Similar Shapes (Area and Volume)

Grade 6 topic · Higher tier · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Questions 1–15 (58 marks) build up to the harder Grade 8–9 style questions at the end; aim to complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 83 marks.

Warm-up

1 Two similar shapes have lengths in the ratio 1 : 4. The smaller has area 16 cm². Work out the area of the larger. **[3 marks]**

Answer _____

2 Two similar solids have lengths in the ratio 1 : 3. The smaller has volume 30 cm³. Work out the volume of the larger. **[3 marks]**

Answer _____

3 A square has side 4 cm. A similar square has side 20 cm. Work out the ratio of their areas. **[3 marks]**

Answer _____

4 Two similar cubes have sides 2 cm and 8 cm. Work out the ratio of their volumes. **[3 marks]**

Answer _____

5 The scale factor of enlargement is 4. By what factor does the area increase? **[2 marks]**

Answer _____

Core

6 Two similar shapes have areas 26 cm² and 104 cm². Work out the scale factor of lengths. **[4 marks]**

Answer _____

7 Two similar solids have volumes 14 cm³ and 896 cm³. Work out the scale factor of lengths. **[4 marks]**

Answer _____

8 Two similar bottles have heights 10 cm and 30 cm. The small bottle holds 36 ml. How much does the large bottle hold? **[4 marks]**

Answer _____

9 Two similar posters have areas 9 cm² and 225 cm². The smaller has width 6 cm. Work out the width of the larger. **[4 marks]**

Answer _____

10 Two similar shapes have lengths in the ratio 2 : 4. Write the ratio of their areas in simplest form. **[3 marks]**

Answer _____

Stretch

11 Two similar cones have heights 6 cm and 30 cm. The larger cone has volume 5375 cm³. Work out the volume of the smaller cone. **[5 marks]**

Answer _____

12 A model ship is 1/30 the length of the real ship. The real ship has a deck area of 15300 m². Work out the deck area of the model. **[5 marks]**

Answer _____

13 Two similar jars have heights in the ratio 2 : 3. The smaller has surface area 80 cm². Work out the larger one's surface area. **[5 marks]**

Answer _____

14 Two similar cylinders have heights 10 cm and 15 cm. The larger holds 675 ml. How much does the smaller hold? **[5 marks]**

Answer _____

15 Two similar shapes have areas in the ratio 4 : 9. Write the ratio of their lengths and the ratio of their volumes (if solid). **[5 marks]**

Answer _____

Challenge

16 A large statue is an enlargement of a small statue with scale factor 5. The small statue has mass 2 kg. Assuming the same material, work out the mass of the large statue. **[5 marks]**

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