

Map scales

Year 7 About 75 minutes No calculator 45 marks



Hints online, answers free with an account:
mathswariz.uk/worksheets/ks3-year-7-map-scales/

Date _____

A Do Now

Quick questions to start.

- A1** Needed today [1 mark] **A2** Needed today [1 mark]
 How many centimetres are there in 3 km? Write 6 : 42 in the form 1 : n .

Answer

Answer

- A3** Last lesson [1 mark] **A4** From chapter 8 [1 mark]
 A shape is enlarged by a scale factor of $\frac{1}{4}$. One side of the shape is 20 cm. How long is this side on the image? Work out 4.6×10^4 .

Answer

Answer

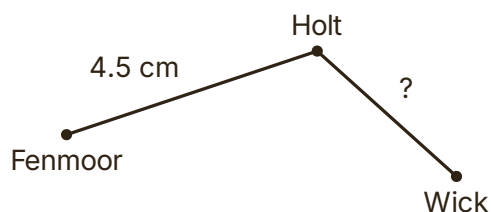
B Example, then your turn

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Your teacher works through each example with you. Then try the one beside it.

EXAMPLE 1

The scale of this map is 1 cm to 6 km. (a) Work out the actual distance from Fenmoor to Holt. (b) Holt and Wick are 21 km apart. How far apart are they on the map?



Not drawn accurately

Hint Each centimetre on the map is 6 km. Going back, divide by 6.

- B1** A map has a scale of 1 cm to 8 km. (a) Two villages are 2.5 cm apart on the map. How far apart are they? (b) Two lakes are 52 km apart. How far apart are they on the map? [2 marks]

Answer

EXAMPLE 2

Write each map scale as a map ratio. (a) 1 cm to 3 km (b) 2 cm to 7 km

Hint A ratio has the same unit on both sides. 1 km = 1000 m = 100 000 cm.

B2 Write each map scale as a map ratio. [2 marks]
(a) 1 cm to 4 km (b) 4 cm to 18 km

Answer

EXAMPLE 3

A map has a map ratio of 1 : 40 000. (a) A canal is 6.5 cm long on the map. How long is it, in km? (b) A footpath is 3.4 km long. How long is it on the map?

Hint 1 cm on the map is 40 000 cm on the ground. Divide by 100 for metres, then by 1000 for km.

B3 A map has a map ratio of 1 : 60 000. [2 marks]
(a) A river is 7.5 cm long on the map. How long is it, in km? (b) A road is 2.4 km long. How long is it on the map?

Answer

EXAMPLE 4

On a map, 8 cm represents 12 km. Write the map ratio.

Hint Change the km into cm, then make the map side 1.

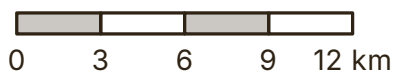
B4 On a map, 5 cm represents 4 km. [2 marks]
Write the map ratio.

Answer

c Practice

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C1 This is the scale bar on a map. [2 marks]
Each section of the bar is 2 cm long. A lake is 7 cm long on the map. How long is the real lake, in km?



Not drawn accurately

C2 A plan of a classroom is drawn with a scale of 1 : 50. [3 marks]
On the plan the room is 18 cm long and 14 cm wide. Work out the area of the real room, in m².

Answer m²

Answer km

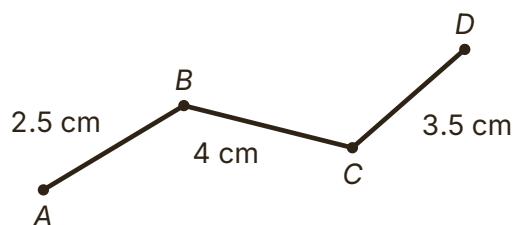
C3 Two towns are 45 km apart. How far apart are they on a map with a map ratio of 1 : 250 000? [2 marks]

Answer cm

C4 A path is 9 cm long on map *A*, which has a map ratio of 1 : 20 000. How long is the same path on map *B*, which has a map ratio of 1 : 30 000? [3 marks]

Answer cm

C5 A bus goes from *A* to *B* to *C* to *D* along the roads shown on a map. The map ratio is 1 : 200 000. How far does the bus travel, in km? [2 marks]



Not drawn accurately

Answer km

D Exam-style questions

GCSE Foundation

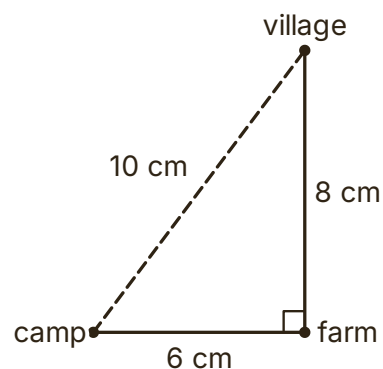
D1 Nia says, "A map ratio of 1 : 70 000 means that 1 cm on the map is 70 000 km on the ground." [3 marks]

Nia is wrong. Work out what 1 cm on the map represents, in km, and say what Nia has done wrong.

Answer 1 cm represents km

D2 The map shows the paths between a camp, a farm and a village. The map ratio is 1 : 15 000.

- (a) Leah walks from the camp to the farm, then to the village, then straight back to the camp. [2 marks]
How far does she walk, in km?



Not drawn accurately

Answer km

- (b) Leah walks at 4 km per hour. How many minutes does the walk take? [2 marks]

Answer minutes

- (c) How many metres shorter is the straight path from the camp to the village than the path through the farm? [2 marks]

Answer m

Total for D2: 6 marks

D3 A model railway is built to a scale of 1 : 76.

- (a) A real carriage is 19 m long. How long is the model carriage, in cm? [2 marks]

Answer cm

- (b) A model platform is 2.5 m long. How long is the real platform, in metres? [2 marks]

Answer m

Total for D3: 4 marks

D4 On a map with a map ratio of 1 : 5000, a rectangular field is 4 cm long and 3 cm wide. Work out the actual area of the field, in m². [3 marks]

Answer m²

No route is given. The hints are at the end of the sheet. Use one at a time.

E1 On map *A*, which has a map ratio of 1 : 120 000, two lighthouses are 7.5 cm apart. [5 marks]
On map *B* the same two lighthouses are 4.5 cm apart. Work out the map ratio of map *B*.

Answer 1 :

Extension hints

Cover these with paper. Uncover one at a time.

- E1** **Hint 1** Work out the actual distance between the lighthouses first.
- Hint 2** $7.5 \times 120\,000 = 900\,000$ cm, which is 9 km.
- Hint 3** On map *B*, 4.5 cm represents 900 000 cm. Make the map side 1.

How did it go?

Colour one circle on each line: not yet, nearly, yes.

- I can use a map scale to change a map distance into an actual distance, and back. ☐ ☐ ☒
- I can write a map scale as a map ratio. ☐ ☐ ☒
- I can use a map ratio, changing centimetres into metres and kilometres. ☐ ☐ ☒
- I can find the map ratio from a map distance and an actual distance. ☐ ☐ ☒