

Similar Shapes - Areas and Volumes

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **29**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

- 1** The lengths of a shape are multiplied by 3 to make a similar shape.
By what number is the area multiplied?
Circle your answer.

[1 mark]

- 2** Two similar triangles have corresponding sides 4 cm and 10 cm.
The area of the smaller triangle is 12 cm^2 .
Work out the area of the larger triangle.

[2 marks]

Answer _____ cm^2

- 3** Two rugs are mathematically similar.
The area of the larger rug is 4 times the area of the smaller rug.
Zainab says,
“The larger rug is 4 times as long as the smaller rug.”
Is she correct?
Tick a box.
Give a reason for your answer.

[1 mark]

☐ Yes☐ No

- 4 A cuboid has volume 15 cm^3 .
It is enlarged by scale factor 2 to make a similar cuboid.
What is the volume of the enlarged cuboid?
Circle your answer.

[1 mark]

30 cm^3

60 cm^3

120 cm^3

240 cm^3

- 5 Each row of the table is for a different pair of similar solids.
Complete the table.

Length scale factor	Area scale factor	Volume scale factor
2		
	25	

[2 marks]

- 6 Two similar cylinders have volumes 54 cm^3 and 250 cm^3 .
The height of the smaller cylinder is 6 cm.
Work out the height of the larger cylinder.

[3 marks]

Answer _____ cm

- 7** Two bottles are mathematically similar.
The smaller bottle is 10 cm tall and has surface area 240 cm^2 .
The larger bottle is 15 cm tall.

(a) Work out the surface area of the larger bottle.

[2 marks]

Answer _____ cm^2

- (b) The larger bottle holds 1.35 litres.
How much does the smaller bottle hold?

[2 marks]

Answer _____ litres

- 8** A shop sells two sizes of solid chocolate egg.
The eggs are mathematically similar and made of the same chocolate.
The small egg has mass 27 g and is wrapped in 45 cm^2 of foil.
The large egg has mass 216 g.
Work out the area of foil needed to wrap the large egg.

[3 marks]

Answer _____ cm^2

- 9** A company makes two sizes of triangular warning sign.
The signs are mathematically similar.
The smaller sign is 60 cm tall and has an area of 1560 cm^2
The larger sign has an area of 3510 cm^2
Work out the height of the larger sign.

[3 marks]

Answer _____ cm

- 10** A small photo print is similar to a large photo print.
The large print is 50 cm wide and the small print is 20 cm wide.
The area of the large print is 3000 cm^2
Printing costs £25 per square metre.
Work out the cost of printing the small print.

[5 marks]

Answer £ _____

- 11** Two cylindrical tins are mathematically similar.
The small tin has radius 4 cm and height 10 cm.
The large tin has volume $4320\pi \text{ cm}^3$
Work out the height of the large tin.

[4 marks]

Answer _____ cm