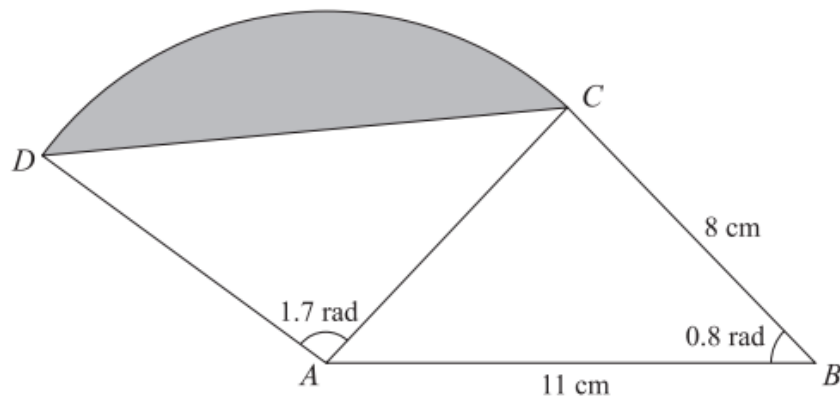


**Radians, Circle Sectors and Triangles Exam Questions (From OCR 4722)**

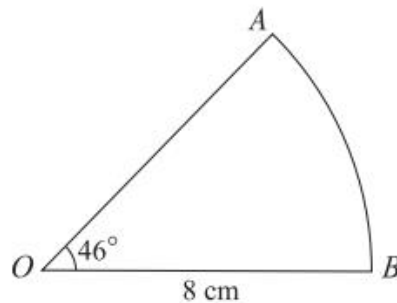
**Q1, (Jun 2006, Q7)**



The diagram shows a triangle  $ABC$ , and a sector  $ACD$  of a circle with centre  $A$ . It is given that  $AB = 11$  cm,  $BC = 8$  cm, angle  $ABC = 0.8$  radians and angle  $DAC = 1.7$  radians. The shaded segment is bounded by the line  $DC$  and the arc  $DC$ .

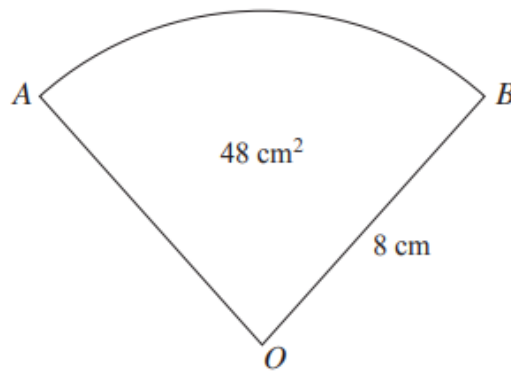
- (i) Show that the length of  $AC$  is 7.90 cm, correct to 3 significant figures. [3]
- (ii) Find the area of the shaded segment. [3]
- (iii) Find the perimeter of the shaded segment. [4]

**Q2, (Jan 2007, Q2)**



The diagram shows a sector  $OAB$  of a circle, centre  $O$  and radius 8 cm. The angle  $AOB$  is  $46^\circ$ .

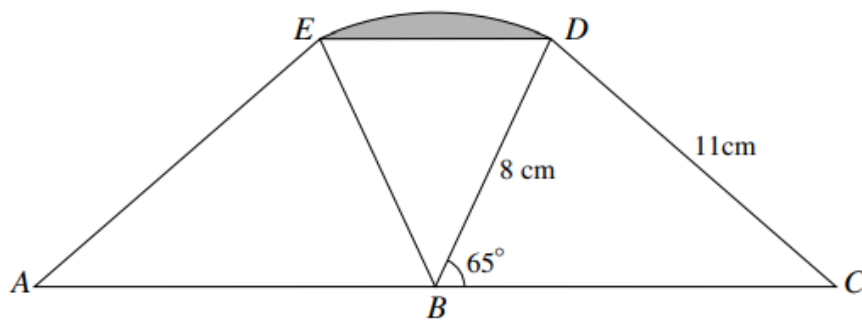
- (i) Express  $46^\circ$  in radians, correct to 3 significant figures. [2]
- (ii) Find the length of the arc  $AB$ . [1]
- (iii) Find the area of the sector  $OAB$ . [2]



The diagram shows a sector  $AOB$  of a circle with centre  $O$  and radius  $8\text{ cm}$ . The area of the sector is  $48\text{ cm}^2$ .

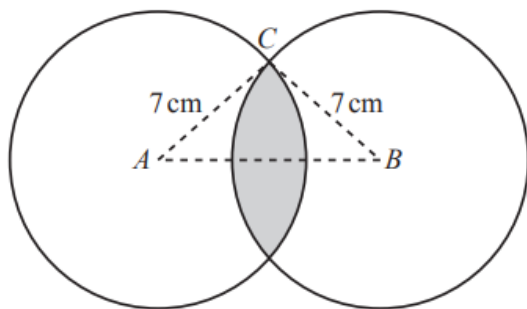
- (i) Find angle  $AOB$ , giving your answer in radians. [2]
- (ii) Find the area of the segment bounded by the arc  $AB$  and the chord  $AB$ . [3]
- 

Q4, (Jun 2010, Q5)



The diagram shows two congruent triangles,  $BCD$  and  $BAE$ , where  $ABC$  is a straight line. In triangle  $BCD$ ,  $BD = 8\text{ cm}$ ,  $CD = 11\text{ cm}$  and angle  $CBD = 65^\circ$ . The points  $E$  and  $D$  are joined by an arc of a circle with centre  $B$  and radius  $8\text{ cm}$ .

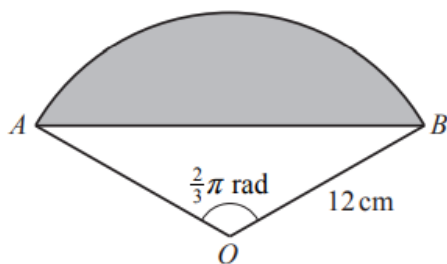
- (i) Find angle  $BCD$ . [2]
- (ii) (a) Show that angle  $EBD$  is  $0.873$  radians, correct to 3 significant figures. [2]
- (b) Hence find the area of the shaded segment bounded by the chord  $ED$  and the arc  $ED$ , giving your answer correct to 3 significant figures. [4]
-



The diagram shows two circles of radius 7 cm with centres  $A$  and  $B$ . The distance  $AB$  is 12 cm and the point  $C$  lies on both circles. The region common to both circles is shaded.

- (i) Show that angle  $CAB$  is 0.5411 radians, correct to 4 significant figures. [2]
- (ii) Find the perimeter of the shaded region. [2]
- (iii) Find the area of the shaded region. [5]

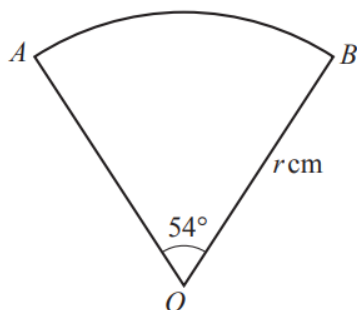
**Q6, (Jun 2014, Q3)**



The diagram shows a sector  $OAB$  of a circle, centre  $O$  and radius 12 cm. The angle  $AOB$  is  $\frac{2}{3}\pi$  radians.

- (i) Find the exact length of the arc  $AB$ . [2]
- (ii) Find the exact area of the shaded segment enclosed by the arc  $AB$  and the chord  $AB$ . [5]

**Q7, (Jun 2016, Q2)**



The diagram shows a sector  $AOB$  of a circle with centre  $O$  and radius  $r$  cm. The angle  $AOB$  is  $54^\circ$ . The perimeter of the sector is 60 cm.

- (i) Express  $54^\circ$  exactly in radians, simplifying your answer. [2]
- (ii) Find the value of  $r$ , giving your answer correct to 3 significant figures. [3]