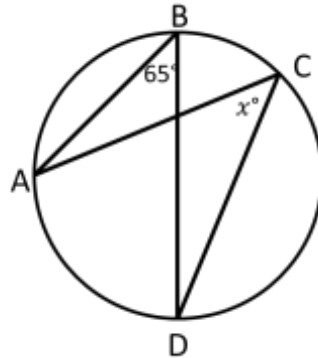


Circle theorems worksheet

Q1.

A, B, C and D are points on the circumference of a circle.



(a) Find the size of angle ACD

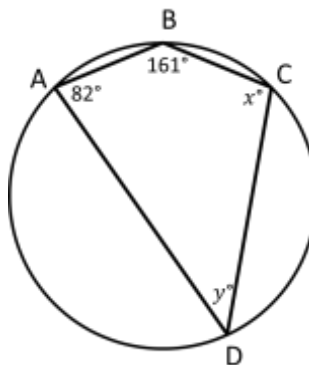
.....[1]

(b) Give a reason for your answer

.....
[2]

Q2.

A, B, C and D are points on the circumference of a circle.



(a) Find the size of angle x giving reasons for your answer.

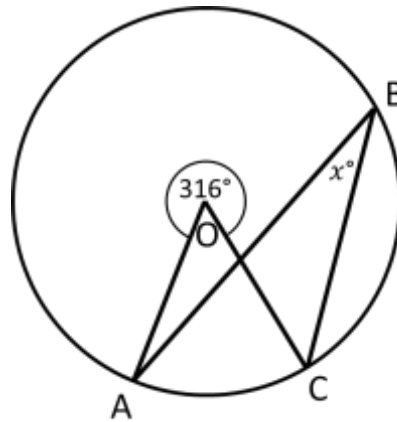
.....
[2]

(a) Find the size of angle y giving reasons for your answer.

.....
[2]

Q3.

In the diagram, A, B, C are points on the circumference of a circle and O is the centre of the circle.

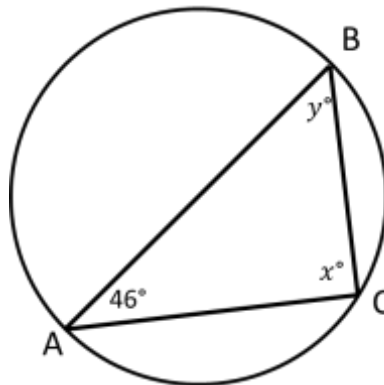


Find the size of angle ABC giving reasons for your answer.

.....
[2]

Q4.

In the diagram, A, B, C are points on the circumference of a circle and the line AB is the diameter.



(b) Find the size of angle x giving reasons for your answer.

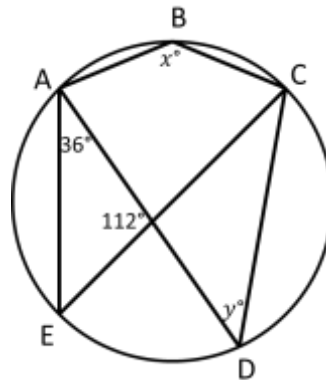
.....
[2]

(b) Find the size of angle y giving reasons for your answer.

.....
[2]

Q5.

A, B, C, D and E are points on the circumference of a circle.



(a) Find the size of angle x giving reasons for your answer.

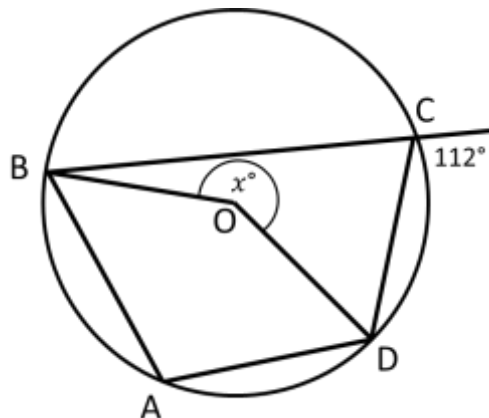
.....
[2]

(b) Find the size of angle y giving reasons for your answer.

.....
[2]

Q6. 

A, B, C and D are points on the circumference of a circle and O is the centre of the circle.



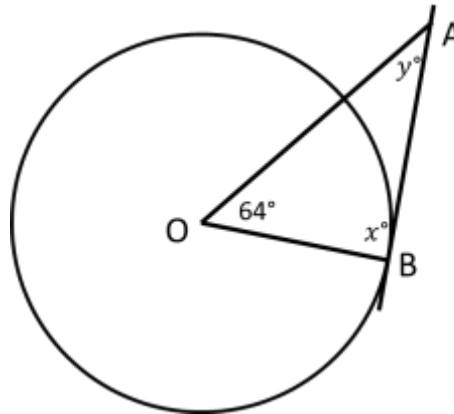
Find the size of angle x giving reasons for your answer.

.....

[2]

Q7. Q7MATHS
A02
Q7MATHS

B is a point on the circumference of the circle, O is the centre of the circle and the line AB is a tangent to the circle.



(a) Find the size of angle x

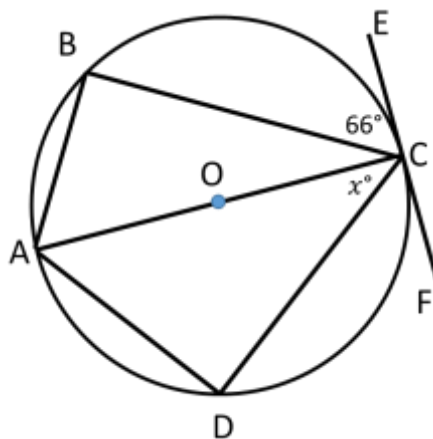
.....[1]

(b) Find the size of angle y

.....[1]

Q8. Q8MATHS
A02
Q8MATHS

A, B, C and D are points on the circumference of a circle and O is the centre of the circle. The line EF is a tangent to the circle.

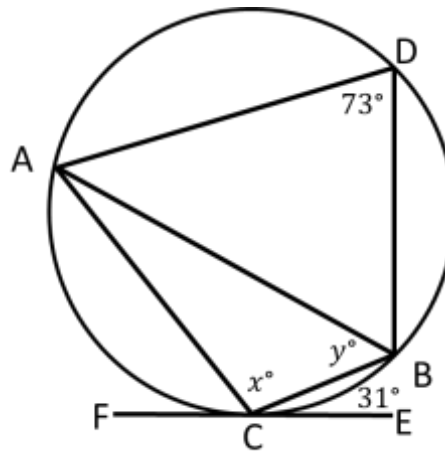


Given that the angle BAD has a value of $2x$, find the value of x .

.....[3]

Q9. EZY MATHS
A02
EZY MATHS

A, B, C and D are points on the circumference of a circle. The line EF is a tangent to the circle.



(a) Find the size of angle x

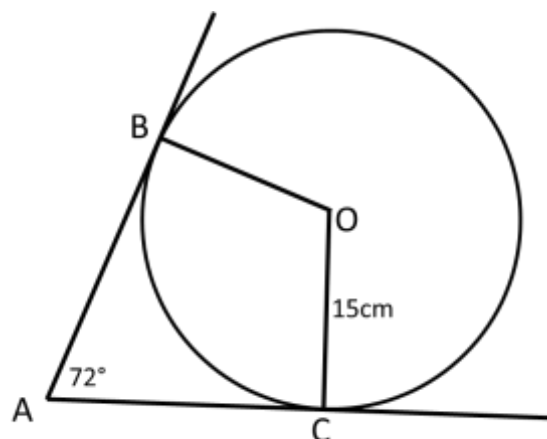
.....[2]

(b) Find the size of angle y

.....[1]

Q10. EZY MATHS
A03
EZY MATHS

A, B and C are points on the circumference of a circle and O is the centre of the circle. The lines AB and AC are tangents to the circle.



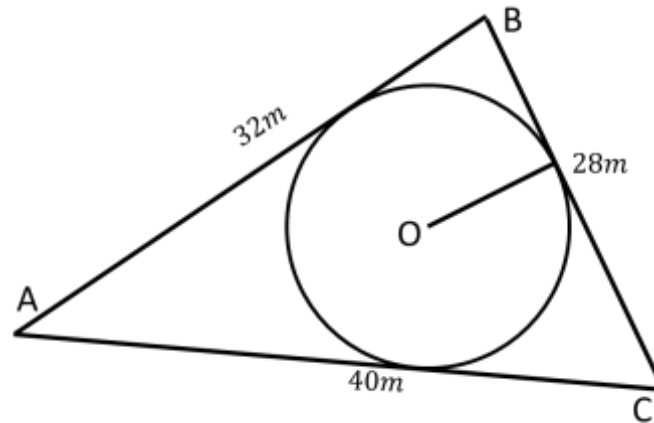
Calculate the length AO , giving your answer to 1 decimal place.

.....[4]

Q11. A03

The lines AB , BC and AC are tangents to the circle and O is the centre of the circle.

Given that the area of the triangle is 452.54m^2 , find the radius of the circle to 1 decimal place.



Answers**Q1.** $x = 65^\circ$ – Angles in same segment are equal**Q2.** $x = 98^\circ$ and $y = 19^\circ$ *Reasons include opposite angles in cyclic quadrilateral make 180° or angles in quad = 360°* **Q3.** $x = 22^\circ$ – Angle at centre is twice angle at circumference**Q4.** $x = 90^\circ$ – Angles in semicircle is 90° $y = 44^\circ$ – Angles in triangle**Q5.** $x = 148^\circ$ – Opposite angles in cyclic quadrilateral make 180 degrees. (opposite y) $y = 32^\circ$ – $AEC = 32$ degrees (angles in triangle)*then angles in same segment are equal (angle y)***Q6.** $x = 224^\circ$ $DCB = 68$ degrees, straight line = 180 degrees $BAD = 112$ degrees, opposite angles in cyclic quadrilateral make 180 degrees $x = 224$ degrees, angle at centre is twice angle at circumference.**Q7.** $x = 90^\circ, y = 26^\circ$ (angle in semicircle is 90 degrees then angles in a triangle)**Q8.** $x = 52$

Q9.

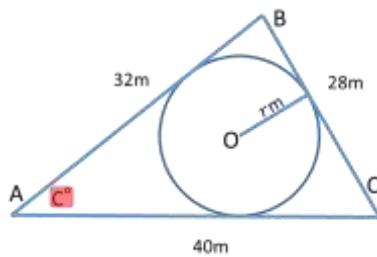
$$x = 107^\circ$$

$$y = 42^\circ$$

Q10.

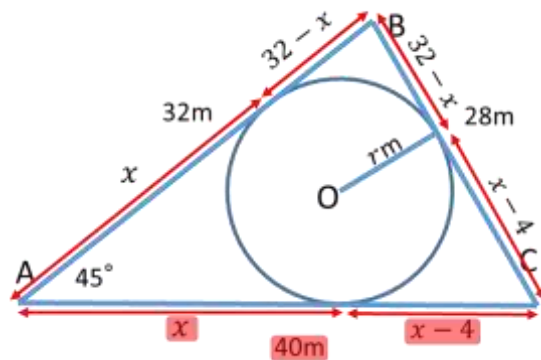
25.5cm (make a kite and use trigonometry to find the hypotenuse)

Q11.

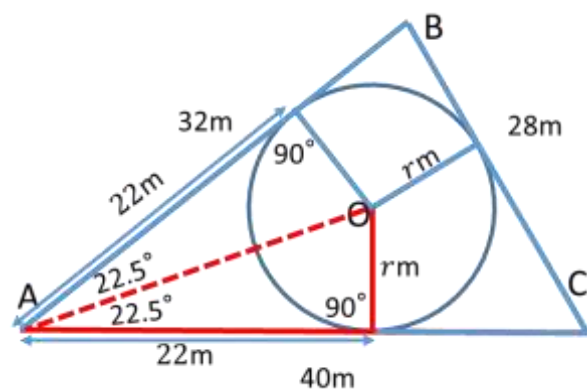


$$\begin{aligned} \text{Area of a triangle} \\ = \frac{1}{2} \times 32 \times 40 \sin C \end{aligned}$$

$$C = 45^\circ$$



$$x = 22$$



$$22 \tan(22.5) = r$$