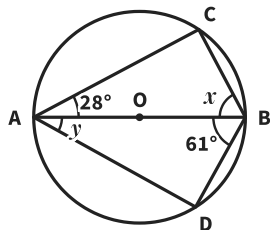


# Circle Theorems: Angle in a Semicircle *stretch*

ANSWERS

1

AB is a diameter of the circle.  
Find angles  $x$  and  $y$ .



Not drawn accurately

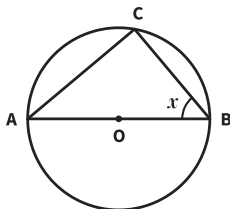
$$ACB = ADB = 90^\circ \text{ (angle in a semicircle)}$$

$$x = 180 - 90 - 28, y = 180 - 90 - 61$$

Answer  $x = 62^\circ, y = 29^\circ$

2

AB is a diameter. Angles CAB and CBA are in the ratio 4 : 5. Find angle CBA, marked  $x$ .



Not drawn accurately

$$ACB = 90^\circ \text{ (angle in a semicircle), so}$$

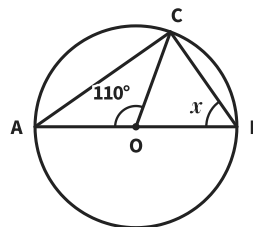
$$CAB + CBA = 90^\circ$$

$$9 \text{ parts} = 90^\circ: x = 5 \times 10$$

Answer  $x = 50^\circ$

3

AB is a diameter and O is the centre.  
Find angle ABC, marked  $x$ .



Not drawn accurately

$$OA = OC, \text{ so angle}$$

$$CAB = (180 - 110) \div 2 = 35^\circ$$

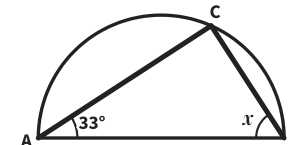
$$ACB = 90^\circ \text{ (angle in a semicircle),}$$

$$x = 180 - 90 - 35$$

Answer  $x = 55^\circ$

4

A window is a semicircle with a straight base AB. Struts run from C on the curved edge to A and B. Strut CA meets the base at  $33^\circ$ . At what angle does strut CB meet the base?



Not drawn accurately

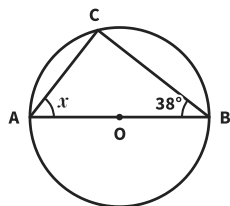
$$\text{angle } ACB = 90^\circ \text{ (angle in a semicircle)}$$

$$180 - 90 - 33 = 57^\circ$$

Answer  $57^\circ$

5

AB is a diameter. Tom says  $x = 90^\circ$  because AB is a diameter.  
Explain his mistake, then find  $x$ .



Not drawn accurately

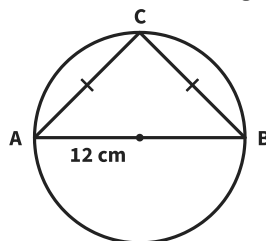
the  $90^\circ$  angle is at C, on the edge, facing the diameter

$$x = 180 - 90 - 38$$

Answer  $x = 52^\circ$

6

AB is a diameter of length 12 cm and  $CA = CB$ . Find the area of triangle ABC.



Not drawn accurately

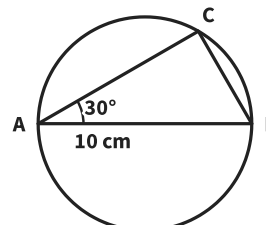
$CA = CB$ , so C is at the top: its height above AB is the radius, 6 cm

$$\text{area} = \frac{1}{2} \times 12 \times 6$$

Answer  $36 \text{ cm}^2$

7

AB is a diameter of length 10 cm and angle CAB =  $30^\circ$ . Find the length of BC.



Not drawn accurately

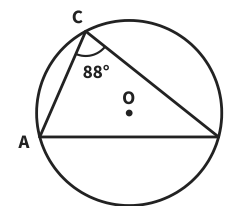
$$\text{angle } ACB = 90^\circ \text{ (angle in a semicircle)}$$

$$BC = 10 \sin 30^\circ = 10 \times \frac{1}{2}$$

Answer  $BC = 5 \text{ cm}$

8

O is the centre. Angle ACB =  $88^\circ$ .  
Is AB a diameter?  
Explain how you know.



Not drawn accurately

if AB were a diameter, angle ACB would be  $90^\circ$  (angle in a semicircle)

$88^\circ$  is not  $90^\circ$ , so AB is not a diameter

Answer  $\text{No}$