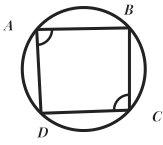


Circle theorems and algebra

1

$ABCD$ is a cyclic quadrilateral. Angle $DAB = (3x + 10)^\circ$ and angle $BCD = (2x + 20)^\circ$. Find x .



Theorem **Cyclic quadrilateral**

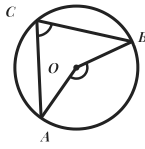
$$3x + 10 + 2x + 20 = 180$$

$$x = \boxed{}$$

Answer _____

2

O is the centre. Angle $AOB = (3x + 45)^\circ$ and angle $ACB = (x + 40)^\circ$. Find x .



Theorem **Angle at the centre**

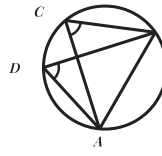
$$\boxed{} = \boxed{}$$

$$x = \boxed{}$$

Answer _____

3

Angle $ACB = (2x + 15)^\circ$ and angle $ADB = (5x - 30)^\circ$. Find x .



Theorem **Angles in the same segment**

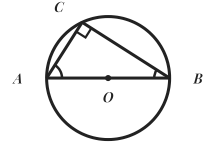
$$\boxed{} = \boxed{}$$

$$x = \boxed{}$$

Answer _____

4

AB is a diameter. Angle $CAB = x^\circ$ and angle $CBA = (2x + 15)^\circ$. Find x .

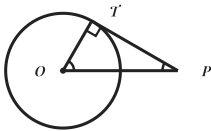


$$x = \boxed{}$$

Answer _____

5

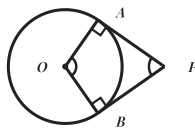
PT is a tangent at T and O is the centre. Angle $TOP = 3x^\circ$ and angle $OPT = (x + 10)^\circ$. Find x .



Answer _____

6

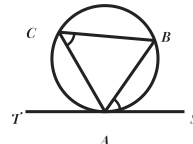
PA and PB are tangents and O is the centre. Angle $APB = (x + 40)^\circ$ and angle $AOB = 3x^\circ$. Find x .



Answer _____

7

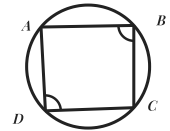
TS is a tangent at A . Angle $SAB = (2x + 8)^\circ$ and angle $ACB = (3x - 12)^\circ$. Find x .



Answer _____

8

$ABCD$ is a cyclic quadrilateral. Angle $ABC = (2x + 16)^\circ$ and angle $CDA = (3x - 6)^\circ$. Find the size of angle ABC .

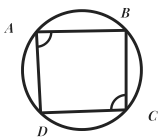


Answer _____

Circle theorems and algebra *further practice*

9

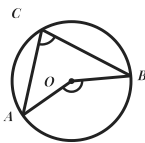
$ABCD$ is a cyclic quadrilateral. Angle $DAB = (5x - 4)^\circ$ and angle $BCD = (3x + 24)^\circ$. Find x .



Answer _____

10

O is the centre. Angle $AOB = (7x + 10)^\circ$ and angle $ACB = (3x + 15)^\circ$. Find x , then angle AOB .



Answer _____

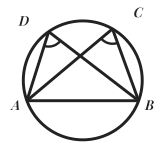
11

PQ is a diameter of a circle and R is a point on the circle. Angle $QPR = (3x - 5)^\circ$ and angle $PQR = (2x + 20)^\circ$. Find x .

Answer _____

12

Angle $ACB = (7x - 22)^\circ$ and angle $ADB = (4x + 11)^\circ$. Find x , then the size of each angle.



Answer _____

13

$ABCD$ is a cyclic quadrilateral and CD is extended to E . Angle $ADE = (4x + 5)^\circ$ and angle $ABC = (6x - 25)^\circ$. Find x .

Answer _____

14

TS is a tangent at A and O is the centre. The angle between the tangent and the chord AB is $(2x + 10)^\circ$. Angle AOB is $5x^\circ$. Find x .

Answer _____

15

$ABCD$ is a cyclic quadrilateral. Angle $A = 3x$, angle $B = 2y + 10$, angle $C = x + 2y$ and angle $D = x + 50$. Find x and y .

Answer _____

16

The angle at the centre is $4x$ and the angle at the circumference is $x + 25$, from the same arc. Jo writes $2 \times 4x = x + 25$. Explain her mistake and find x .

Answer _____