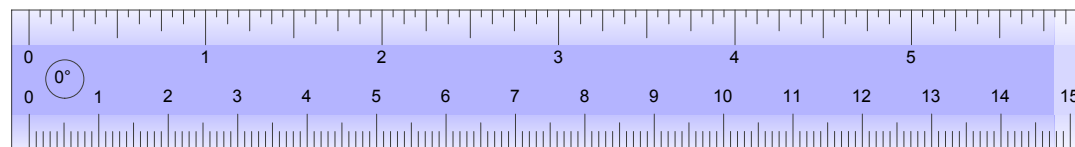
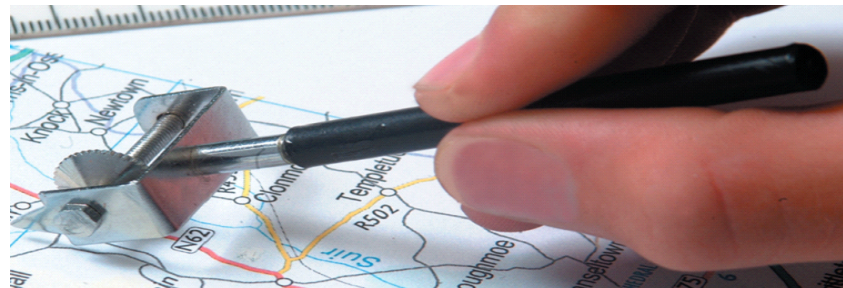
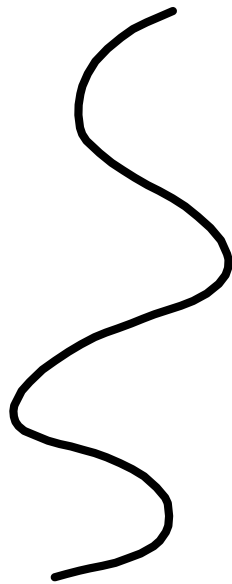
Opisometer - is used to measure curved lines. e.g. on a map.

The wheel is placed next to the side with the point.

The point is moved along the line and the wheel moves.

The opisometer is then turned over and moved along a ruler.

When the wheel stops we have the length of the curved line.



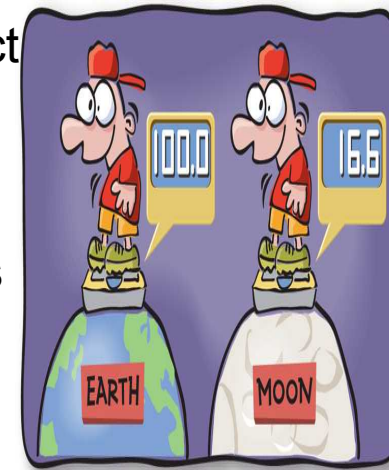
MASS

Mass of an object is the amount of matter in it.

Your mass on the earth and on the moon are the exact same.

This is because you're made of the same stuff here and there.

Your weight will be different on the earth and moon as weight depends on gravity.



Mass is measured using an electronic balance.

We weigh a solid to find its mass or we can weigh a liquid in a beaker.

Unit of Mass

It is measured in grams or kilograms , g or Kg

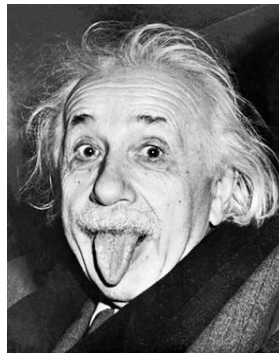


Time

Time can be measured in **seconds**, s.

We use a **stopwatch** to measure time in the lab.
The most accurate clocks are atomic clocks.
Greenwich mean time is where all time on earth is measured from.

Einstein had some interesting facts about Time
The faster we move the more time slows down.
There is the twins experiment that explains this.



Temperature

The temperature of an object is a measure of how hot or cold the object is.



Temperature is measured using a thermometer and is measured in Celcius.

Water freezes at 0°C and boils at 100°C .

Thermometers used to have Mercury in them.

Many now have alcohol that is coloured red.

Digital thermometers are used in hospitals.



Human Body temperature is 37°C .

