5.16 Spheres and Cones: 10-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

Formulae You May Need

Revision Library formulae reminder, styled on Edexcel 1MA1 formulae-sheet conventions; wording is original.

Volume of a sphere = (4/3) x pi x r^3

Surface area of a sphere = 4 x pi x r^2

Volume of a cone = (1/3) x pi x r^2 x h

Curved surface area of a cone = pi x r x l (l = slant height)

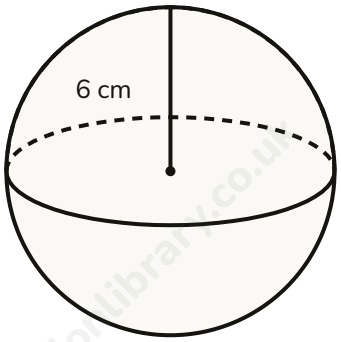
Volume of a hemisphere = (2/3) x pi x r^3

Total surface area of a solid hemisphere = 3 x pi x r^2

Note: the surface area formulae for spheres and cones are supplied in relevant Edexcel questions.

1 A small ball has radius 6 cm. Calculate its volume. Give your answer in terms of π.

Diagram NOT accurately drawn

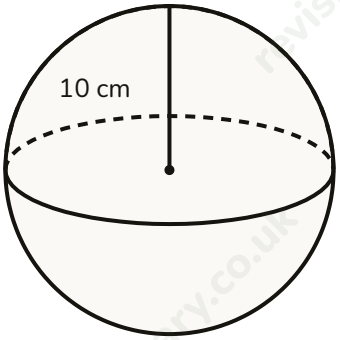


(Total for Question 1 is 1 mark)

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2 A solid sphere has radius 10 cm. Work out the volume of the sphere. Give your answer correct to 3 significant figures.

Diagram NOT accurately drawn

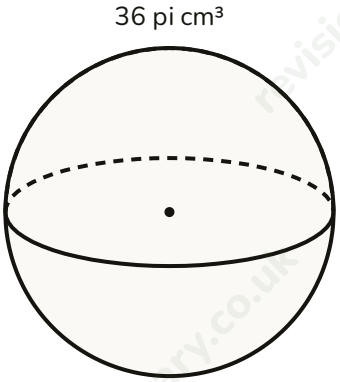


(Total for Question 2 is 2 marks)

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3 The volume of a sphere is $36\ \pi\ cm^3$. Work out its radius in cm. Give your answer in exact form.

Diagram NOT accurately drawn

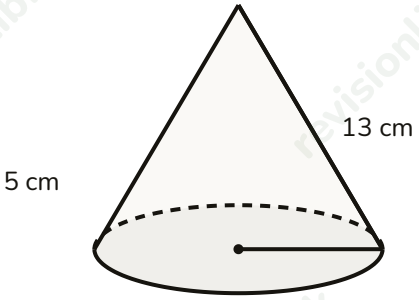


(Total for Question 3 is 2 marks)

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4 A right circular cone has sloping edge (the slant height) 13 cm and radius 5 cm. Calculate the height of the cone. Give your answer in cm.

Diagram NOT accurately drawn



(Total for Question 4 is 3 marks)

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Mark scheme · 5.16 Spheres and Cones: 10-minute Pack

Question 1

$288\ \pi\ cm^3$ cao	**B1**

Answer: $288\ \pi\ cm^3$

Question 2

correct substitution into $V = (4/3) \times \pi \times r^3$, e.g. $(4/3) \times \pi \times 10^3$ (oe)	**M1**
awrt 4190 cm^3 (cao)	**A1**

Answer: 4190 cm^3 (3 s.f.)

Question 3

use $(4/3)\ \pi\ r^3 = 36\ \pi$ and cancel π then $r^3 = 27$	**M1**
r = 3 cm cao	**A1**

Answer: 3 cm

Question 4

use Pythagoras: $height^2 + 5^2 = 13^2$	**M1**
compute $height^2 = 169 - 25 = 144$	**M1**
height = 12 cm cao	**A1**

Answer: 12 cm

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