Mustansiriyah University
College of Engineering
Highway and Transportation Engineering Department

Engineering Surveying Laboratory

Second Year - First Semester

Distance Conversion



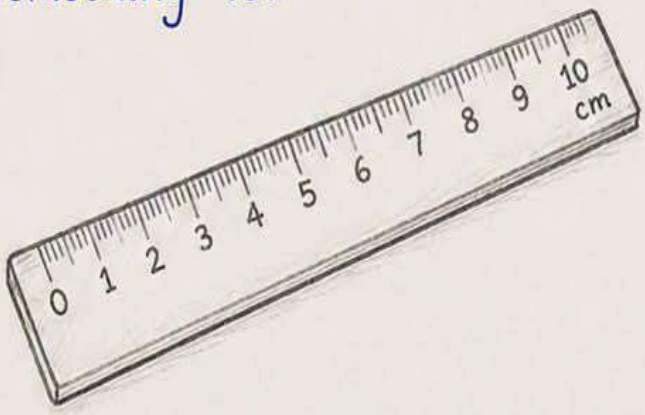
Prepared by:

Asst. Lect. Hussein Mohammed Noor
Asst. Prof. Teba Tariq
Asst. Prof: Areej Muhy

2027-2026

Length / Distance Conversion

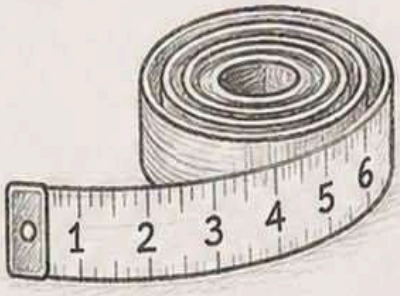
Length / Distance means measuring how long, short, near, or far something is.



Common units

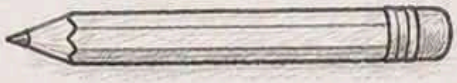
- millimetre = mm
- centimetre = cm
- metre = m
- kilometre = km

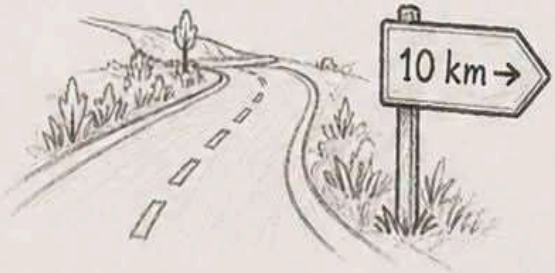
Used for



- Small length → mm, cm
- Medium length → m
- Long distance → km

Examples





- Pencil length → cm
- Room length → m
- Road distance → km
- Book thickness → mm

Length conversion helps us change one unit into another unit.

Length / Distance Conversion

Metric Length Units

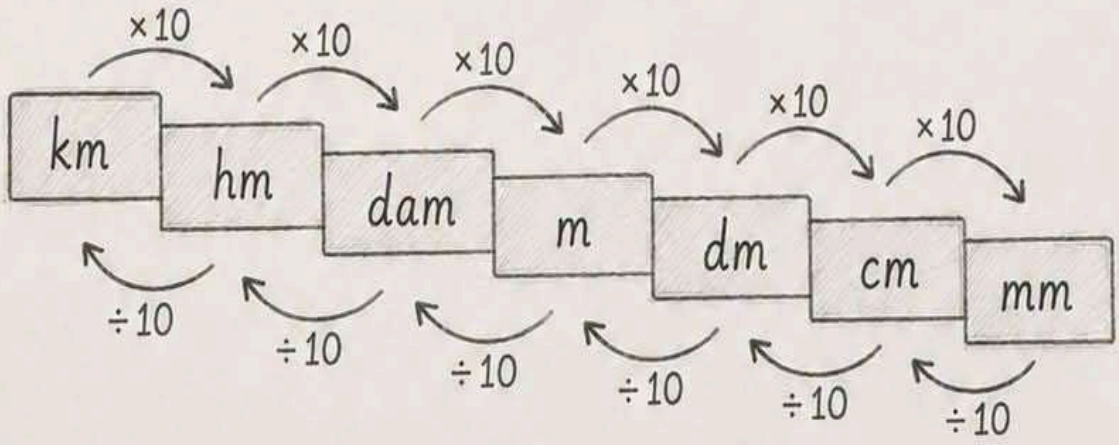
1 kilometre (km) = 10 hectometres (hm)
1 hectometre (hm) = 10 decametres (dam)
1 decametre (dam) = 10 metres (m)
1 metre (m) = 10 decimetres (dm)
1 decimetre (dm) = 10 centimetres (cm)
1 centimetre (cm) = 10 millimetres (mm)

Easy order

km → hm → dam → m → dm → cm → mm

Rule

- Move left to right → multiply by 10
- Move right to left → divide by 10



Length / Distance Conversion

Most Used Length Conversions

- 1 km = 1000 m
- 1 m = 100 cm
- 1 cm = 10 mm
- 1 m = 1000 mm

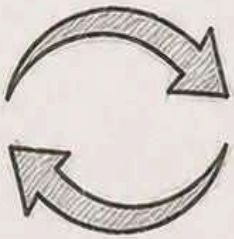
km → m → cm → mm

×1000 ×100 ×10



Reverse conversions

- 1000 m = 1 km
- 100 cm = 1 m
- 10 mm = 1 cm
- 1000 mm = 1 m



Quick method

- km to m → multiply by 1000
- m to km → divide by 1000
- m to cm → multiply by 100
- cm to m → divide by 100
- cm to mm → multiply by 10
- mm to cm → divide by 10

Think:

m → cm → mm

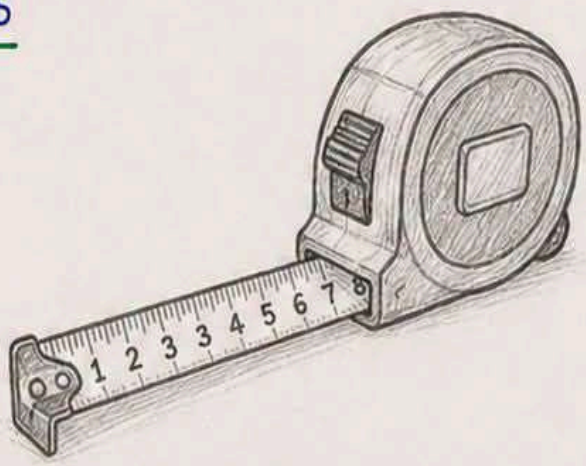
goes smaller (multiply)

mm → cm → m → km

goes bigger (divide)

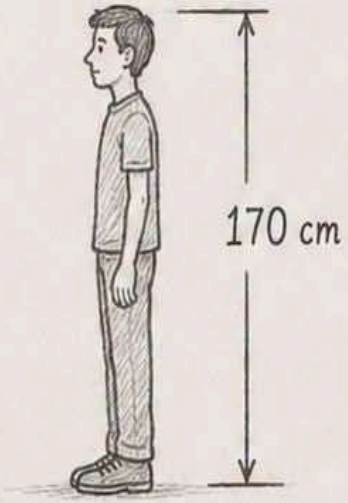
Length / Distance Conversion

Extra Length Conversions



- 1 inch = 2.54 cm
- 1 foot = 12 inches
- 1 foot = 30.48 cm
- 1 yard = 3 feet
- 1 mile = 1.609 km

Indian exam useful



- 1 metre = 3.28 feet
- 1 kilometre = 0.621 mile
- 1 mile ≈ 1.6 km

Examples



- Height of a person → feet / cm
- Cloth measurement → metre
- Road distance → kilometre / mile

Length / Distance Conversion

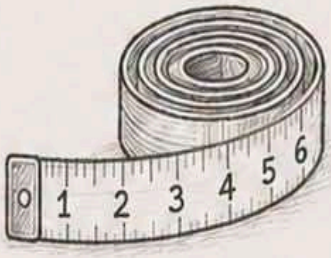
Length Conversion Examples



Example 1: Convert 5 km into metres

1 km = 1000 m

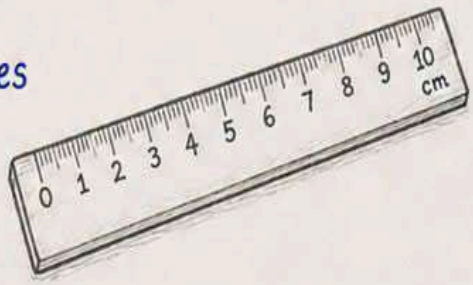
5 km = 5 × 1000 = 5000 m



Example 2: Convert 250 cm into metres

100 cm = 1 m

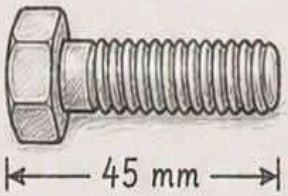
250 cm = 250 ÷ 100 = 2.5 m



Example 3: Convert 7 m into centimetres

1 m = 100 cm

7 m = 7 × 100 = 700 cm



Example 4: Convert 45 mm into centimetres

10 mm = 1 cm

45 mm = 45 ÷ 10 = 4.5 cm

Final summary

- 1 km = 1000 m
- 1 m = 100 cm
- 1 cm = 10 mm
- 1 m = 1000 mm