MATHEMATICS · GRADES 7-9

Map scales

Difficulty level: Intermediate

Mathematics: Grades 7-9

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Overview of the concept

This is how you turn a distance on a map into the real distance on the road, so you can plan how far a drive or a hike actually is. A map is a shrunken version of the real world, and the scale is the key that tells you how much it has been shrunk. You use it to plan a road trip, to work out how far a hike really is, or to read a floor plan and know whether the furniture will actually fit.



Rule

A map scale tells you what one map unit stands for in the real world.

Real distance = map distance × scale, and map distance = $\frac{\text{real distance}}{\text{scale}}$.

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Worked examples

EXAMPLE 1

Q A map scale is 1 cm to 8 km. Two towns are 6 cm apart on the map. How far apart are they really?

Picture it



SOLUTION

Write the scale: each centimetre stands for 8 km.

Multiply the map distance by 8: $6 \times 8 = 48$

So the towns are 48 km apart.

EXAMPLE 2

Q A map scale is 1 cm to 5 km. Two towns are really 35 km apart. How far apart are they on the map?

Picture it



SOLUTION

Write the scale: each centimetre stands for 5 km.

Divide the real distance by 5: $35 \div 5 = 7$

So the towns are 7 cm apart on the map.

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Practice questions

1 Two towns are 4 cm apart on a map with scale 1 cm to 10 km. How far apart are they really?

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2 Two towns are really 30 km apart. On a map with scale 1 cm to 6 km, how far apart are they on the map?

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3 Two towns are 6 cm apart on a map and 48 km apart in real life. What does 1 cm on the map stand for?

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4 A river is 9 cm long on a map with scale 1 cm to 4 km. How long is the river in metres?

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5 A lake is really 45 km across. On a map with scale 1 cm to 15 km, how wide is the lake on the map in millimetres?

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6 Two roads are 12 cm and 15 cm long on a map with scale 1 cm to 2 km. How much longer is the second road really?

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7 A map has scale 1 cm to 20 km. A road is 5 cm long on the map. A car drives the road at 50 km per hour. How long does the trip take?

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8 A bike path is 5 cm long on a map with scale 1 cm to 3 km. A second path is twice as long on the map. How long is the second path really?

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9 A map has scale 1:200,000. A road is 3 cm long on the map. How long is it in real centimetres?

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10 A beach is really 21 km long. On a map it is 3 cm long. The map is photocopied at half size. How long is the beach on the copy?

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ANSWER KEY

1. 40 km

2. 5 cm

3. 8 km

4. 36000 m

5. 30 mm

6. 6 km

7. 2 hours

8. 30 km

9. 600000 cm

10. 1.5 cm

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