GCSE HIGHER · REVISION MAT 1

Scale factors for length, area and volume

1 A plan has scale 1 : 200.

What real length does 4 cm represent?

2 Two similar rectangles have lengths 3 cm and 6 cm.

Find the ratio of their areas.

3 Explain why doubling the sides of a square multiplies its area by 4.

4 A model car is made to a scale of 1 : 40.

The real car is 4.2 m long.

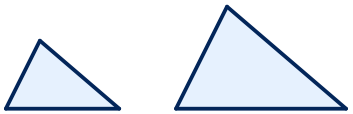
How long is the model in cm?

5 Two similar cylinders have heights 5 cm and 10 cm.

Show that their volumes are in the ratio 1 : 8.

6 These triangles are similar.

The small one has area 12 cm².



Find the area of the large one.

7 Two similar solids have surface areas in the ratio 4 : 9.

Show that their volumes are in the ratio 8 : 27.

8 Two similar bottles hold 250 ml and 2 litres.

The small bottle is 12 cm tall.

How tall is the large bottle?

Mr&Mrs MATHS

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Scale factors for length, area and volume

1 800 cm

8 m

2 Length 1 : 2

Area 1 : 4

3 **Area = side × side,**
so it is multiplied by 2 × 2.

4 420 ÷ 40

10.5 cm

5 Length 1 : 2

Volume $1^3 : 2^3 = 1 : 8$

6 Length 2 : 3, area 4 : 9

$12 \times \frac{9}{4} = 27$ cm²

7 Length $\sqrt{4} : \sqrt{9} = 2 : 3$

Volume $2^3 : 3^3 = 8 : 27$

8 Volume 1 : 8

Length 1 : 2

24 cm

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