5.2) Arc length

Worked example	Your turn
Find the length of the arc of a circle of radius 5.2 cm, given that the arc subtends an angle of 0.4 radians at the centre of the circle.	Find the length of the arc of a circle of radius 5.2 cm, given that the arc subtends an angle of 0.8 radians at the centre of the circle.
	$4.16 \ cm$
Find the length of the arc of a circle of radius 10.4 cm, given that the arc subtends an angle of 0.2 radians at the centre of the circle.	

Worked example	Your turn
An arc AB of a circle with radius 0.35 cm and centre O has a length of 2.45 cm. Find the angle $\angle AOB$ subtended by the arc at the centre of the circle	An arc AB of a circle with radius 7 cm and centre O has a length of 2.45 cm. Find the angle $\angle AOB$ subtended by the arc at the centre of the circle
	$0.35\ rad$
An arc AB of a circle with radius 0.7 cm and centre O has a length of 4.9 cm. Find the angle $\angle AOB$ subtended by the arc at the centre of the circle	

Worked example	Your turn
The border of a garden pond consists of a straight edge AB of length 4.8 m, and a curved part C, also connecting A and B. The curve part is an arc of a circle, centre O, radius 4 m. Find the length of C.	The border of a garden pond consists of a straight edge AB of length 2.4 m, and a curved part C, also connecting A and B. The curve part is an arc of a circle, centre O, radius 2 m. Find the length of C. 9.99 m

Worked example	Your turn
A triangle ABC is such that $AB = 4\ cm$, $AC = 5.5\ cm$ and $\angle BAC = 0.35$ radians. The arc BD, where D lies on AC, is an arc of a circle with centre A and radius 4 cm. A region R, is bounded by the straight lines BC and CD and the arc BD. Find the perimeter of R	A triangle ABC is such that $AB = 8\ cm$, $AC = 11\ cm$ and $\angle BAC = 0.7$ radians. The arc BD, where D lies on AC, is an arc of a circle with centre A and radius 8 cm. A region R, is bounded by the straight lines BC and CD and the arc BD. Find the perimeter of R 15.7 cm (3 sf)

Worked example	Your turn
A sector of a circle of radius 30 cm contains an angle of θ radians. Given that the perimeter of the sector is 84 cm, find the value of θ	A sector of a circle of radius 15 cm contains an angle of θ radians. Given that the perimeter of the sector is 42 cm, find the value of θ $\theta = 0.8$ rad

Worked example	Your turn
The perimeter of a sector OAB is four times the length of the arc AB. Find the size of angle AOB	The perimeter of a sector OAB is four times the length of the arc AB. Find the size of angle AOB $$\theta = 2 \text{ rad}$$