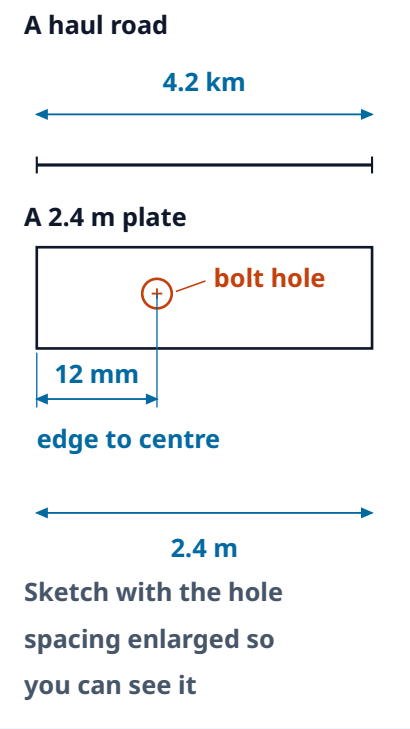
Mathematics 10-3

Unit M: Measurement in SI and imperial

SI prefixes and base units

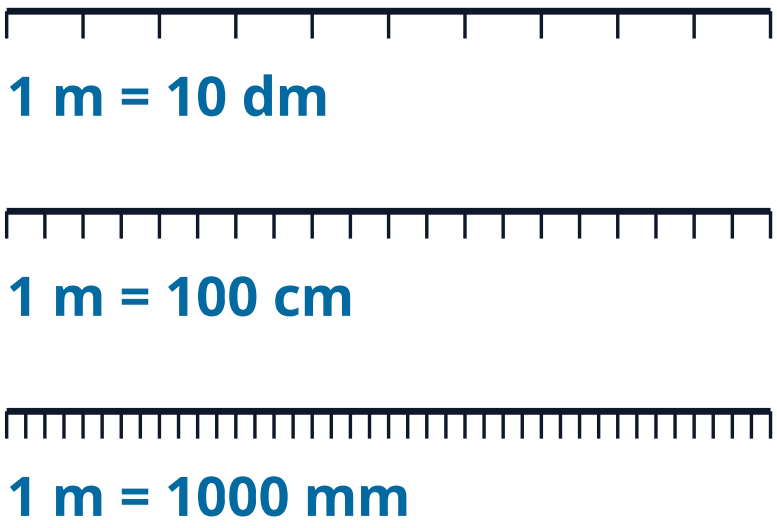
Prefixes in daily use

- A truck log says 4.2 kilometres.
- A shop drawing says the plate is 2.4 metres, with a bolt hole whose centre is 12 millimetres from the edge.
- A clinic label uses milligrams.
- Those jobs all use SI.
- Kilo means 1000.
- Milli means one thousandth.
- The prefix tells you which size of unit you have.



Base units and the six prefixes

- You measure a room in metres, flour in kilograms, and a jug in litres.
- A floor uses square metres.
- A box uses cubic metres.
- Milli means 0.001, centi means 0.01, and deci means 0.1.
- Deca means 10 and its symbol is da.
- Hecto means 100.
- Kilo means 1000.
- The mark 10^{-3} means 10 to the power of −3, which equals 0.001.
- That is why milli lines up with a three-place decimal.



Key terms

SI prefix

A base-ten marker written before a unit to scale it. This course uses milli, centi, deci, deca, hecto, and kilo. (m, c, d, da, h, k)

metre

The SI base unit of length. Other length units in this course are prefixes on the metre. (m)

kilogram

The SI base unit of mass. The name already includes kilo, and a gram is one thousandth of a kilogram. (kg)

litre

The capacity unit on SI job sheets. One litre equals one cubic decimetre. (L)

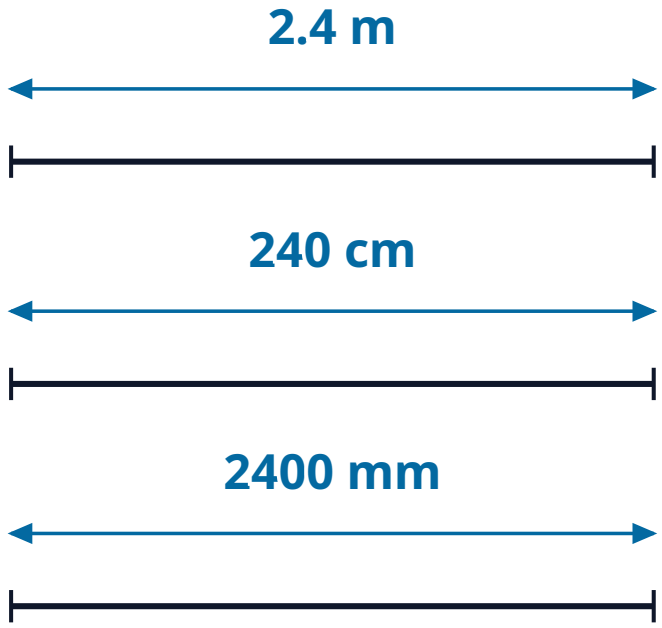
Key terms

kelvin

The SI base unit of temperature. A change of one kelvin equals a change of one degree Celsius. (K)

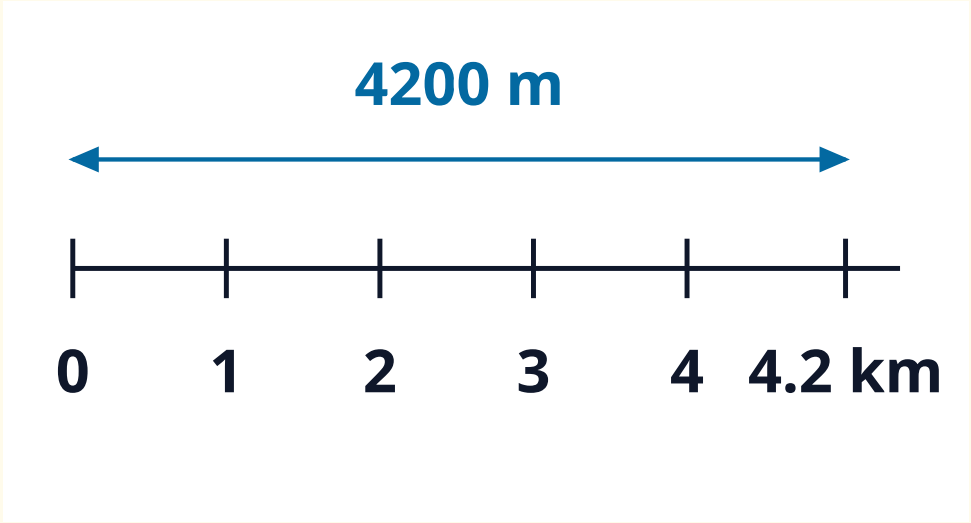
Prefix conversions

- Centimetres are smaller than metres, so multiply by 100.
- Multiplying 2.4 by 100 equals 240 centimetres.
- Millimetres are smaller still, so multiply by 1000.
- Multiplying 2.4 by 1000 equals 2400 millimetres.
- The offset of 12 millimetres, from the plate edge to the bolt-hole centre, divided by 1000 equals 0.012 metres.
- Kilo means 1000, so 4.2 times 1000 equals 4200 metres.



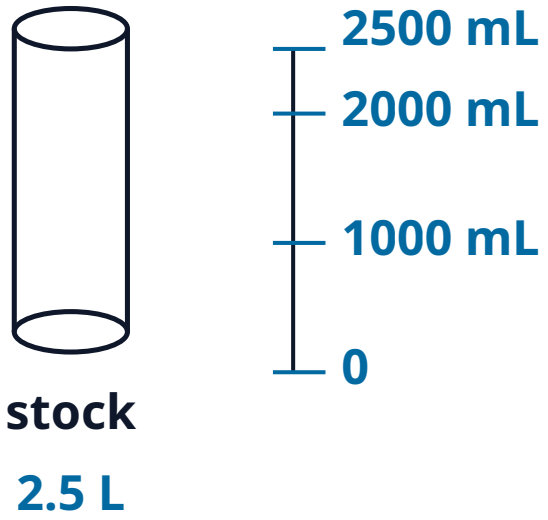
A haul of 4.2 kilometres in metres

- The symbol km stands for kilometre, and the symbol m stands for metre.
- Kilo means 1000, so the haul in metres is 4.2 times 1000.
- Multiplying 4.2 by 1000 equals 4200, so the haul is 4200 metres.



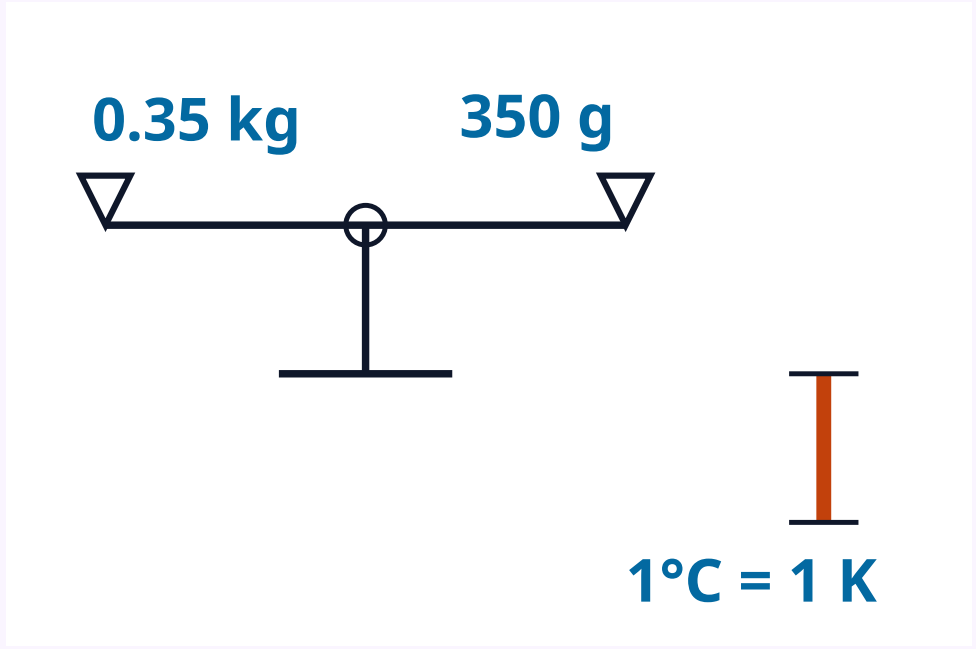
Soup stock in millilitres

- The symbol L stands for litre and the symbol mL stands for millilitre.
- Milli means 0.001, so one litre equals 1000 millilitres.
- Multiplying 2.5 litres by 1000 equals 2500 millilitres of stock.



Mass prefixes and kelvin

- The kilogram already includes the prefix kilo, so a gram is one thousandth of a kilogram and 0.35 kilograms equals 350 grams.
- A 250 milligram tablet equals 0.25 grams because milli means one thousandth and 250 divided by 1000 equals 0.25.
- Job sheets record degrees Celsius, the kelvin is the temperature base unit, and a change of 1 degree Celsius equals a change of 1 kelvin.



Prefix check on the bench

- Rewrite 3.75 metres in centimetres and in millimetres before you leave the ladder.
- State the factor for kilo and use it on a mass or a distance you choose from the lesson.

