A horizontal ground distance of 300.00m was plotted on a map. The plotted map distance was found to be 15.00cm. Determine the map scale.

15 cm on map	➔	300 m on ground	unify units
15 cm on map	➔	30000 cm on ground	divide by 15
1 cm on map	➔	2000 cm on ground	scale format

- Ratio scale: 1:2000
- Representative Fraction: 1/2000
- Engineering Scale: 1 cm = 20 m

■■■■

A circular field has a diameter of 20.0mm on a map of scale 1:500. Compute the ground diameter and perimeter of the field.

1 unit on map	➔	500 units on ground
20 mm on map	➔	? mm on ground

Ground diameter = 20 × 500 / 1 = 10000 mm = 10 m

Ground perimeter = 2πr = 2 × 3.14 × 5 m = 31.4286 m

■■■■

A land parcel of planimetric area 8000.00m^2 was plotted on a map of scale 1:5000, what is the area of this land on the map (in mm^2)?

Distance scale: 1:5000 Area scale: 1^2:5000^2 ➔ Area scale 1:25000000

1 unit on map	➔	25000000 units on ground
? mm^2 on map	➔	8000000000 mm^2 on ground

Map area = 1 × 8000000000 / 25000000 = 320 mm^2

■■■■

A map distance between two points is 20.0 cm. The corresponding ground distance between these points is 100.00 m. Compute the map scale (write your answer in Rep Fraction, Ratio and engineering scale forms, respectively).

Plot a simple graphical scale for this map scale that can read to 1.0m accuracy.

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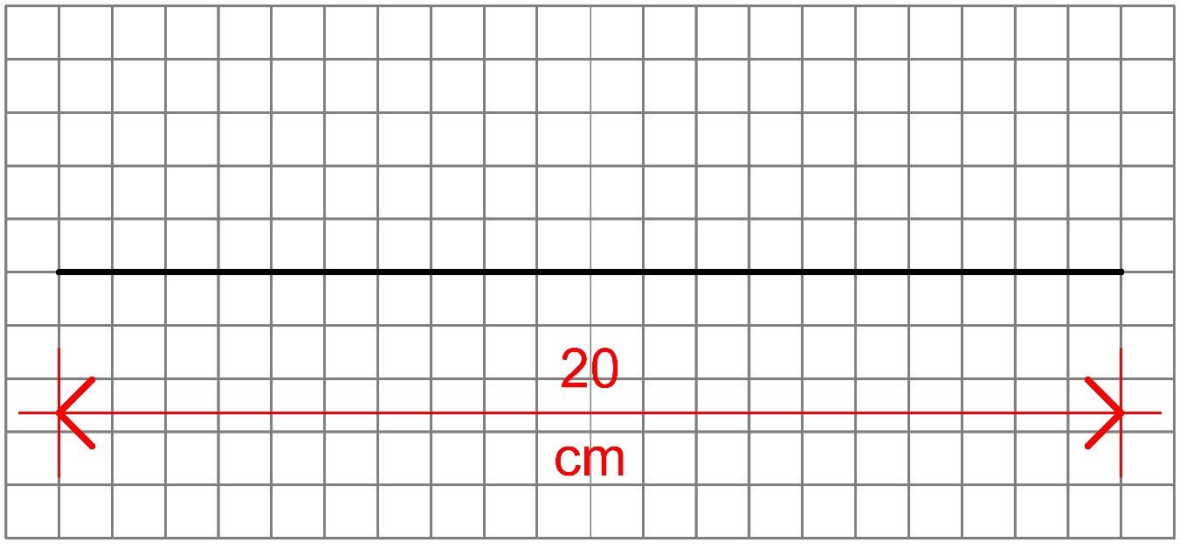
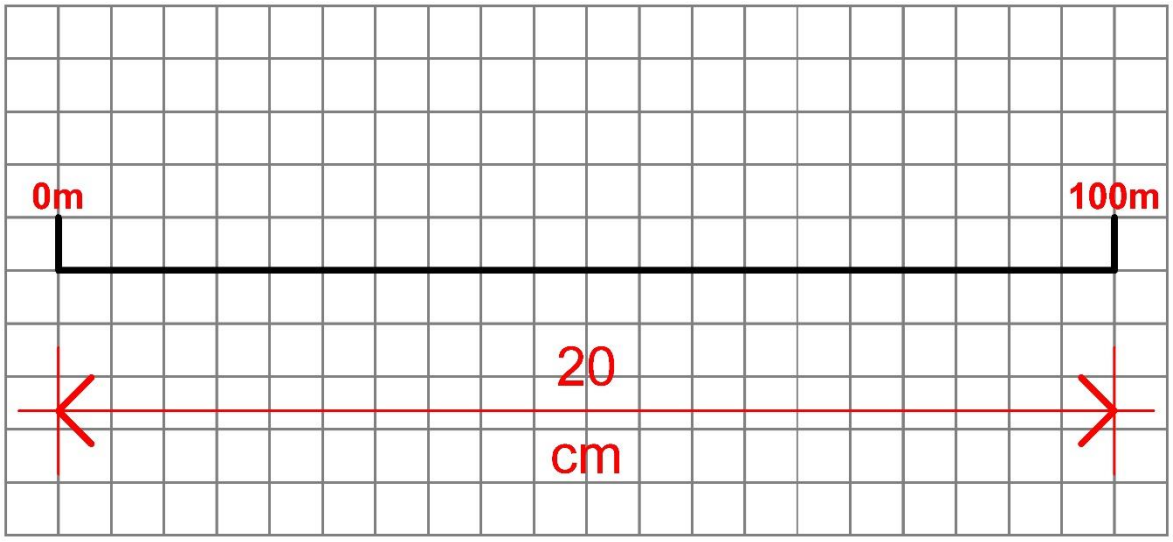
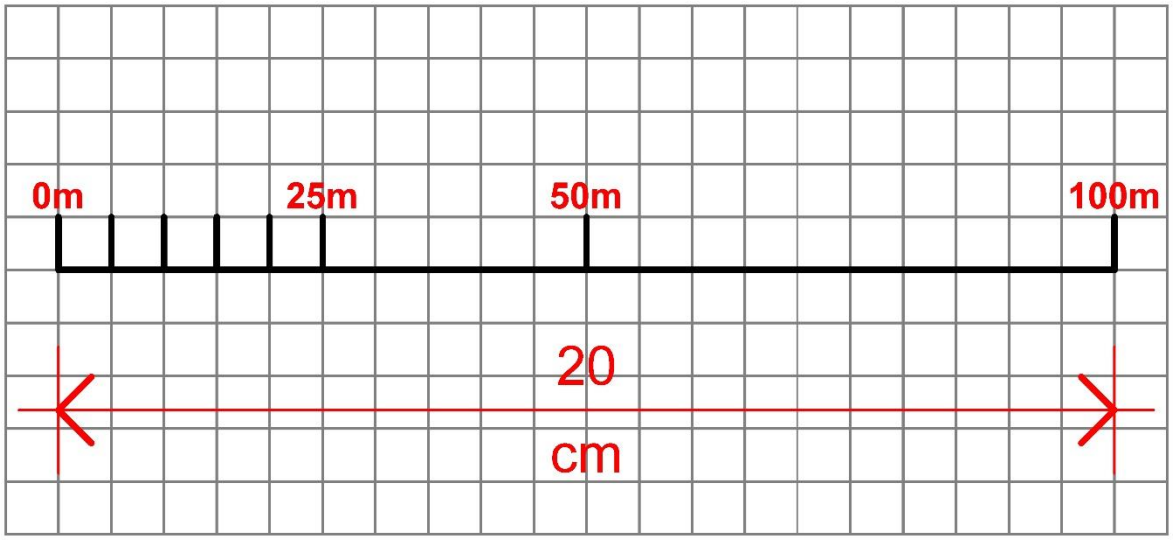
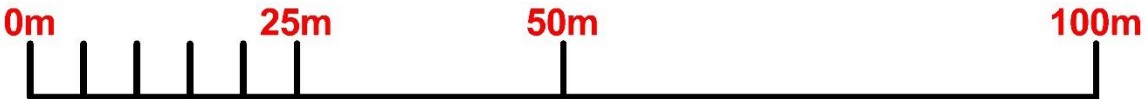
20 cm on map	➔	100 m on ground	unify units
20 cm on map	➔	10000 cm on ground	divide by 20
1 cm on map	➔	500 cm on ground	scale format

- Ratio scale: 1:500
- Representative Fraction: 1/500
- Engineering Scale: 1 cm = 5 m




0m
100m
20
cm


0m
25m
50m
100m
20
cm


0m
25m
50m
100m

■■■■

If 25 cm size drawing paper is available, and we want to draw a sketch of a land where the maximum dimension to be plot is 300 m what scale should we use?

Scale = length available on the paper ÷ Maximum length of the land

= 25 cm / 300 m ➔ 1 cm / 12 m

= 1 cm / 1200 cm ➔ 1: 1200

■■■■

If 25 cm size drawing paper is available, and we want to draw a sketch of a land where the maximum dimension to be plot is 140 m what scale should we use?

Scale = length available on the paper ÷ Maximum length of the land

= 25 cm / 140 m ➔ 1 cm / 5.6 m say 1 cm / 6 m

= 1 cm / 600 cm ➔ 1: 600

■■■■

Exam Question: *An area of a playground was plotted on a map of scale 1:250. If this area measures 200 cm^2 on this map, what is the ground area of the playground?*

Distance scale: 1:250 Area scale: 1^2:250^2 ➔ Area scale 1:62500

1 unit on map ➔ 62500 units on ground

200 cm^2 on map ➔ ? cm^2 on ground

Ground area = 200 × 62500 / 1 = 12500000 cm^2 = 1250 m^2

■■■■

Exam Question*: A distance AB measures 20 mm on a 1:24000 scale map. The same distance AB measures 30 mm on a second map. What is the scale of the second map?*

- First map:

1 unit on map ➔ 24000 units on ground

20 mm on map ➔ ? mm on ground

Ground diameter = 20 × 24000 / 1 = 480000 mm = 480 m

- Second map:

30 mm on map	➔	480 m on ground	unify units
30 mm on map	➔	480000 mm on ground	divide by 30
1 mm on map	➔	16000 mm on ground	scale format

- Ratio scale: 1:16000
- Representative Fraction: 1/16000
- Engineering Scale: 1 mm = 16 m

■■■■