MME
mathsmadeeasy.co.uk

GCSE MATHEMATICS

AQA | Edexcel | OCR | WJEC

(Level 4 - 7)

Volume of 3D Shapes

Please write clearly in block capitals

Forename:
Surname:

Materials

For this paper you must have:
- mathematical instruments

You ***can*** use a calculator.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

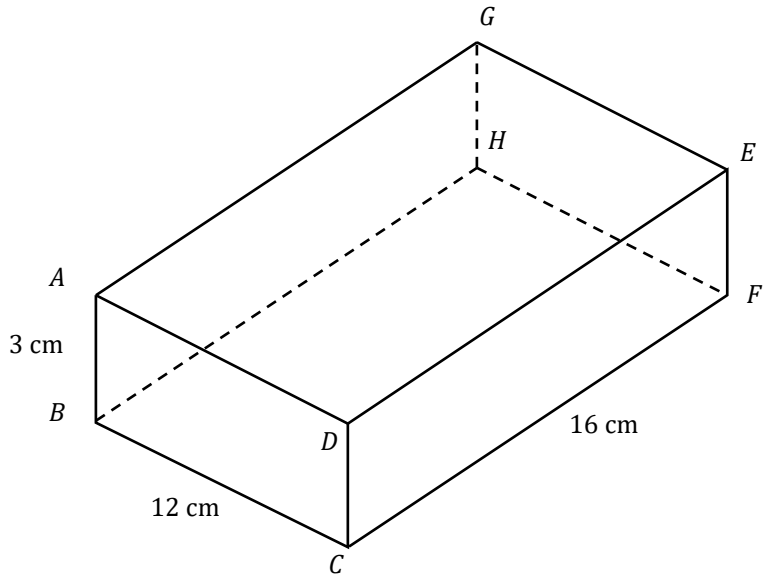
- In all calculations, show clearly how you work out your answer.

1 The diagram below shows cuboid $ABCDEFGH$. *(Level 4)*

$AB = 3\ cm$

$BC = 12\ cm$

$CF = 16\ cm$



Not drawn accurately

Calculate the total volume of the cuboid shown.

[1 mark]

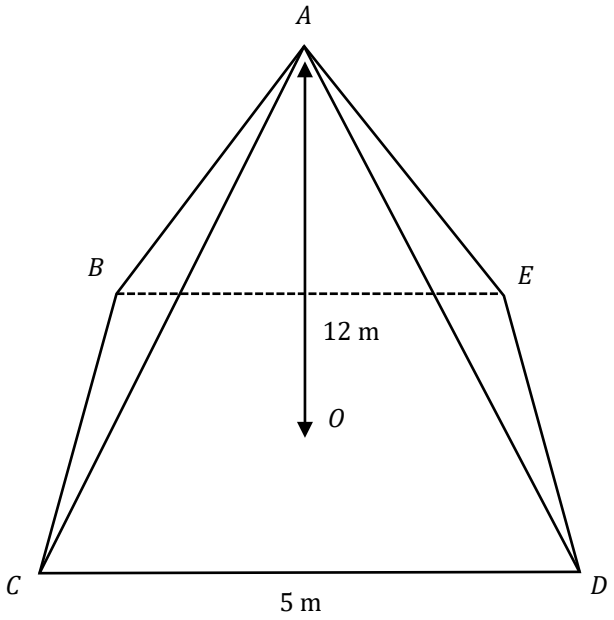
Answer _____ cm^3

1

2 The diagram below shows a square based pyramid $ABCDE$. *(Level 4)*

The vertical height of the pyramid is $12\ m$

$CD = 5\ m$



Not drawn accurately

$V = \frac{1}{3}$ Area of base × vertical height

Using the equation above, calculate the volume of the pyramid shown.

[2 marks]

Answer _____ m^3

Turn over for next question

2

3 Two cuboids have been joined to make the shape below. *(Level 4)*

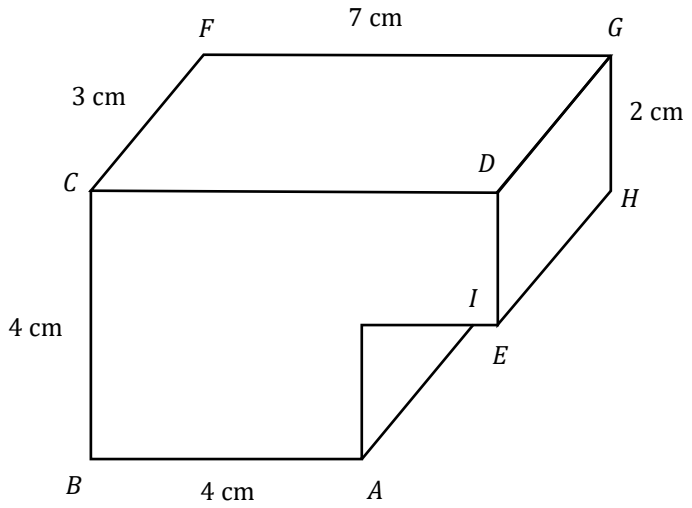
$FG = 7\ cm$

$FC = 3\ cm$

$CA = 4\ cm$

$GH = 2\ cm$

$AB = 4\ cm$



Not drawn accurately

3(a) Calculate the area of the face $ABCDE$

[2 marks]

Answer _____ cm^2

3(b) Calculate the total volume of the 3D shape shown above.

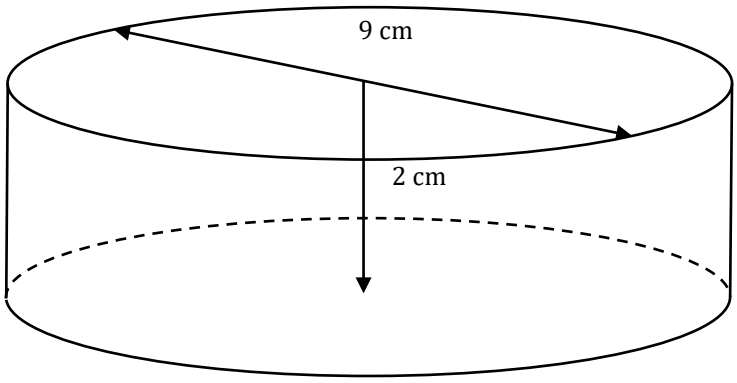
[1 mark]

Answer _____ cm^3

3

4 The cylinder shown below has a diameter of 9 cm and height 2 cm. *(Level 4)*

Not drawn accurately



Calculate the volume of the cylinder shown above.

Give your answer to 2 decimal places.

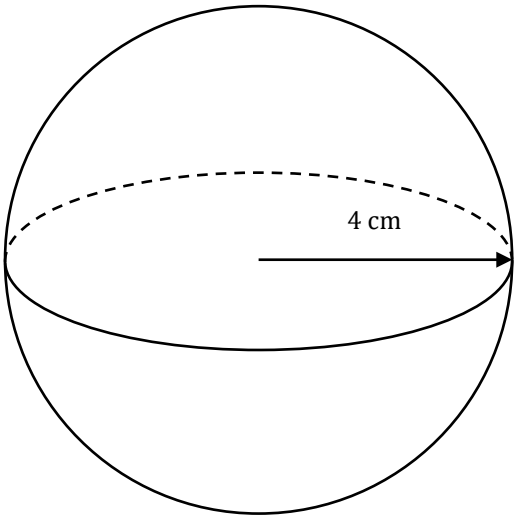
[2 marks]

Answer _____ cm^3

2

5 A sphere with radius 4 cm is shown below. *(Level 4)*

$Volume\ of\ a\ sphere: V = \frac{4}{3}\pi r^3$



Not drawn accurately

Calculate the volume of the sphere above.

Give your answer in terms of π

[2 marks]

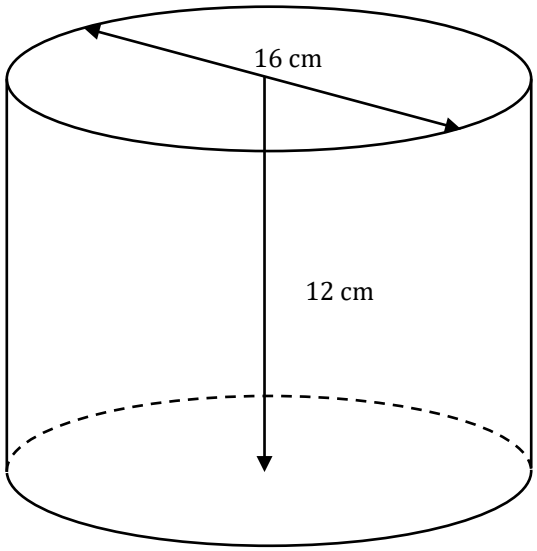
Answer _____ cm^3

Turn over for next question

2

6 1500 ml of water is poured into an open-topped cylinder with diameter 16 cm and height 12 cm. *(Level 5)*

$1 \text{ ml} = 1 \text{ cm}^3$



Not drawn accurately

How high does the water reach from the base of the cylinder?

Give your answer to 2 decimal places.

[3 marks]

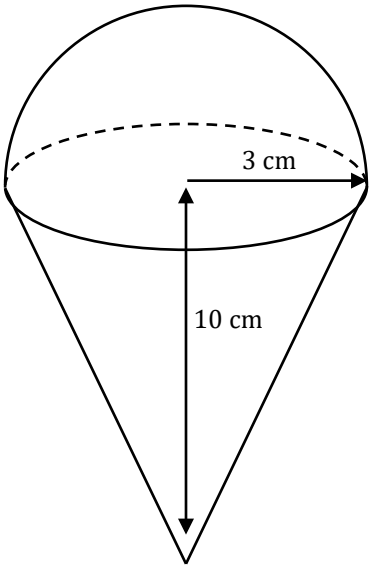
Answer _____

Turn over for next question

3

7 The diagram below shows an ice-cream cone. *(Level 6)*

This consists of a cone, of radius $3\ cm$ and height $10\ cm$ with an attached hemisphere of ice cream of radius $3\ cm$, as shown below.



Not drawn accurately

Assuming the cone is completely filled, calculate the volume of Ice-cream held by the cone.

Give your answer in terms of π

[4 marks]

Answer _____

4

8 The diagram below shows a square based pyramid $ABCDE$. *(Level 7)*

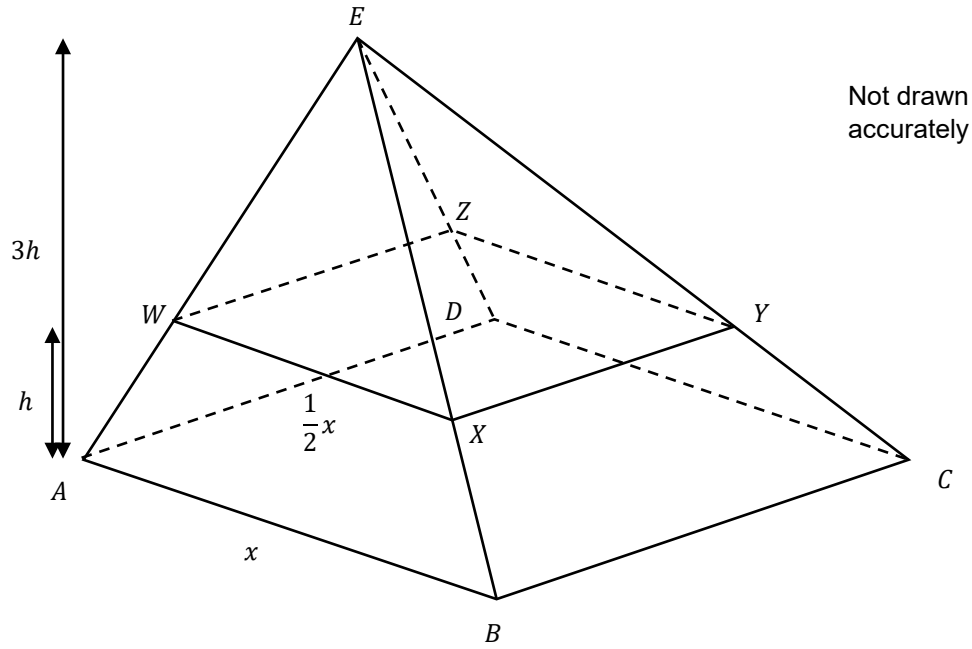
The vertical height of the pyramid is $3h$

Water fills the square based pyramid to a height of h.

The top of the water can be seen along line $WXYZ$.

$AB = x$

$WX = \frac{1}{2}x$



Not drawn accurately

Calculate the proportion of the pyramid that is filled with water.

Give your answer as a fraction in its simplest form.

[4 marks]

Answer _____

End of Questions

4

END