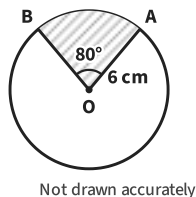


1 Parts of a circle

O is the centre of the circle.

- Name the shaded region and the curved edge AB.
- Find the perimeter of the shaded region in terms of π .



Not drawn accurately

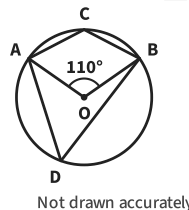
a) a sector; AB is an arc

$$b) 6 + 6 + \frac{80}{360} \times 12\pi = 12 + \frac{8\pi}{3} \text{ cm}$$

2 Angle at the centre

O is the centre of the circle.

- Find angle ACB. Give a reason.
- Angle ADB = $(3y + 10)^\circ$. Find y.



Not drawn accurately

$$a) 360 - 110 = 250^\circ, 250 \div 2 = 125^\circ$$

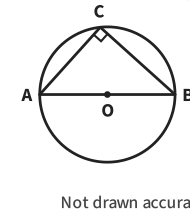
(angle at centre is twice angle at circumference)

$$b) ADB = 110 \div 2 = 55^\circ, 3y + 10 = 55, y = 15$$

3 Angle in a semicircle

AB is a diameter of the circle, centre O.

- Angle CAB = $3x^\circ$ and angle CBA = $(2x + 10)^\circ$. Find x.
- AB = 10 cm. Find AC to 1 decimal place.



Not drawn accurately

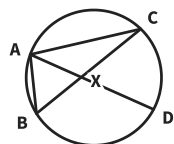
$$a) \text{ angle } ACB = 90^\circ, \text{ so } 5x + 10 = 90, x = 16$$

$$b) \text{ angle } CAB = 48^\circ, AC = 10 \cos 48^\circ = 6.7 \text{ cm}$$

4 Angles in the same segment

Chords AD and BC cross at X.

- Angle ACB = $(2x + 8)^\circ$ and angle ADB = $(5x - 19)^\circ$. Find x.
- Angle CAD = 37° . Find angle AXC.



Not drawn accurately

$$a) \text{ same segment: } 5x - 19 = 2x + 8, x = 9$$

angle ACB = 26°

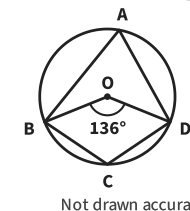
$$b) \text{ triangle } AXC: 180 - 37 - 26 = 117^\circ$$

Circle geometry revision mat answers

5 Cyclic quadrilaterals

ABCD is a cyclic quadrilateral. O is the centre of the circle. Give a reason for each answer.

- Find angle BAD.
- Find angle BCD.



Not drawn accurately

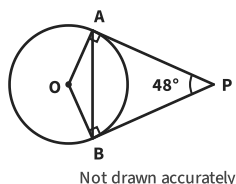
$$a) 136 \div 2 = 68^\circ, \text{ the angle at the centre is twice the angle at the circumference}$$

$$b) 180 - 68 = 112^\circ, \text{ opposite angles add to } 180^\circ$$

6 Tangents

PA and PB are tangents to the circle, centre O.

- Find angle OAB. Give reasons.
- The radius is 7 cm. Find PA to 1 decimal place.



Not drawn accurately

$$a) PA = PB, \text{ so } PAB = (180 - 48) \div 2 = 66^\circ$$

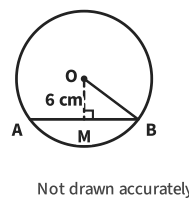
$OAP = 90^\circ$ (tangent, radius), $OAB = 90 - 66 = 24^\circ$

$$b) \text{ angle } APO = 24^\circ, PA = 7 \div \tan 24^\circ = 15.7 \text{ cm}$$

7 Chords

O is the centre. The chord AB is 16 cm long and 6 cm from O.

- Find the radius of the circle.
- Chord CD is 12 cm long, parallel to AB and on the same side of O. How far apart are the chords?



Not drawn accurately

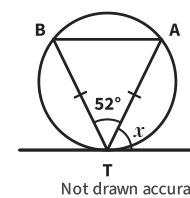
$$a) MB = 8, OB = \sqrt{6^2 + 8^2} = 10 \text{ cm}$$

$$b) \sqrt{10^2 - 6^2} = 8, \text{ so } 8 - 6 = 2 \text{ cm}$$

8 Alternate segment

The straight line is a tangent at T. TA = TB.

- Find angle TBA.
- Find the angle x. Give a reason.



Not drawn accurately

$$a) (180 - 52) \div 2 = 64^\circ, \text{ isosceles}$$

$$b) x = 64^\circ, \text{ the alternate segment theorem}$$