

Surface area of cones and spheres

Grade 6 | Higher | 13 questions, 54 marks

GCSE Maths topic practice



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Name: _____ **Date:** _____ **Score:** _____ / 54

1 The surface area of a sphere is $4\pi r^2$.

- Work out the surface area of a sphere with radius 5 cm. Give your answer in terms of π .
- Work out the surface area of a sphere with diameter 14 cm. Give your answer correct to 3 significant figures.

(3 marks)

Answer _____

2 A cone has base radius 6 cm and slant height 10 cm. Give your answers in terms of π .

- Work out the curved surface area of the cone.
- Work out the total surface area of the cone.

(3 marks)

Answer _____

3 Three quarters of the surface area of a sphere is $108\pi \text{ cm}^2$.

Work out the diameter of the sphere.

(4 marks)

Answer _____

- 4 A cone has base radius 5 cm and perpendicular height 12 cm.
- Work out the slant height of the cone.
 - Work out the total surface area of the cone. Give your answer correct to 3 significant figures.

(4 marks)

Answer _____

- 5 A solid hemisphere has volume $18\pi \text{ cm}^3$.
Work out the total surface area of the hemisphere.
Give your answer in terms of π .

(4 marks)

Answer _____

- 6 A solid toy is made from a hemisphere joined to the circular base of a cone. Both have radius 4 cm. The cone has perpendicular height 3 cm.
Work out the total surface area of the toy. Give your answer correct to 3 significant figures.

(4 marks)

Answer _____

- 7 The volume of a solid hemisphere is $144\pi \text{ cm}^3$.
Work out the total surface area of the hemisphere. Give your answer in terms of π .

(4 marks)

Answer _____

- 8 A solid cone has base radius 6 cm.
The total surface area of the cone is $96\pi \text{ cm}^2$.
Work out the vertical height of the cone.

(4 marks)

Answer _____

- 9 A sphere has radius 6 cm. A cone has base radius 6 cm. The curved surface area of the cone is equal to the surface area of the sphere.
- Work out the slant height of the cone.
 - Work out the perpendicular height of the cone. Give your answer correct to 3 significant figures.

(4 marks)

Answer _____

- 10 A large cone has base radius 9 cm and slant height 15 cm. A smaller cone is cut off the top, leaving a frustum. The cone that was cut off has base radius 3 cm.
Work out the total surface area of the frustum. Give your answer correct to 3 significant figures.

(5 marks)

Answer _____

- 11** A large cone has base radius 9 cm and vertical height 12 cm.
A smaller, similar cone of base radius 3 cm and vertical height 4 cm is removed from the top of the large cone, leaving a frustum.
Calculate the curved surface area of the frustum.
Give your answer correct to 3 significant figures.

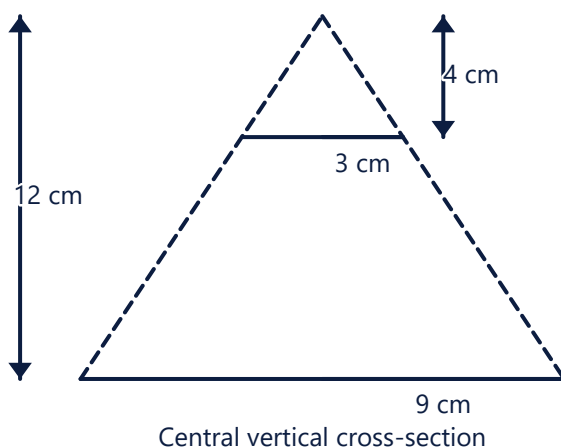


Diagram NOT accurately drawn

(4 marks)

Answer _____

- 12** A solid cone has base radius 5 cm.
The curved surface area of the cone is $65\pi \text{ cm}^2$.
Work out the volume of the cone.
Give your answer correct to 3 significant figures.

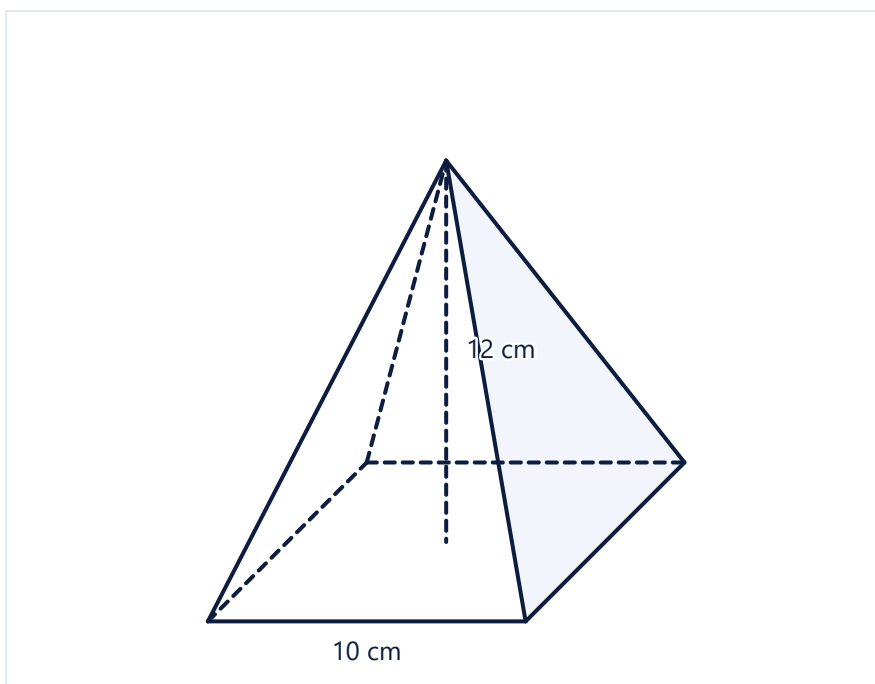
(5 marks)

Answer _____

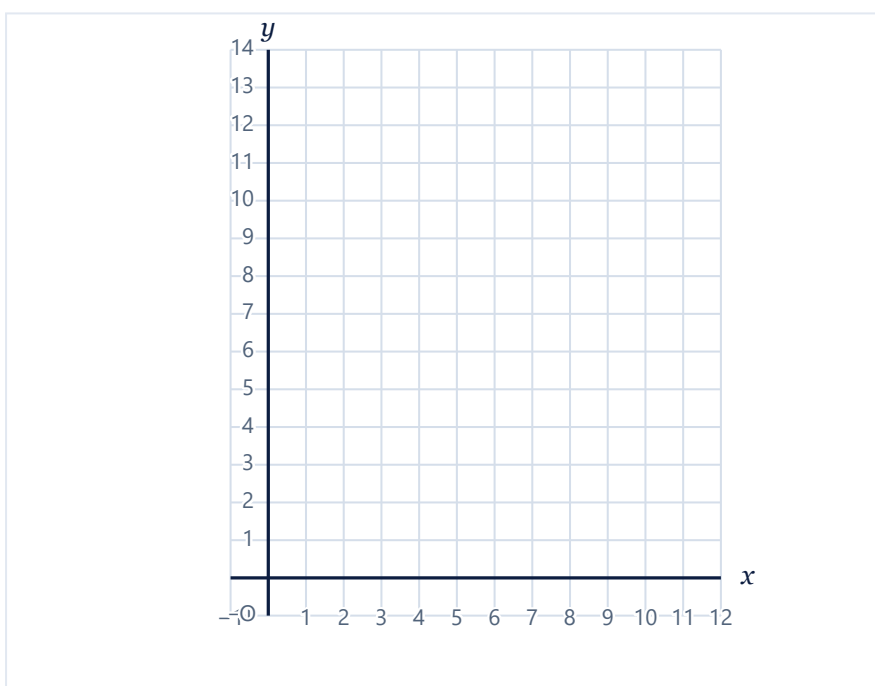
13

A solid square-based pyramid has base edges of 10 cm and vertical height 12 cm. The apex is directly above the centre of the base.

- Draw an accurate front elevation of the pyramid.
- Work out the total surface area of the pyramid.



Given solid



Front elevation

(6 marks)

End of questions | Total 54 marks