Spheres and Cones

Grade 5 topic · Foundation and Higher · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Foundation students: aim for Questions 1–15 (58 marks) and have a go at the rest. Higher students: 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: 82 marks.

Warm-up

1 Work out the volume of a sphere with radius 7 cm. Give your answer to 3 significant figures. **[3 marks]**

Answer _____

2 Work out the surface area of a sphere with radius 9 cm. Give your answer to 3 significant figures. **[3 marks]**

Answer _____

3 Work out the volume of a sphere with radius 8 cm. Give your answer to 3 significant figures. **[3 marks]**

Answer _____

4 Work out the surface area of a sphere with radius 3 cm. Give your answer to 3 significant figures. **[3 marks]**

Answer _____

5 Work out the volume of a sphere with radius 3 cm. Give your answer to 3 significant figures. **[3 marks]**

Answer _____

Core

6 Work out the volume of a cone with base radius 4 cm and height 10 cm. Give your answer to 3 significant figures. **[4 marks]**

Answer _____

7 A sphere has radius 9 cm. Give its volume in terms of π. **[3 marks]**

Answer _____

8 A hemisphere has radius 5 cm. Work out its volume to 3 significant figures. **[4 marks]**

Answer _____

9 A cone has base radius 9 cm and slant height 12 cm. Work out its curved surface area to 3 significant figures. **[4 marks]**

Answer _____

10 A cone has base radius 7 cm and height 8 cm. Give its volume in terms of π. **[4 marks]**

Answer _____

Stretch

11 A cone has base radius 8 cm and height 8 cm. Work out its slant height to 3 significant figures. **[4 marks]**

Answer _____

12 A cone has base radius 9 cm and height 6 cm. Work out its total surface area to 3 significant figures. **[5 marks]**

Answer _____

13 A sphere has volume 113 cm³. Work out its radius. **[5 marks]**

Answer _____

14 A solid hemisphere has radius 3 cm. Work out its total surface area to 3 significant figures. **[5 marks]**

Answer _____

15 A cone has volume 216.00π cm^3 and base radius 9 cm. Work out its height. **[5 marks]**

Answer _____

Challenge

16 A cone of radius 6 cm and height 10 cm is placed inside a cylinder of the same radius and height. Work out the volume of the cylinder not filled by the cone, in terms of π. **[5 marks]**

Answer _____

17 A solid is made from a cylinder of radius 5 cm and height 11 cm with a hemisphere of radius 5 cm on top. Work out its volume to 3 significant figures. **[5 marks]**

Answer _____

18 A metal sphere of radius 4 cm is melted and recast into small spheres of radius 1 cm. How many small spheres are made? **[5 marks]**

Answer _____

19 A spherical balloon's radius increases from 8 cm to 16 cm. By what factor does its volume increase? **[4 marks]**

Answer _____

20 A cone and a sphere have equal radii 7 cm. The cone's height is 14 cm. Show that they have the same volume ratio of 1 : 2 (cone : sphere). **[5 marks]**

Answer _____