Area and volume scale factors

1

Two similar shapes have lengths 3 cm and 6 cm. The small area is 7 cm^2. Find the large area.



1 square lengths × 2

length scale factor

2

area scale factor: square it

Answer _____

2

Two similar shapes have lengths 4 cm and 8 cm. The small volume is 5 cm^3. Find the large volume.



1 cube lengths × 2

length scale factor

volume scale factor: cube it

Answer _____

3

Two similar shapes have lengths 4 cm and 20 cm. The small area is 2 cm^2. Find the large area.

length scale factor

area scale factor: square it

Answer _____

4

Two similar shapes have lengths 2 cm and 6 cm. The small volume is 3 cm^3. Find the large volume.

length scale factor

volume scale factor: cube it

Answer _____

5

Two similar shapes have lengths 4 cm and 6 cm. The small area is 8 cm^2. Find the large area.

Answer _____

6

Two similar shapes have areas 5 cm^2 and 45 cm^2. The small one is 3 cm long. How long is the large one?

Answer _____

7

Two similar solids have volumes 6 cm^3 and 48 cm^3. The small one is 7 cm tall. Maya says the large one is 56 cm tall, because 48 ÷ 6 = 8 and 7 × 8 = 56. Explain her mistake and find the height.

Answer _____

8

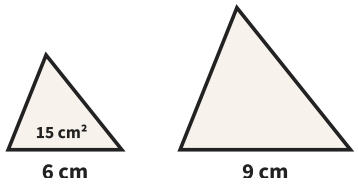
Two similar solids have surface areas 32 cm^2 and 72 cm^2. The volume of the small one is 8 cm^3. Find the volume of the large one.

Answer _____

Area and volume scale factors *further practice*

9

These triangles are similar.
The small one has an area of 15 cm².
Find the area of the large one.



Answer _____

10

Two similar solids have heights in the ratio 2 : 5. Write the ratio of their surface areas, and the ratio of their volumes.

Surface areas _____

Volumes _____

11

A flag 40 cm long uses 0.3 m² of fabric.
A similar flag is 1 m long.
How much fabric does it use?

Answer _____

12

Two similar paperweights are made of the same glass. They have masses of 120 g and 405 g. The small one is 6 cm tall. How tall is the large one?

Answer _____

13

Two similar water tanks have bases with areas 1.2 m² and 4.8 m².
The small tank holds 900 litres.
How many litres does the large tank hold?

Answer _____

14

Two similar vases have volumes 250 cm³ and 2000 cm³. The small vase takes 30 ml of glaze to cover it.
How much glaze does the large vase take?

Answer _____

15

A model of a ship is made to a scale of 1 : 50. The deck of the model has an area of 600 cm². Find the area of the real deck in m².

Answer _____

16

Two similar solids have volumes 10 cm³ and 30 cm³. Jo says their lengths are in the ratio 1 : 3. Is she right? Explain.

Answer _____