Mathematics 10C

Unit M: Measurement and trigonometry

Linear measurement with referents and tools

A doorway and a thumb

- A doorway is about 1 m across.
- A thumb is about 1 inch across.
- A couch wider than that doorway needs another path.

Unit referents

- A long stride stands for about 1 m.
- A size-ten shoe stands for about 1 foot.

Key terms

referent

A familiar object or body length that stands in for a unit before a measuring tool is used. (a familiar length)

SI unit

A length unit in the International System, built by powers of ten from the metre. (mm, cm, m, km)

imperial unit

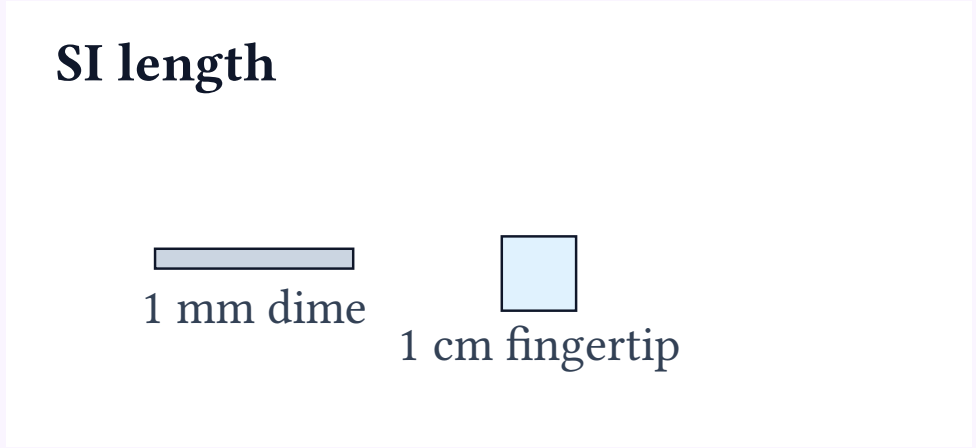
A length unit in the inch-foot-yard-mile system still used on many North American tools and signs. (in, ft, yd, mi)

linear measurement

The size of a distance along a line, a curve, or the edge of an object, reported with a unit. (a one-dimensional length)

SI units of length

- A dime is about 1 mm thick.
- A fingertip is about 1 cm across.
- A brisk 12-minute walk covers about 1 km.



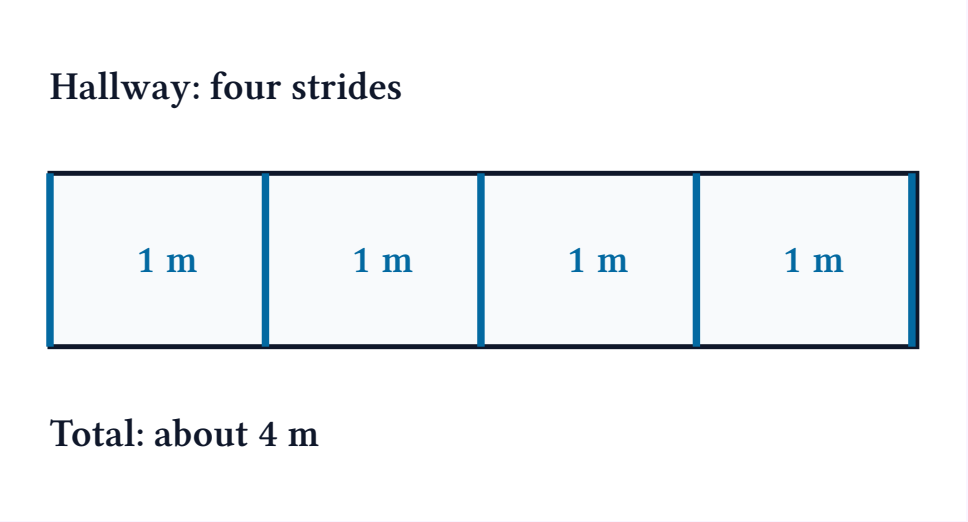
Imperial units of length

- A thumb width is about 1 inch.
- A long step is about 1 yard.
- A 20-minute walk covers about 1 mile.

Imperial length
~1 in thumb width
~1 yd long step

Four strides along a hallway

- One long stride stands for about 1 m.
- Four strides give about 4 m.



Choosing a unit

- A hallway estimate uses metres.
- The thickness of a coin uses millimetres.

Pick the unit

Hallway → metres

Coin thickness → millimetres

A window checked with a ruler

- Three fingertip widths give an estimate of 3 cm.
- The ruler reads 3.2 cm.

A ruler for a straight edge

- Place the zero mark at one end.
- Read the mark at the other end.

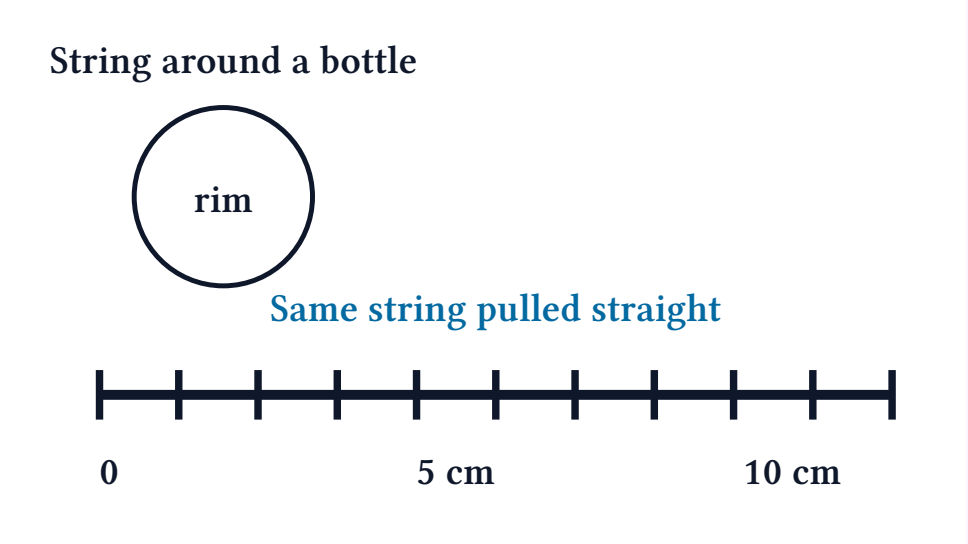
Zero at one end



Read the mark at the other end

String for a bottle rim

- Wrap string around the rim.
- Straighten that string on a ruler.



The oval base of a lamp

- Wrap string around the oval base.
- Record the tool, the path, and the unit.

Quick check

- Four shoe lengths give the estimate.
- A tape measure can check it, with zero at one end.

A length answer has three parts

- Name the referent or the tool.
- Name the count or the reading, with the unit.