

Geometry Test IB Review Questions

1. Triangle ABC is such that AC is 7 cm, angle $\hat{A}BC$ is 65° and angle $\hat{A}CB$ is 30° .

(a) Sketch the triangle writing in the side length and angles. (1)

(b) Calculate the length of AB. (2)

(c) Find the area of triangle ABC. (3)

Working:

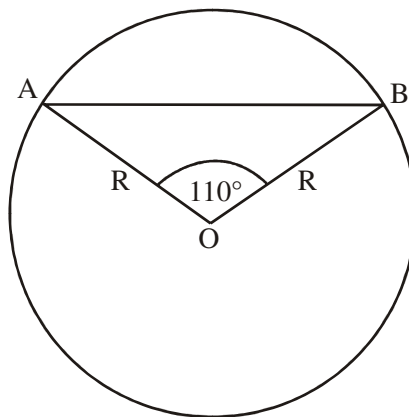
Answers:

(b)

(c)

(Total 6 marks)

2. The diagram shows a circle of radius R and centre O. A triangle AOB is drawn inside the circle. The vertices of the triangle are at the centre, O, and at two points A and B on the circumference. Angle $\hat{A}OB$ is 110 degrees.



(a) Given that the area of the circle is $36\pi \text{ cm}^2$, calculate the length of the radius R.

- (b) Calculate the length AB.
- (c) Write down the side length L of a square which has the same area as the given circle.

Working:

Answers:

- (a)
- (b)
- (c)

(Total 6 marks)

3. The diagram below shows a field ABCD with a fence BD crossing it. AB = 15m, AD = 20 m and angle $\hat{BAD} = 110^\circ$. BC = 22 m and angle $\hat{BDC} = 30^\circ$.

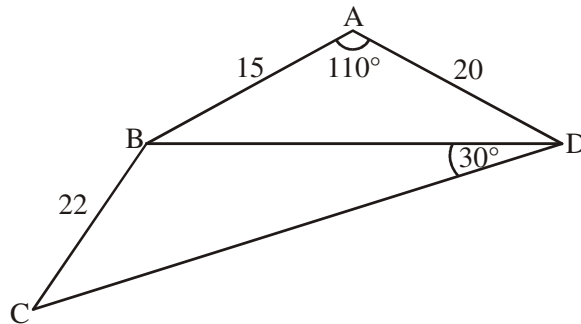


diagram not to scale

- (a) Calculate the length of BD. (3)

- (b) Calculate the size of angle \hat{BCD} . (3)

One student gave the answer to (a) “correct to 1 significant figure” and used this answer to calculate the size of angle \hat{BCD} .

- (c) Write down the length of BD correct to 1 significant figure. (1)

(d) Find the size of angle \hat{BCD} that the student calculated, **giving your answer correct to 1 decimal place.**

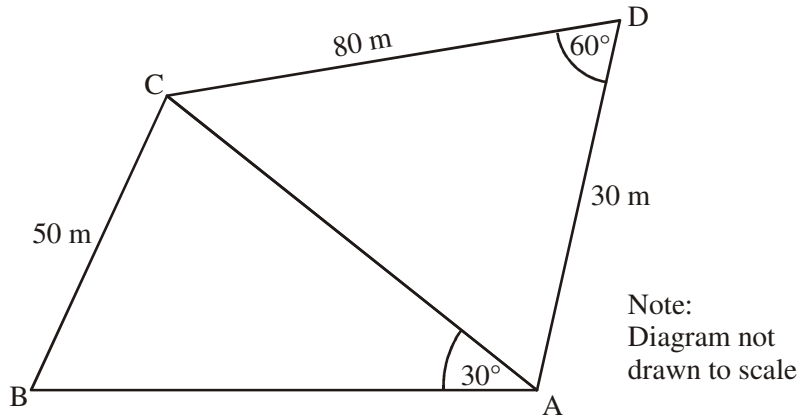
(2)

(e) Hence find the percentage error in his answer for angle \hat{BCD} .

(3)

(Total 12 marks)

4. The figure shows two adjacent triangular fields ABC and ACD where $AD = 30$ m, $CD = 80$ m, $BC = 50$ m. $\hat{ADC} = 60^\circ$ and $\hat{BAC} = 30^\circ$.



(a) Using triangle ACD calculate the length AC.

(b) Calculate the size of \hat{BCA} .

Working:

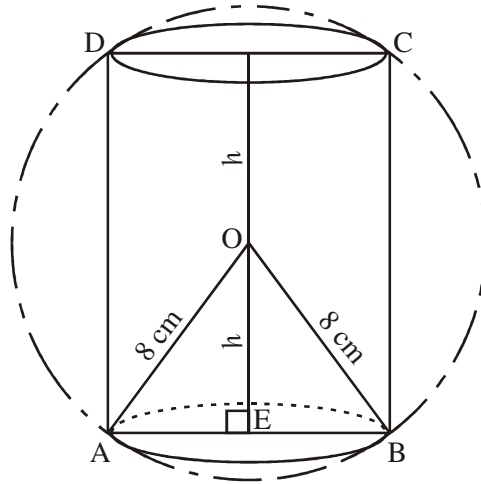
Answers:

(a)

(b)

(Total 8 marks)

5. A cylinder is cut from a solid wooden sphere of radius 8 cm as shown in the diagram. The height of the cylinder is $2h$ cm.



- (a) Find AE (the radius of the cylinder), in terms of h . (2)
- (b) Show that the volume (V) of the cylinder may be written as
- $$V = 2\pi h (64 - h^2) \text{ cm}^3. \quad (2)$$
- (c) (i) Determine, correct to three significant figures, the height of the cylinder with the greatest volume that can be produced in this way. (5)
- (ii) Calculate this greatest volume, giving your answer correct to the nearest cm^3 . (3)

(Total 12 marks)

6. Three right pyramids *Andal*, *Batsu* and *Cartos* were discovered in the dense jungle of *Marhartmasol*. Each pyramid has a square base with centres A, B and C respectively.

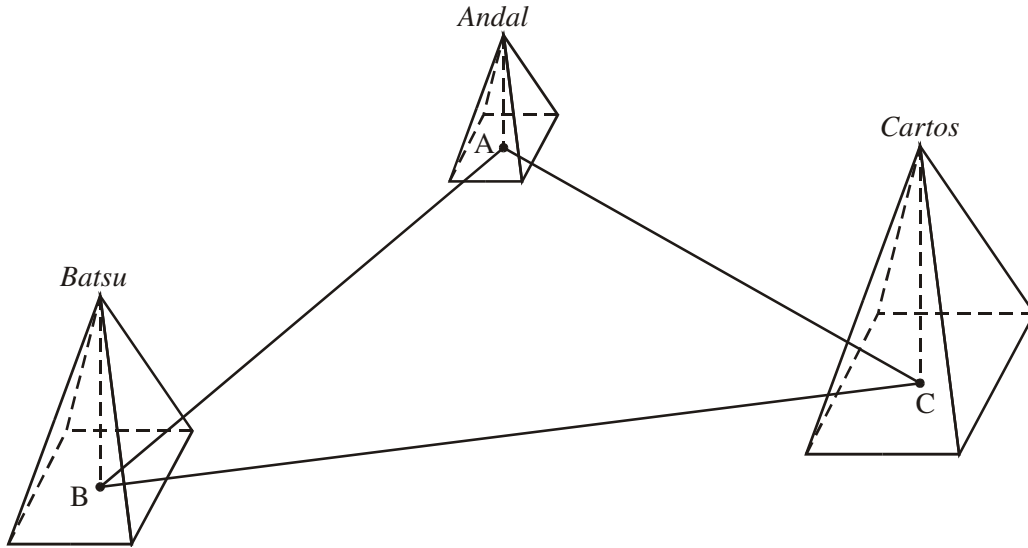


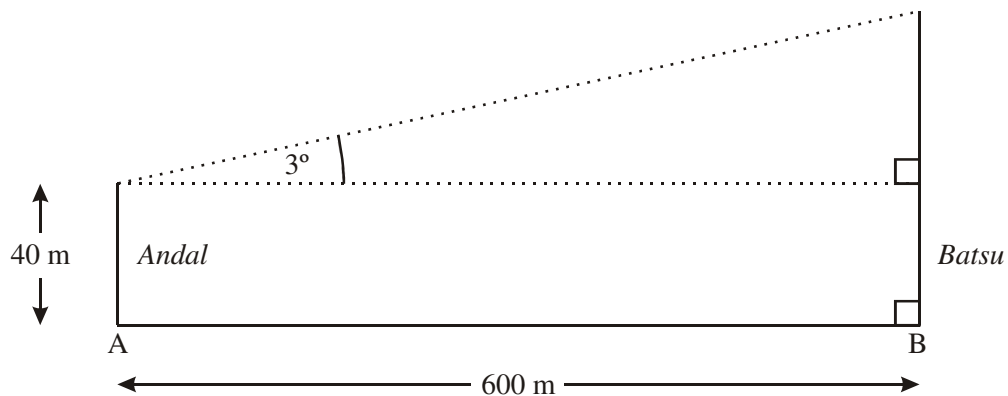
Diagram not to scale

A surveying team was lowered from a helicopter to the top of *Andal* to take measurements of the area. *Andal* is 40 metres high. The angle of elevation from the top of *Andal* to the top of *Batsu* is 3° . The horizontal distance from A, the centre of the base of *Andal*, to B, the centre of the base of *Batsu* is 600 metres.

- (a) Use the diagram below to find the height of *Batsu*.

(3)

Diagram not to scale



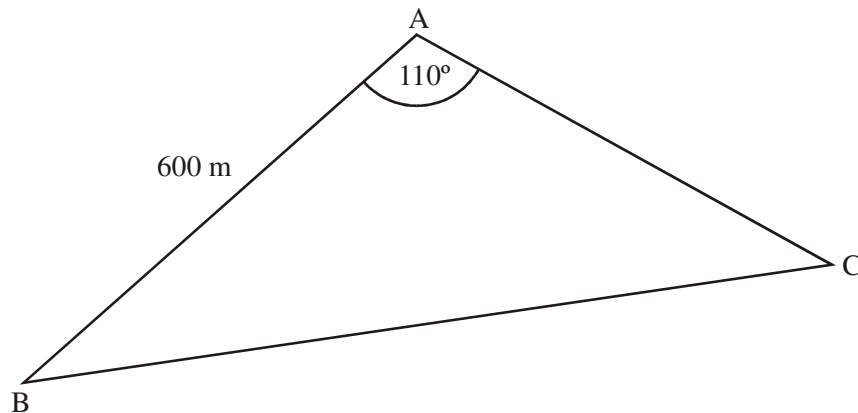
- (b) *Cartos* is found to be 92 metres high and the angle of elevation from the top of *Andal* to the top of *Cartos* is 4° .
- (i) Draw a diagram similar to the diagram in part (a) to show the relationship between *Andal* and *Cartos*.

(ii) What is the horizontal distance from A to C?

(4)

- (c) The diagram below represents measurements relative to the centres of the bases of the pyramids. The surveyors determined the angle at A to be 110° , and the distance AB to be 600 m.

Diagram not to scale



- (i) What is the distance between B and C? Give your answer to the nearest metre.
- (ii) What is the size of angle ACB?
- (iii) What is the area of the land inside triangle ABC?

(8)
(Total 15 marks)