



Making a measurement

Choose the instrument, read it correctly, and do it again.



Measuring a quantity means comparing it with a unit using a suitable instrument. A measurement is always written with its unit.

1 The general method, in 6 steps

1

Choose the quantity to measure and a suitable instrument.

2

Check the unit, the zero (or the tare) and the range setting.

3

Place the instrument and the object correctly.

4

Read it with no parallax error: eye level with the scale.

5

Write the result as symbol = value unit.

6

Do it again: note the range, keep the mean.

2 The instruments in the lab

Mass · balance

Use the tare, then put the object on.

Volume · measuring cylinder

Stand it upright, read at the bottom of the meniscus.

Temperature · thermometer

Wait until the reading settles.

Time · stopwatch

Start and stop at exactly the right moment.

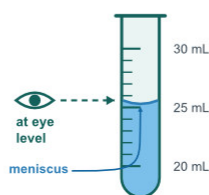
Length · ruler, tape measure

Line the zero up with the edge of the object.

Voltage, current · multimeter

Choose the range setting, connect it correctly.

3 Reading a scale



Value of one small division = gap between two neighbouring numbered marks ÷ number of intervals.

Between 20 mL and 25 mL there are 5 intervals, so one small division is $(25 - 20) \div 5 = 1 \text{ mL}$.

4 Choosing the range setting



On an instrument with several ranges, start with the largest so you do not go off the scale, then move down while the reading still shows: the measurement gets more precise.

5 Writing the result

Correct

$m = 42.3 \text{ g}$

$V = 18 \text{ mL}$

$T = 23.5 \text{ }^{\circ}\text{C}$

To avoid

42.3

$V = 18$

23.5 degrees

Check before handing it in



- ☒ The instrument suits the quantity
- ☒ I read the scale at eye level
- ☒ I have repeated the measurement

- ☒ I have checked the zero, the tare or the range
- ☒ I have written the value with its unit
- ☒ I have kept the mean of my readings

