

Measurement

Dimension	Unit Name	Unit Symbol	Measuring Tools
Length	metre	m	metre stick, ruler, Vernier calipers, opisometer, brundle wheel
Mass	Kilogram	kg	mass balance
Time	second	s	clock, watch, stopwatch
Volume	metre cubed	m ³	measuring cylinder

Length

The straight-line distance between two points.

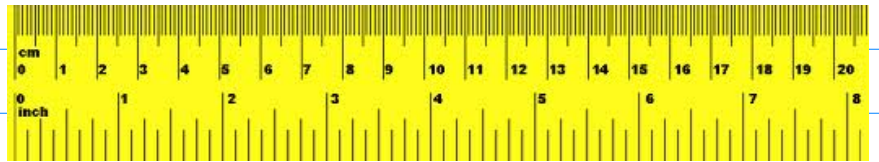
Usually measured in metres. Sometimes measured in:

→ Kilometres ($1 \text{ km} = 1000 \text{ m}$)

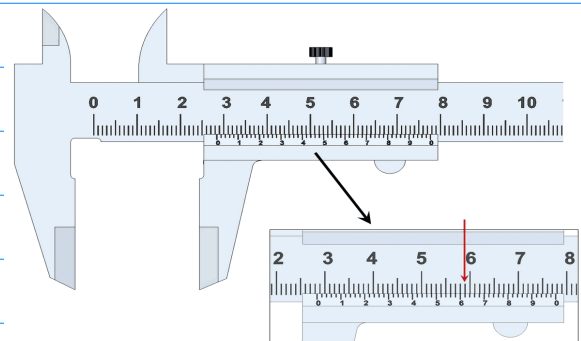
→ Centimetres ($100 \text{ cm} = 1 \text{ m}$)

→ millimetres ($1000 \text{ mm} = 1 \text{ m}$; $10 \text{ mm} = 1 \text{ cm}$)

Ruler: measures straight-line distances. A 1 m-long ruler is a "metre stick"



Vernier Callipers: measures diameters



Opisometer / Trundle Wheel:
Used to measure curved lengths.
Opisometers measure short lengths, trundle wheels measure longer lengths.



Mass

The amount of matter in an object.

Usually measured in kilograms. Sometimes measured in:

- grams ($1000 \text{ g} = 1 \text{ kg}$)
- milligrams ($1000 \text{ mg} = 1 \text{ g}$)

Mass balance



Time

Usually measured in seconds. Sometimes measured in:

- Milliseconds ($1000 \text{ ms} = 1 \text{ s}$)
- minutes ($60 \text{ s} = 1 \text{ min}$)
- hours ($60 \text{ min} = 1 \text{ hr}$; $3600 \text{ s} = 1 \text{ hr}$)
- days ($24 \text{ hr} = 1 \text{ day}$)

Area

Usually measured in metres squared. Sometimes measured in:
→ centimetres squared ($10000 \text{ cm}^2 = 1 \text{ m}^2$)

- Area of rectangle = length \times width
- Area of triangle = $\frac{1}{2} \times$ base length \times perpendicular height.
- Area of circle = $\pi \times$ radius²

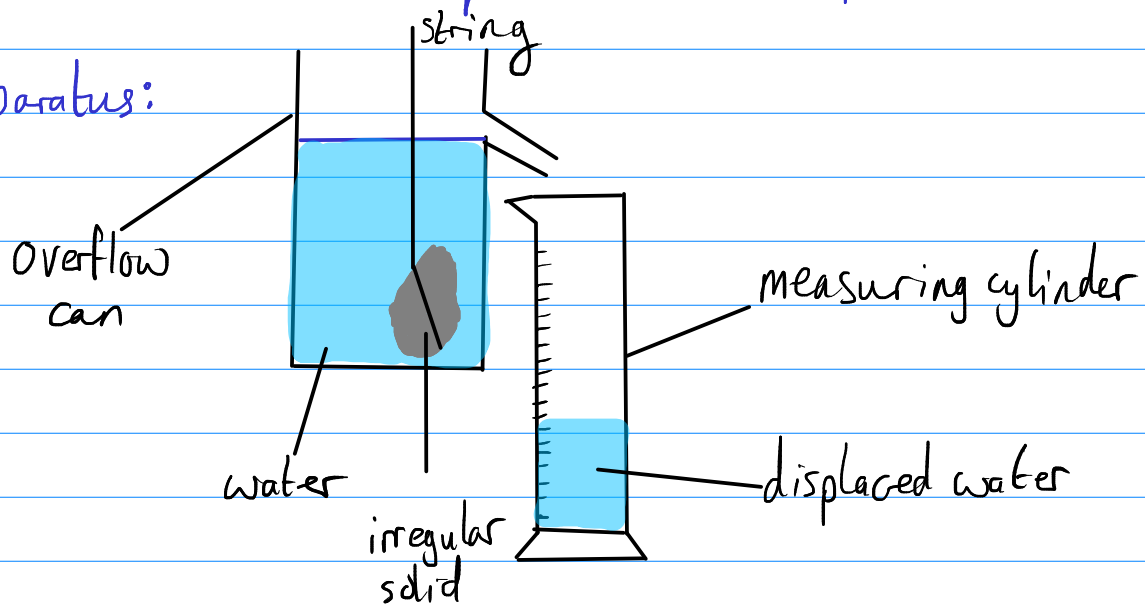
Volume

How much space an object takes up.

- Volume of a box = length \times width \times height.

To Measure the Volume of an Irregular Shaped Solid

Apparatus:



- Pour water into the overflow can until it begins to spill out.
- Place an empty measuring cylinder under the spout of the overflow can.
- Lower the irregular solid into the overflow can until it is completely submerged.
- Record water volume in the measuring cylinder.