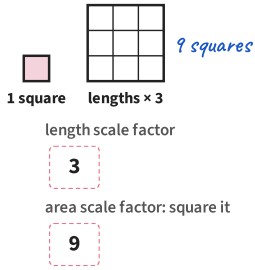


Area and Volume Scale Factors

1

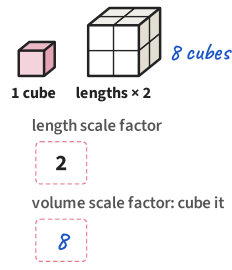
Two similar shapes have lengths 4 cm and 12 cm. The small area is 5 cm^2 . Find the large area.



Answer 45 cm²

2

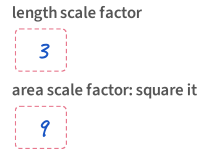
Two similar shapes have lengths 3 cm and 6 cm. The small volume is 10 cm^3 . Find the large volume.



Answer 80 cm³

3

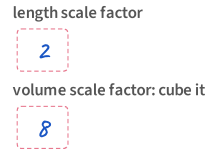
Two similar shapes have lengths 5 cm and 15 cm. The small area is 8 cm^2 . Find the large area.



Answer 72 cm²

4

Two similar shapes have lengths 4 cm and 8 cm. The small volume is 7 cm^3 . Find the large volume.



Answer 56 cm³

5

Two similar shapes have lengths 2 cm and 10 cm. The small area is 3 cm^2 . Find the large area.



Answer 75 cm²

6

Two similar shapes have lengths 3 cm and 9 cm. The small volume is 2 cm^3 . Find the large volume.



Answer 54 cm³

7

Two similar shapes have areas 4 cm^2 and 36 cm^2 . The small one is 5 cm long. How long is the large one?

area scale factor 9, so length scale factor 3

Answer 15 cm

8

Two similar shapes have volumes 2 cm^3 and 54 cm^3 . The small one is 10 cm long. How long is the large one?

volume scale factor 27, so length scale factor 3

Answer 30 cm

Area and Volume Scale Factors further practice

9

Two similar solids have lengths 4 cm and 10 cm. The volume of the large one is 375 cm^3 . Find the volume of the small one.

scale factor 2.5, $2.5^3 = 15.625$,
 $375 \div 15.625$

Answer 24 cm³

10

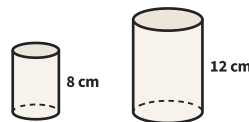
Two similar solids have surface areas 36 cm^2 and 81 cm^2 . The volume of the small one is 40 cm^3 . Find the volume of the large one.

$81 \div 36 = 2.25$, $\sqrt{2.25} = 1.5$,
 40×1.5^3

Answer 135 cm³

11

These two cylinders are similar. Write each ratio, small : large, in its simplest form.



length $8 : 12 = 2 : 3$,
then square, then cube

Surface areas 4 : 9

Volumes 8 : 27

12

A model of a statue is made to a scale of 1 : 20. It takes 15 ml of paint to cover the model. How many litres of paint would cover the real statue?

area scale factor $20^2 = 400$,
 $15 \times 400 = 6000 \text{ ml}$

Answer 6 litres

13

Two glass jars are similar. The small jar holds 0.4 litres and is 12 cm tall. The large jar holds 1.35 litres. How tall is the large jar?

$1.35 \div 0.4 = 3.375$, $\sqrt[3]{3.375} = 1.5$,
 12×1.5

Answer 18 cm

14

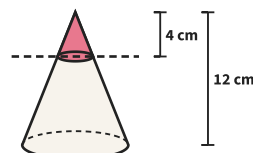
Two candles are similar. The small candle is 6 cm tall and costs £3.20. The large candle is 9 cm tall and costs £10. Which candle gives more wax for your money? Show how you know.

$1.5^3 = 3.375$,
 $3.375 \text{ small candles cost } £10.80$

Answer the large candle

15

A cone 12 cm tall is cut parallel to its base. The small cone cut from the top is 4 cm tall and has a volume of 10 cm^3 . Find the volume of the piece that is left.



scale factor 3, $10 \times 27 = 270$,
 $270 - 10$

Answer 260 cm³

16

Solid B is similar to solid A. The surface area of B is 50% more than the surface area of A. Leo says the volume of B is also 50% more. Is he right? Explain.

area $\times 1.5$, length $\times \sqrt{1.5} = 1.22...$,
volume $\times 1.22...^3 = 1.84 \text{ (2 dp)}$

Answer No, about 84% more