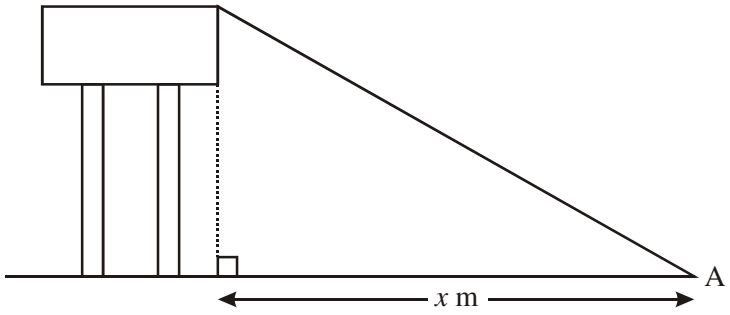
2-D Trigonometry IB Questions – Review

1. The diagram shows a water tower standing on horizontal ground. The height of the tower is 26.5 m.



From a point A on the ground the angle of elevation to the top of the tower is 28°.

(a) On the diagram, show and label the angle of elevation, 28°.

(b) Calculate, **correct to the nearest metre**, the distance x m.

Working:

Answers:

(b) ……..

(Total 4 marks)

2. Triangle ABC is drawn such that angle $A\hat{B}C$ is 90°, angle $A\hat{C}B$ is 60° and AB is 7.3 cm.

(a) (i) Sketch a diagram to illustrate this information. Label the points A, B, C. Show the angles 90°, 60° and the length 7.3 cm on your diagram.

(ii) Find the length of BC.

(3)

Point D is on the straight line AC extended and is such that angle $C\hat{D}B$ is 20°.

(b) (i) Show the point D and the angle 20° on your diagram.

(ii) Find the size of angle $C\hat{B}D$.

(3)

Working:

Answers:

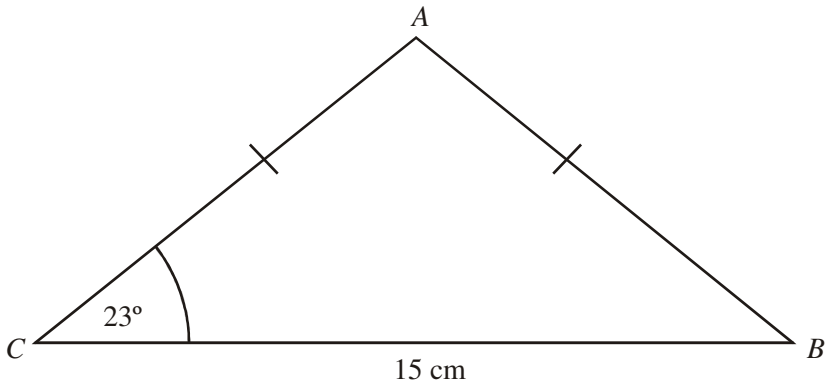
(a) (ii).....

(b) (ii).....

(Total 6 marks)

3. In the diagram, triangle *ABC* is isosceles. *AB* = *AC*, *CB* = 15 cm and angle *ACB* is 23°.

Diagram not to scale



Find

(a) the size of angle *CAB*;

(b) the length of *AB*.

Working:

Answers:

(a) ……..

(b) ……..

(Total 4 marks)

4. The diagram below shows an equilateral triangle ABC, with each side 3 cm long. The side [BC] is extended to D so that CD = 4 cm.

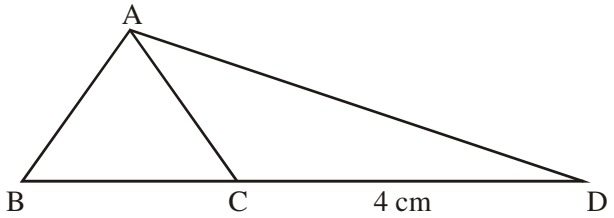


Diagram not to scale

Calculate, **correct to two decimal places**, the length of [AD].

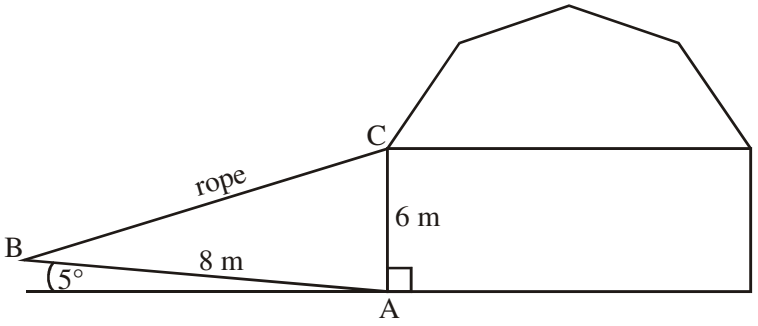
Working:

Answer:

.....

(Total 4 marks)

5. The following diagram shows the side view of a tent. The side of the tent AC is 6 m high. The ground AB slopes upwards from the bottom of the tent at point A, at an angle of 5° from the horizontal. The tent is attached to the ground by a rope at point B, a distance of 8 m from its base.



(a) Calculate the angle BAC.

(b) Calculate the length of the rope, BC.

(c) Calculate the angle CBA that the rope makes with the sloping ground.

Working:

Answers:

(a) .....

(b) .....

(c) .....

(Total 8 marks)

6. (a) A farmer wants to construct a new fence across a field. The plan is shown below. The new fence is indicated by a dotted line.

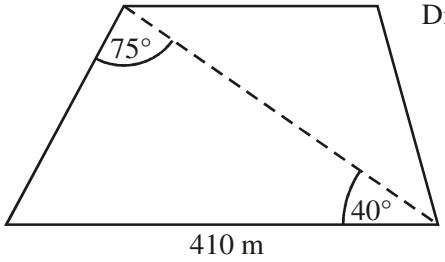


Diagram not to scale

Calculate the length of the fence.

(5)

(b) The fence creates two sections of land. Find the area of the smaller section of land ABC, given the additional information shown below.

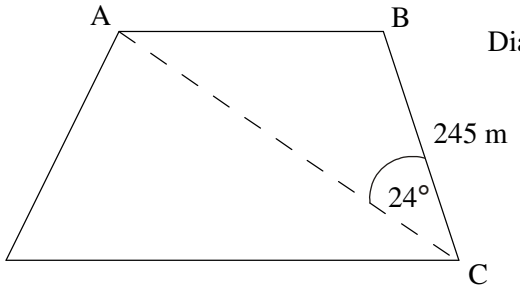
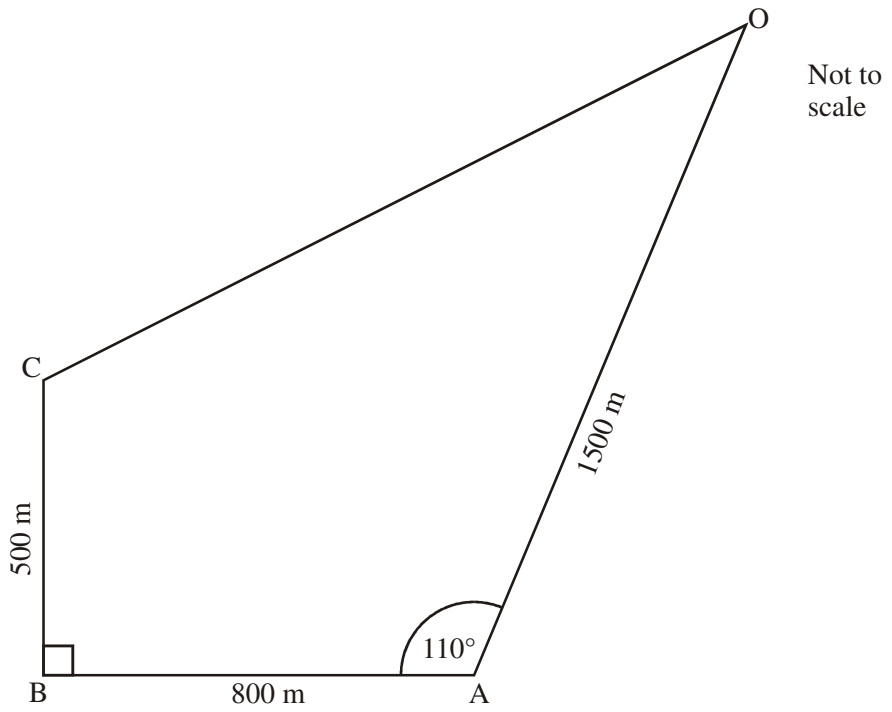


Diagram not to scale

(3)
(Total 8 marks)

7. A cross-country running course is given in the diagram below. Runners start and finish at point O.



(a) Show that the distance CA is 943 m correct to 3 s.f.

(2)

(b) Show that angle BCA is 58.0° correct to 3 s.f.

(2)

(c) (i) Calculate the angle CAO.

(ii) Calculate the distance CO.

(5)

(d) Calculate the area enclosed by the course OABC.

(4)

(e) Gonzales runs at a speed of 4 m s^{-1}. Calculate the time, in minutes, taken for him to complete the course.

(3)

(Total 16 marks)