

Similar Shapes - Areas and Volumes

For Pearson Edexcel GCSE Mathematics (1MA1) • Higher tier

Name _____

Total marks: **30**

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

- 1** The ratio of the volumes of two similar spheres is 8:125
Find the ratio of their surface areas.

.....
(2)

(Total for Question 1 is 2 marks)

- 2** A garden centre sells two plant pots that are mathematically similar.
The smaller pot holds 2.5 litres of compost and is 24 cm tall.
The larger pot holds 20 litres of compost.
Work out the height of the larger pot.

..... cm
(3)

(Total for Question 2 is 3 marks)

- 3** Shapes A and B are mathematically similar.
The area of A is 20 cm^2 and the area of B is 45 cm^2 .
A length on shape A is 6 cm .
Work out the corresponding length on shape B .

..... cm
(3)

(Total for Question 3 is 3 marks)

- 4** A model of a statue is made to a scale of $1:20$
The model has a volume of 450 cm^3 .
Work out the volume of the statue.
Give your answer in m^3 .

..... m^3
(3)

(Total for Question 4 is 3 marks)

- 5 A small model boat and a large model boat are mathematically similar.
The sail of the small boat has an area of 150 cm^2
The sail of the large boat has an area of 240 cm^2
The hull of the small boat has a volume of 500 cm^3
Work out the volume of the hull of the large boat.
Give your answer correct to 3 significant figures.

..... cm^3
(3)

(Total for Question 5 is 3 marks)

- 6 Two glass vases, R and S , are mathematically similar.
Vase R holds 1.6 litres of water.
Vase S holds 5.4 litres of water.
The outside surface area of vase R is 480 cm^2
Show that the outside surface area of vase S is 1080 cm^2

(3)

(Total for Question 6 is 3 marks)

- 7** Two watering cans are mathematically similar.
The smaller can holds 2 litres of water.
The larger can holds 5 litres of water and is 40 cm tall.

- (a) Work out the height of the smaller watering can.
Give your answer correct to 1 decimal place.

..... cm
(3)

- (b) The smaller watering can is made from 1800 cm^2 of metal sheet.
Work out the area of metal sheet needed to make the larger watering can.
Give your answer correct to 3 significant figures.

..... cm^2
(2)

(Total for Question 7 is 5 marks)

- 8** A shop sells cat food in two sizes of tin.
 The tins are mathematically similar.
 The small tin is 6 cm tall and costs £0.80
 The large tin is 9 cm tall and costs £2.50
 Which size of tin is the better value for money?
 You must show all your working.

.....
 (4)

(Total for Question 8 is 4 marks)

- 9** A company makes three sizes of gift box, S , M and L .
 The boxes are mathematically similar.
 height of S : height of M = 2:3
 volume of M : volume of L = 27:125
 The surface area of box S is 32 cm^2
 Work out the surface area of box L .

..... cm^2
 (4)

(Total for Question 9 is 4 marks)
