

IB Maths: AA HL

Geometry of 3D Shapes

Topic Questions

These practice questions can be used by students and teachers and is Suitable for IB Maths AA HL Topic Questions

Course	IB Maths
Section	3. Geometry & Trigonometry
Topic	3.2 Geometry of 3D Shapes
Difficulty	Medium

Level: IB Maths

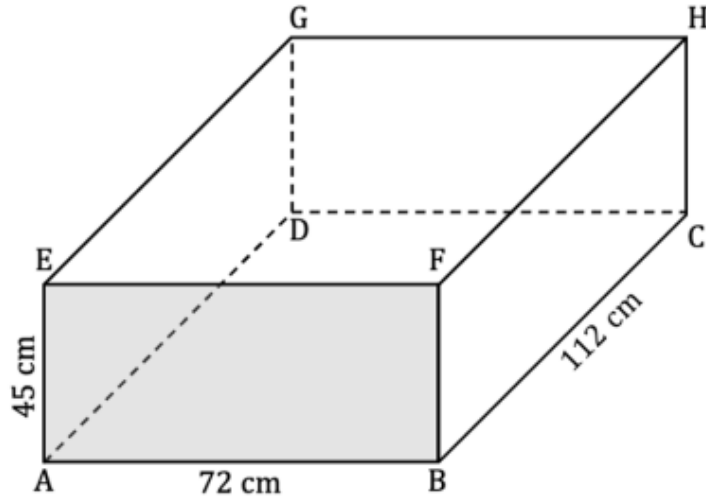
Subject: IB Maths AA HL

Board: IB Maths

Topic: Geometry of 3D Shapes

Question 1

The diagram below shows a cuboid measuring $45\text{ cm} \times 72\text{ cm} \times 112\text{ cm}$.



- (a) (i) Calculate the distance from A to F.
(ii) Calculate the distance from B to H.
(iii) Calculate the distance from A to C.

[3 marks]

- (b) Calculate the distance from B to G.

[2 marks]

Question 2

A nickel earring in the shape of a sphere has a radius of 4mm.

- (a) Find the volume of the earring, expressing your answer in the form of $a \times 10^k$, where $1 \leq a \leq 10$ and k is an integer.

[3 marks]

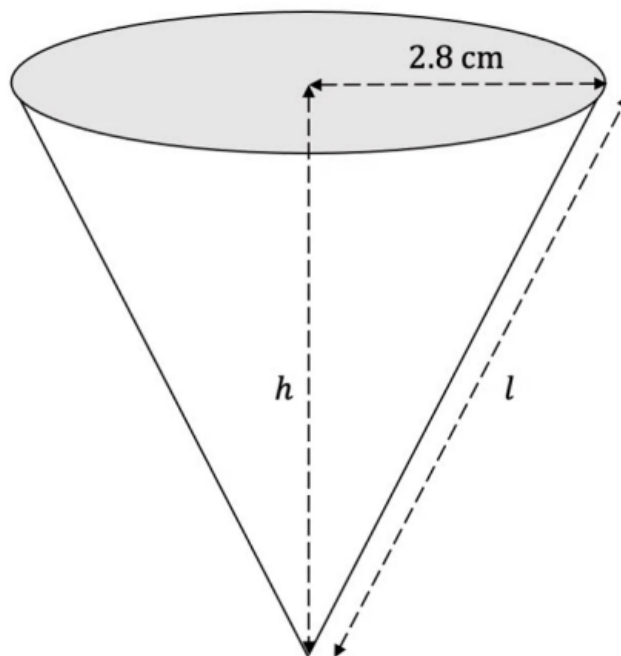
The nickel earring is to be melted down and reshaped to form a cylinder with a height of 16mm.

(b) Find the radius of the cylinder.

[2 marks]

Question 3

A waffle ice cream cone forms a right circular cone that has a volume of 120 cm^3 and a radius of 2.8 cm.



(a) Find the height, h , of the cone.

[2 marks]

(b) Find the slant height, l , of the cone.

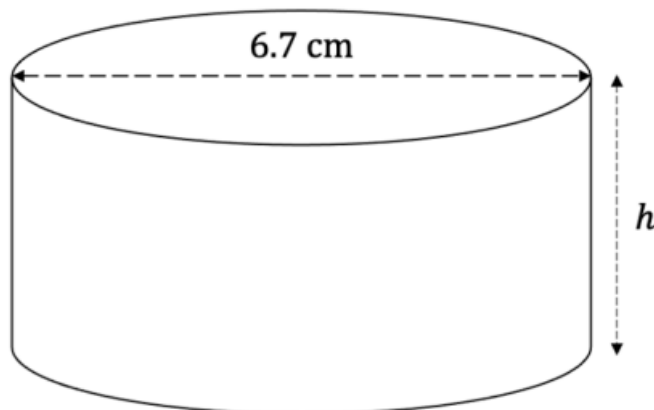
[2 marks]

(c) Calculate the curved surface area of the cone.

[2 marks]

Question 4

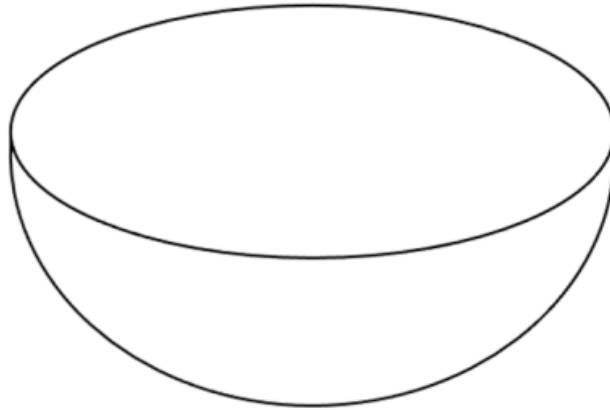
A baking container has the shape of a cylinder, as shown in the diagram below. The diameter of the baking container is 6.7 cm and its volume, V , is 80 cm^3 .



(a) Find the height, h , of the baking container.

[2 marks]

A bowl full of cake batter has the shape of a hemisphere, as shown in the diagram below. The cake batter is poured into the baking container and fills a quarter of the container.

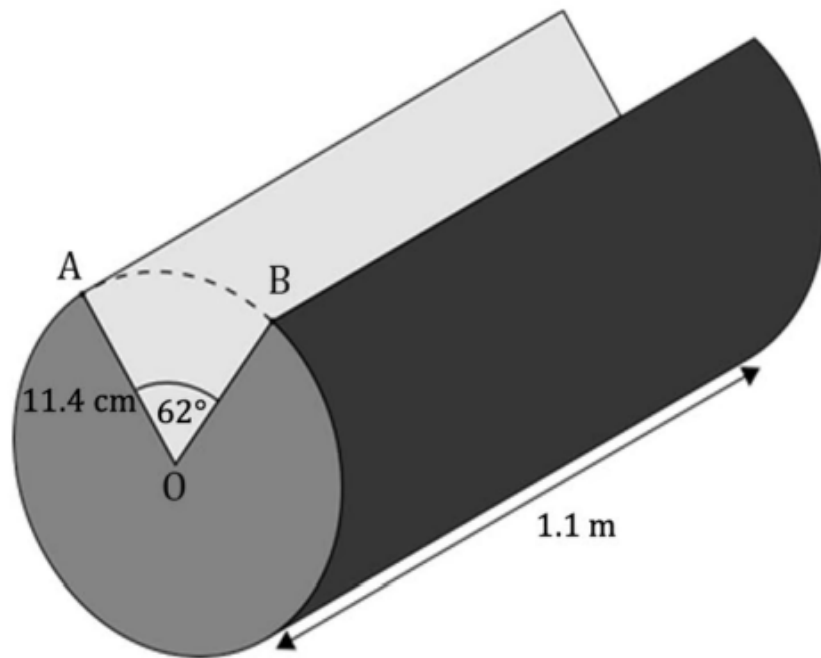


(b) Find the radius, r , of the bowl.

[4 marks]

Question 5

Hamish is building a tree hut using cylindrical logs of length 1.1m and radius 11.4cm. A wedge is cut from the logs as shown.



(a) Find the length, in cm, of the

- (i) minor arc AB
- (ii) major arc AB.

[3 marks]

(b) Find the area of the empty sector OAB.

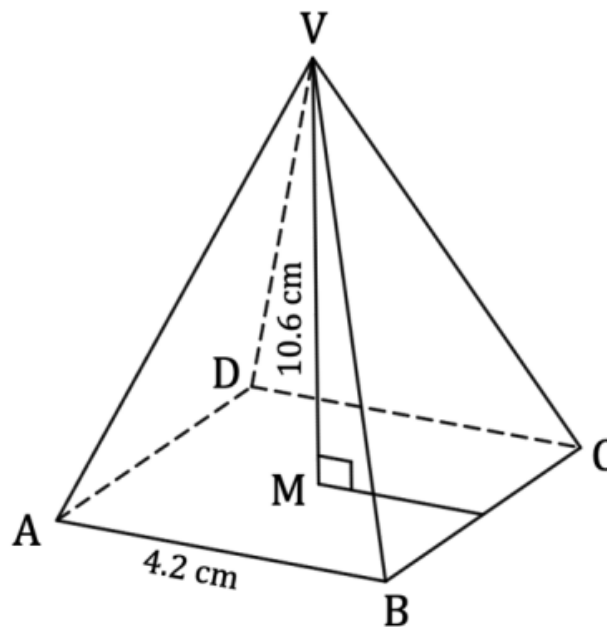
[2 marks]

(c) Find the volume of each log. Give your answer in cm^3 .

[3 marks]

Question 6

In the diagram below ABCD is the square base of a right pyramid with vertex V. The centre of the base is M. The sides of the square base are 4.2 cm and the vertical height is 10.6 cm.



(a) Calculate the area of the triangle ABV.

[3 marks]

(b) Calculate the length of AV .

[3 marks]

(c) Find the size of the angle AV makes with the square base $ABCD$.

[3 marks]