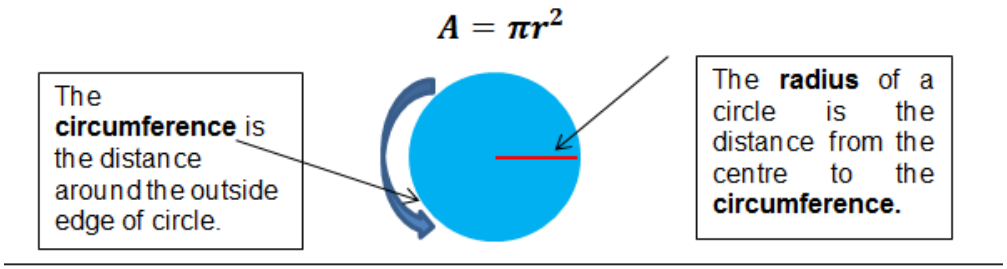
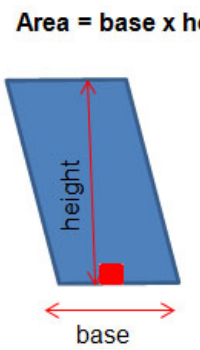
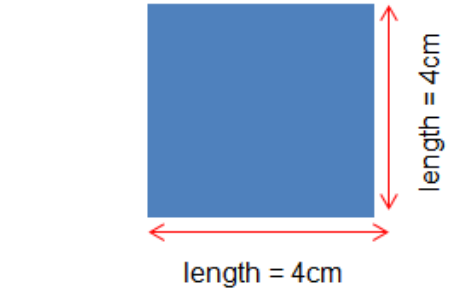
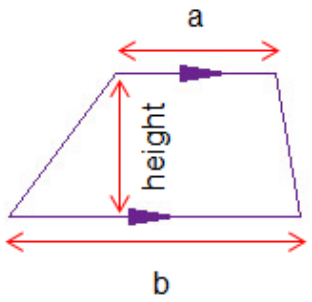
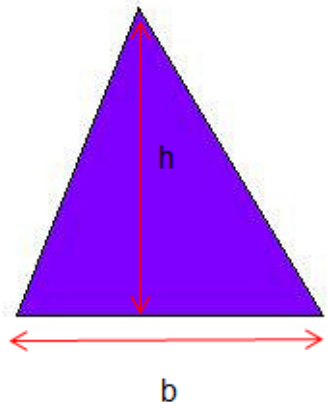
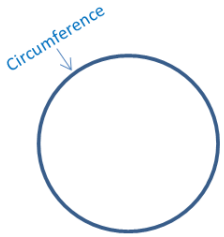
Measurement

Terms	Illustrations	Definitions
Area		The amount of surface space an object covers, measured using non-standard and standard units. Area is usually measured in square units e.g. square centimetres (cm2), square metres (m2) etc.
Area of a circle		Area = $\pi \times r^2$ r = **radius**, d = **diameter**
Area of a parallelogram		Area = $b \times h$ b = base h = vertical height

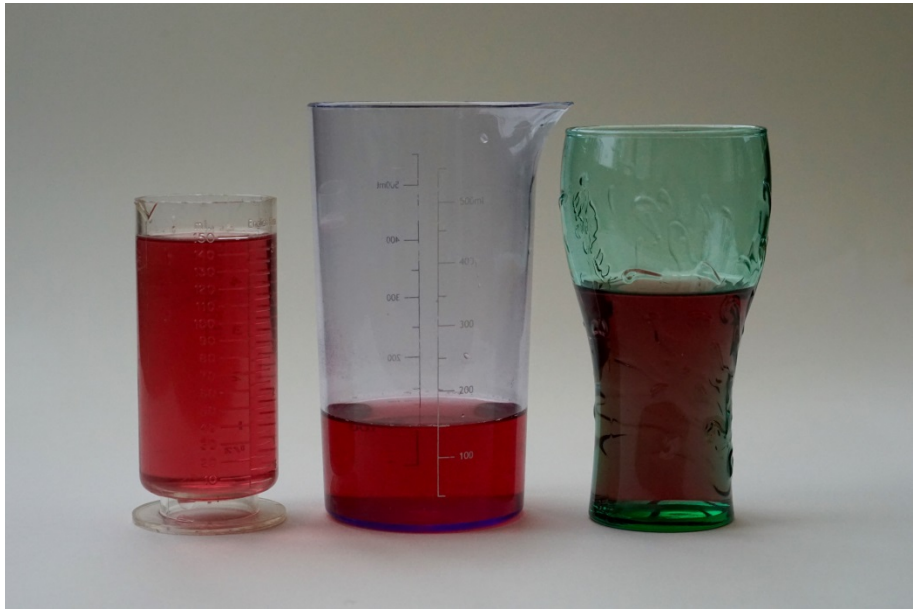
Measurement

Area of a rectangle	**Area = length x breadth** **Area = 8cm x 4cm = 32cm²**  	Can be found by counting the squares or half squares in the rectangle or by using the following formula; Area = $l \times b$ l=length, b = breadth
Area of a square	**Area = length x length** **Area = 4cm x 4cm = 16cm²**  	Can be found by counting the squares or half squares in the square or by using the following formula; Area = l^2 l = length of side

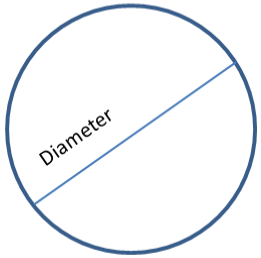
Area of a trapezium		Area = ½$(a + b) \times h$ h = vertical height
Area of a triangle	**Area = ½ x b x h** 	Area = ½ $\times b \times h$ b = base h = vertical height

Breadth		It is the same as width.
Capacity	 The capacity of the container is 2 litres or 2000ml. The volume of the container is 2000cm^3.	The maximum amount of space an object/container can hold *e.g. its maximum capacity is 2 litres*. Capacity is measured in ml. There are 1000ml in a litre.
Circumference		The distance all the way around a **circle**. Circumference can be measured using the formula; $2 \times \pi \times r \; or \; \pi \times d$

Measurement

Conservation of volume		Recognise that shapes and objects that look different can have equal volume *e.g. by using different measuring jugs to show the same volume*. In this example shown, there is 150ml of juice in each container. The conservation of volume is knowing that when any object is split into smaller parts then the total volume of the parts is equal to the original volume..
Degree of accuracy		The level of accuracy to round a number to e.g. to the nearest 10, 100, 1000. to 1 decimal place to 3 significant figures. This is particularly important in measurement in order to ensure accurate measurements. See **tolerance in measurement**.

Measurement

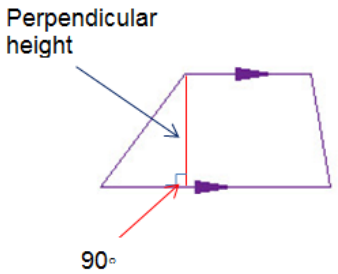
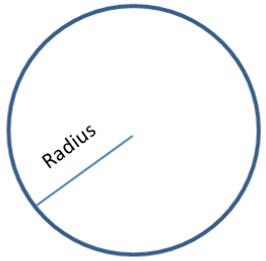
Diameter		A straight line which passes through the centre of a circle.
Height		How tall something is from its base to its top. The vertical distance between the top to bottom of an object.
Length		How long something is from end to end. The distance from one point to another.
Length conversions		10mm in 1cm 100cm in 1 metre 1000m in a kilometre Converting between lengths may look like; 4.7m = 4m 70cm or 470cm ½ m = 50cm

Measurement

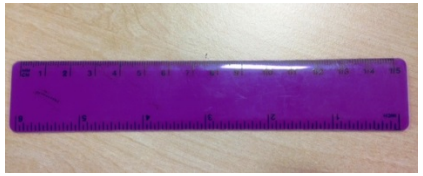
Mass		A large body of matter with no definite shape. The amount of matter in an object.
Measuring tape / Tape measure		Similar to a metre stick but it is flexible. It is often used to measure around things e.g. body parts when measuring for clothes. It can go beyond 1 metre in length. Most measuring tapes have dual measures showing metric and imperial measurements *e.g. one side is marked in cm and m and the other sides in inches.*
Metre Stick		A straight measuring device that is 1 metre in length, usually marked in centimetres but some can be marked in millimetres too.

Measurement

Metric system		The decimal measuring system based on the metre, litre, and gram as units of length, capacity, and weight or mass.
Non-standard units of measurement		Everyday objects which can be used to compare measurements e.g. hands, feet, leaves etc. Any item used to measure items e.g. the tub can hold 13 rubbers (early capacity) or the table is 7 hands long (early length). Children will experiment with these until learning about the need for a set unit of measurement which is more accurate (standard units of measurement).
Pedometer		A measuring device to calculate the distance travelled by the user by measuring the number of steps taken. Can be attached to clothing or some pedometers are now available for the wrist, ankle or smartphone apps.

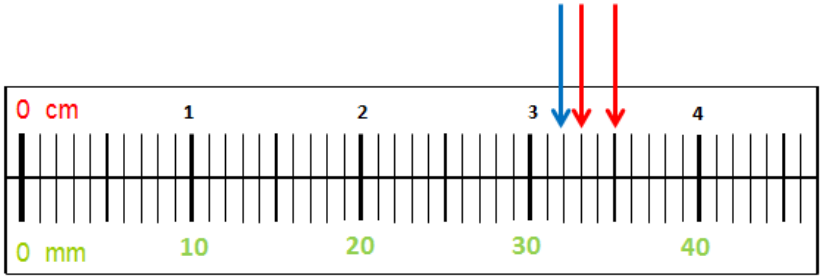
Perimeter of a shape		The distance all the way around the outside of a 2D shape. To find the perimeter of a shape, add together the lengths of all the sides. The total is the perimeter.
Perpendicular height		The height measured from the base to the **vertex** at the top, creating an angle of 90 degrees with the base.
Radius		The distance from the centre of a circle to any point on its circumference.

Measurement

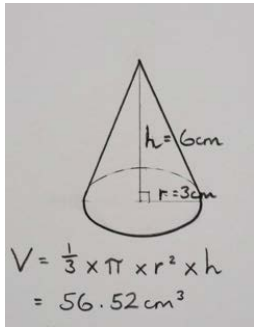
Ruler	 	A straight measuring device, often 30 centimetres in length. It can also be used to draw straight lines.
Scales	   	A measuring device used to measure an object's weight or mass. This can be in the form of digital scales, kitchen scales (analogue) and two pan balance scales

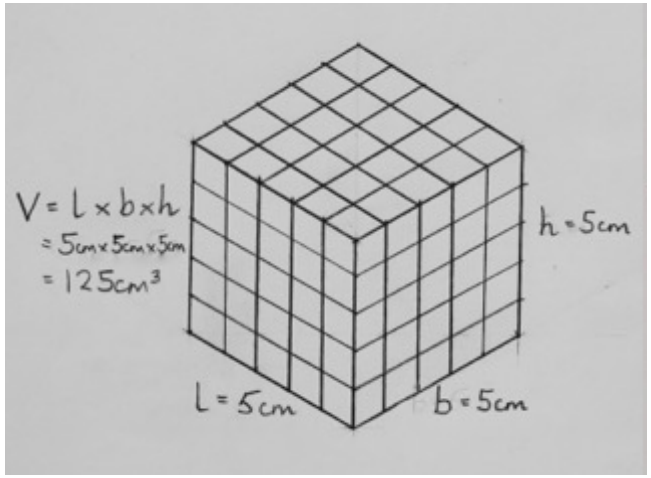
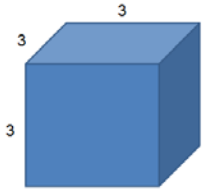
Measurement

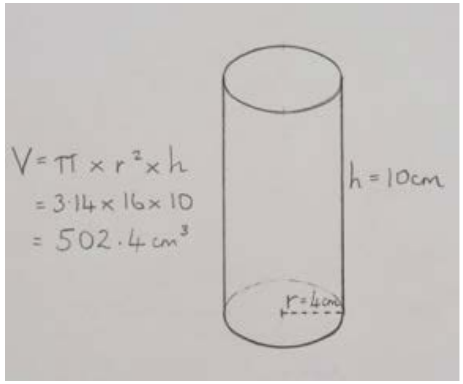
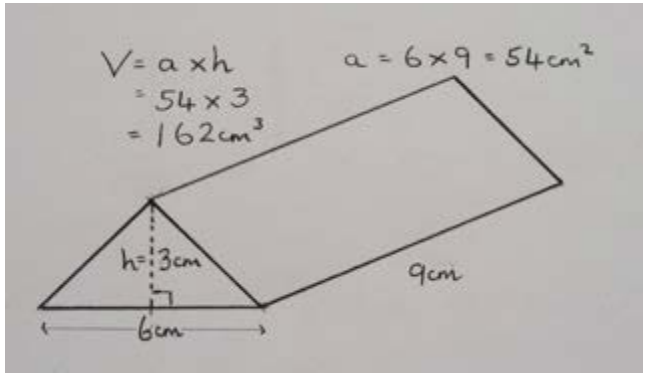
Speedometer		Measuring device to measure the speed travelled by a vehicle. Usually found on the vehicle's dashboard. Speedometers can be analogue or digital.
Standard units of measurement		The universal system of measurement *e.g. mm, cm, ml, litres g, kg etc*
Surface area		The total area of the surface of a three-dimensional object. *E.g. the surface area of a cube is the area of all 6 faces added together.*
Thermometer		A measuring device used to measure temperature. The thermometer reading will rise when the temperature rises and fall when the temperature falls. Temperatures are recorded using the standard units of Degrees Celsius (°C) or Fahrenheit (°F).

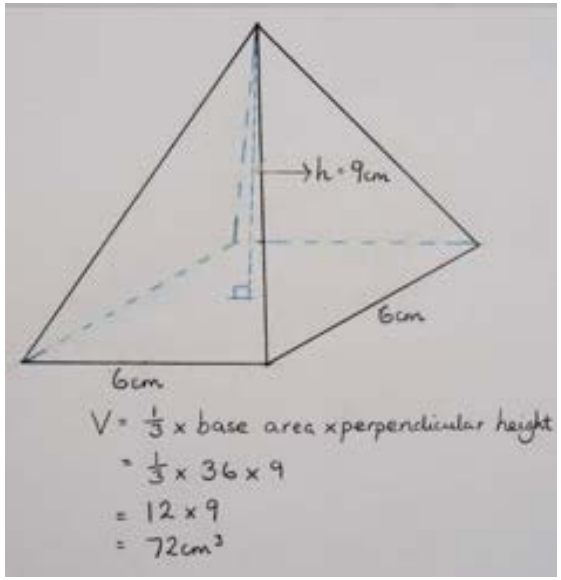
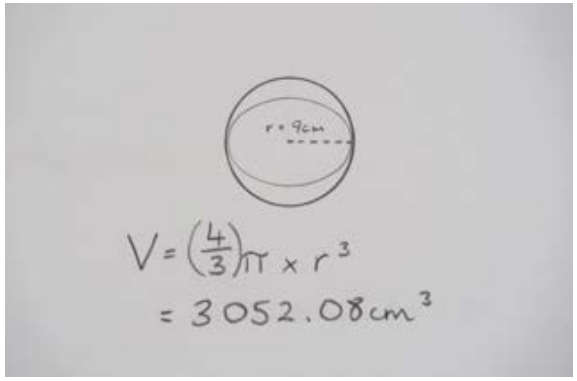
Tolerance in measurement	If the task was to mark 3.4cm on this ruler and the tolerance accepted in the measurement was plus or minus 0.1cm (1mm) – **both red arrows** would be correct as they measure 3.3cm and 3.5cm. They are within 0.1cm (1mm) of the actual required measurement. The **blue arrow** would not be accepted as it measures 3.2cm, which is more than 0.1cm (1mm) out with the actual required measurement. It is 0.2cm (or 2mm) out. 	The margins of error acceptable in different contexts and the impact this could have on end the result. The 'degree of tolerance' will vary from context to context.
Trundle Wheel		A measuring device shaped as a wheel with a holding stick. Measures larger distances when a metre stick may be impractical *e.g. measuring a football field or car park length*. One full rotation of the trundle wheel is 1 metre and it clicks to alert the user when rotation has been completed so users need to keep count of the clicks.

Measurement

Volume	 The capacity of the container is 2 litres or 2000ml. The volume of the container is 2000cm³.	The measure of space taken up by a 3D object. Usually measured in cubic units; for example, cubic centimetres (cm3) and cubic metres (m3).
Volume conversions		1000ml in a litre Conversions between volumes may include e.g. 5.8l = 5 litres 800ml or 5800ml, ½ litre = 500ml
Volume of a cone		$V = \frac{1}{3} \times \pi \times r^2 \times h$ **V = volume** **π = 3.14… (pi)** **r = radius** ***h = height***

Volume of a cube or cuboid	 Cubed  3 cubed or 3^3 = 3 x 3 x 3 = 27	$V = L^3 or\ V = L \times b \times h$ **V = volume** **L = length** **b = breadth** h **= height**

Volume of a cylinder		$V = \pi \times r^2 \times h$ **V = volume** **π = 3.14… (pi)** **r = radius** ***h = height***
Volume of a prism		$V = a \times h$ a = **area** of base h = **height**

Volume of a pyramid		$V = \frac{1}{3} \times$ *base area* $\times$ ***perpendicular height***
Volume of a sphere		$V = (\frac{4}{3})\ \pi \times r^3$ **V = volume** **π = 3.14… (pi)** **r = radius**

Measurement

Weight		How heavy something is. A person or object's mass.
Weight conversions		1000g in a kg Conversions between weights may include e.g. 4673g = 4 kg 673g or 4.673kg , ¾ of kg = 750g
Width		How wide something is from side to side.