

3D Pythagoras and Trigonometry

For Pearson Edexcel GCSE Mathematics (1MA1) • Higher tier

Name _____

Total marks: **23**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

- 1** $ABCDEFGH$ is a cuboid.

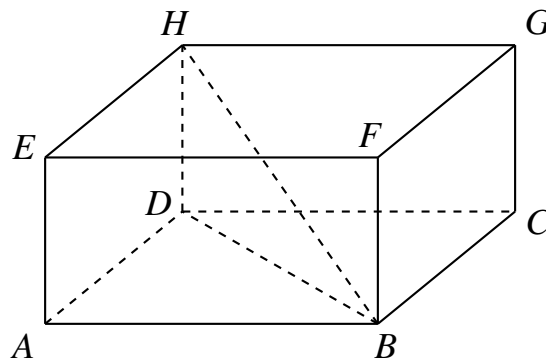


Diagram **NOT** accurately drawn

$$DH = 6 \text{ cm}$$

The angle between BH and the plane $ABCD$ is 35°

Work out the length of BH .

Give your answer correct to 3 significant figures.

..... cm
(2)

(Total for Question 1 is 2 marks)

- 2 Will a 45 cm stick fit inside a box measuring 30 cm by 25 cm by 20 cm?
You must show your working.

.....
(3)

(Total for Question 2 is 3 marks)

- 3 $ABCDEFGH$ is a cuboid.

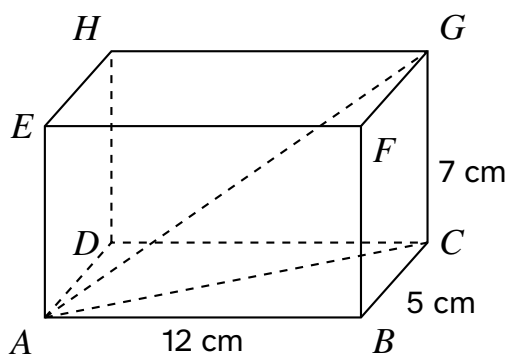


Diagram **NOT** accurately drawn

Calculate the size of the angle between AG and the plane $ABCD$.
Give your answer correct to 1 decimal place.

..... °
(4)

(Total for Question 3 is 4 marks)

- 4 A pole stands vertically at a corner of a rectangular field $ABCD$.
 $AB = 40$ m and $BC = 30$ m. The pole is at A and is 15 m tall. T is the top of the pole.
 Calculate the size of angle TCA .
 Give your answer correct to 1 decimal place.

..... °
 (4)

(Total for Question 4 is 4 marks)

- 5 The diagram shows a cuboid $ABCDEFGH$.

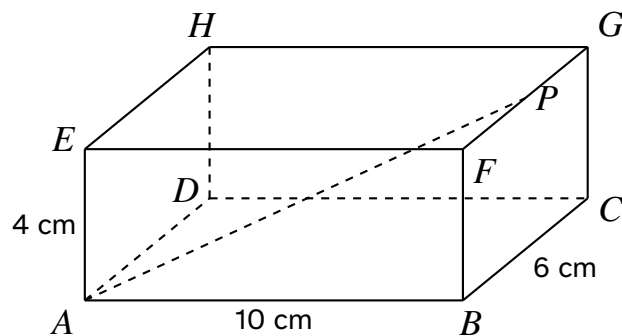


Diagram **NOT** accurately drawn

$AB = 10$ cm $BC = 6$ cm $AE = 4$ cm

P is the midpoint of the edge FG .

Calculate the size of the angle between the line AP and the plane $ABCD$.

Give your answer correct to 1 decimal place.

..... °
 (5)

(Total for Question 5 is 5 marks)

- 6 $VABCD$ is a solid pyramid with V vertically above the centre of the base.

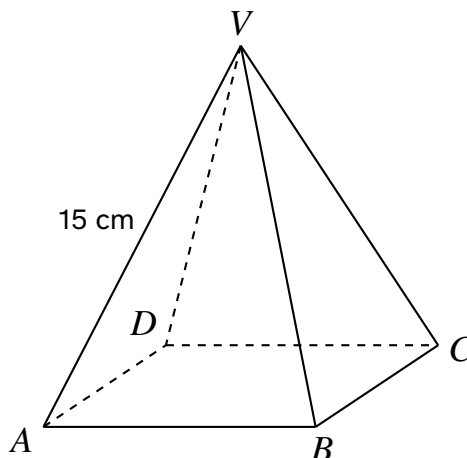


Diagram **NOT** accurately drawn

$ABCD$ is a square.

Each sloping edge of the pyramid has length 15 cm.

The angle between each sloping edge and the base $ABCD$ is 62°

Calculate the volume of the pyramid.

Give your answer correct to 3 significant figures.

(Volume of a pyramid = $\frac{1}{3} \times \text{area of base} \times \text{vertical height}$)

..... cm^3
(5)

(Total for Question 6 is 5 marks)