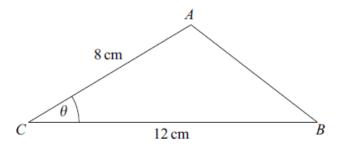
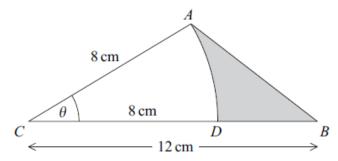
## **Core 2 Trigonometry Questions**

4 The triangle ABC, shown in the diagram, is such that AC = 8 cm, CB = 12 cm and angle  $ACB = \theta$  radians.



The area of triangle  $ABC = 20 \,\mathrm{cm}^2$ .

- (a) Show that  $\theta = 0.430$  correct to three significant figures. (3 marks)
- (b) Use the cosine rule to calculate the length of AB, giving your answer to two significant figures. (3 marks)
- (c) The point D lies on CB such that AD is an arc of a circle centre C and radius 8 cm. The region bounded by the arc AD and the straight lines DB and AB is shaded in the diagram.

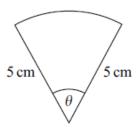


Calculate, to two significant figures:

(i) the length of the arc AD; (2 marks)

(ii) the area of the shaded region. (3 marks)

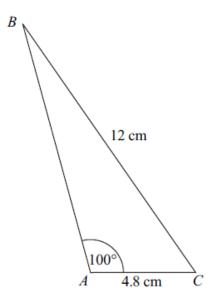
1 The diagram shows a sector of a circle of radius 5 cm and angle  $\theta$  radians.



The area of the sector is 8.1 cm<sup>2</sup>.

- (a) Show that  $\theta = 0.648$ . (2 marks)
- (b) Find the perimeter of the sector. (3 marks)

2 The diagram shows a triangle ABC.

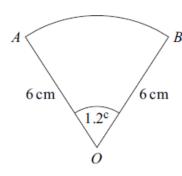


The lengths of AC and BC are 4.8 cm and 12 cm respectively.

The size of the angle BAC is  $100^{\circ}$ .

- (a) Show that angle  $ABC = 23.2^{\circ}$ , correct to the nearest  $0.1^{\circ}$ . (3 marks)
- (b) Calculate the area of triangle ABC, giving your answer in cm<sup>2</sup> to three significant figures. (3 marks)

1 The diagram shows a sector OAB of a circle with centre O.



The radius of the circle is 6 cm and the angle AOB is 1.2 radians.

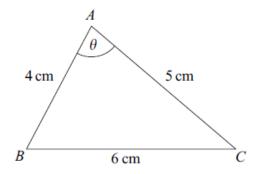
(a) Find the area of the sector OAB.

(2 marks)

(b) Find the perimeter of the sector OAB.

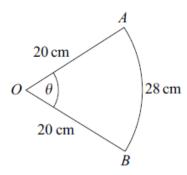
(3 marks)

4 The triangle ABC, shown in the diagram, is such that BC = 6 cm, AC = 5 cm and AB = 4 cm. The angle BAC is  $\theta$ .



- (a) Use the cosine rule to show that  $\cos \theta = \frac{1}{8}$ . (3 marks)
- (b) Hence use a trigonometrical identity to show that  $\sin \theta = \frac{3\sqrt{7}}{8}$ . (3 marks)
- (c) Hence find the area of the triangle ABC. (2 marks)

3 The diagram shows a sector OAB of a circle with centre O and radius 20 cm. The angle between the radii OA and OB is  $\theta$  radians.

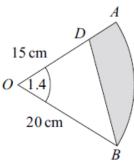


The length of the arc AB is  $28 \, \text{cm}$ .

(a) Show that  $\theta = 1.4$ . (2 marks)

(b) Find the area of the sector *OAB*. (2 marks)

(c) The point D lies on OA. The region bounded by the line BD, the line DA and the arc AB is shaded.



The length of OD is 15 cm.

- (i) Find the area of the shaded region, giving your answer to three significant figures.

  (3 marks)
- (ii) Use the cosine rule to calculate the length of BD, giving your answer to three significant figures. (3 marks)