FOUNDATION & HIGHER

SAME AT BOTH TIERS

Name ..... Class .....

R2: Scale and maps

Reason with scale factors, scale drawings and maps

20 marks · 25 minutes · Non-calculator

1) A map has scale 1 : 50 000. Show that 6 cm on the map is 3 km in real life.

[Question 1: 2 marks]

2) Explain why a scale of 1 cm to 2 km is the same as 1 : 200 000

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[Question 2: 2 marks]

3) A model is built to a scale of 1 : 25. The real car is 4 m long. Kim says the model is 100 cm long. Explain her mistake.

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[Question 3: 2 marks]

4) A plan has scale 1 : 100. A room is 5 cm by 4 cm on the plan. Show that the real area is 20 m^2.

[Question 4: 2 marks]

5) A field has area 4 cm^2 on a map with scale 1 : 25 000. Sam says its real area is $4 \times 25\,000 = 100\,000\ cm^2$. Explain his mistake.

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[Question 5: 2 marks]

6) A shape is enlarged by scale factor 3. Explain why its area is multiplied by 9

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[Question 6: 2 marks]

7) Which map shows more detail: scale 1 : 10 000 or 1 : 50 000? Explain.

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[Question 7: 2 marks]

8) Two towns 18 km apart are 9 cm apart on a map. Show that the scale is 1 : 200 000

[Question 8: 2 marks]

9) A scale drawing uses 1 cm to represent 5 m. Show that a building 22 m tall is drawn 4.4 cm tall.

[Question 9: 2 marks]

10) Explain why an enlargement with scale factor 0.5 makes a shape smaller.

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[Question 10: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Shown	$6 \times 50\,000 = 300\,000$ cm (M1); = 3 km (C1).
2	Explanation	2 km = 200 000 cm (M1); C1.
3	16 cm	She multiplied instead of dividing (C1); $400 \div 25$ (B1).
4	Shown	5 m by 4 m (M1); C1.
5	Explanation	Areas scale by $25\,000^2$ (C2).
6	Explanation	Both length and width are multiplied by 3 (C1); 3×3 (C1).
7	1 : 10 000	Each cm represents less real distance (C2).
8	Shown	1 800 000 cm ÷9 (M1); C1.
9	Shown	$22 \div 5$ (M1); C1.
10	Explanation	Every length is multiplied by a number less than 1 (C2).