

10. Circles

Q 1 True or False: It is possible to draw two circles passing through three given non-collinear points.

Mark (1)

Q 2 State the following statement as true or false. Give reasons also. The perpendicular bisector of two chords of a circle intersect at centre of the circle.

Mark (1)

Q 3 True or False :

If two arcs of a circle are congruent, then corresponding chords are unequal.

Mark (1)

Q 4 State the following statement as true or false . Give reasons also.

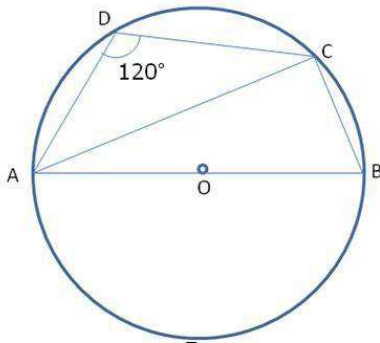
Line segment joining the centre to any point on the circle is a radius of the circle.

Mark (1)

Q 5 O is the centre of a circle of radius 5 cm. $OP \perp AB$ and $OQ \perp CD$, $AB \parallel CD$, $AB = 6$ cm and $CD = 8$ cm. Determine PQ.

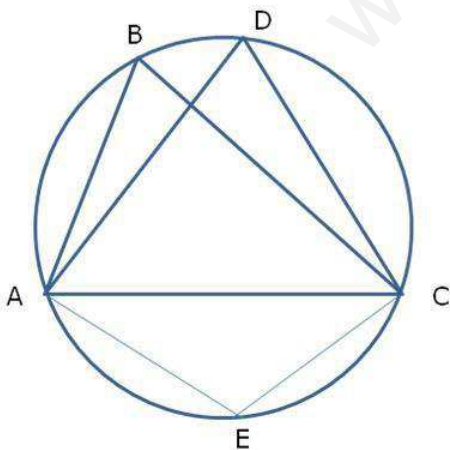
Marks (2)

Q 6 In figure, O is the centre of a circle and $\angle ADC = 120^\circ$. Find $\angle BAC$.



Marks (2)

Q 7 In Figure, $\triangle ABC$ is equilateral . Find (i) $\angle ABC$ (ii) $\angle AEC$.



Marks (2)

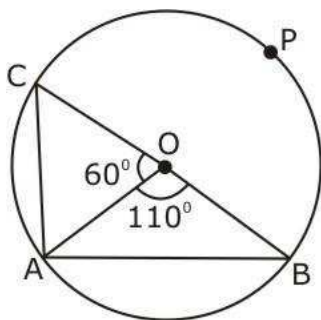
Q 8 The diameter of a circle is 5 cm. If a chord is 4 cm long then find the distance between the centre and the chord of the circle.

Marks (2)

Q 9 The chord of a unit (in cm) circle subtends an angle of 120° at the centre. Find length of the chord in cm.

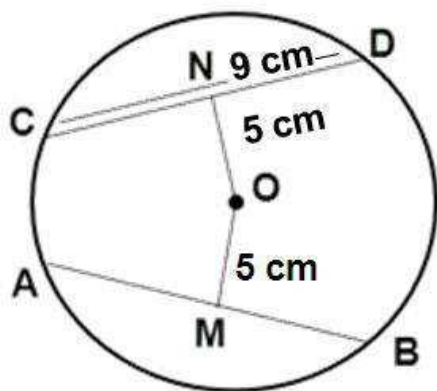
Marks (2)

Q 10 Find the value of $\angle CAB$ in the figure given below.



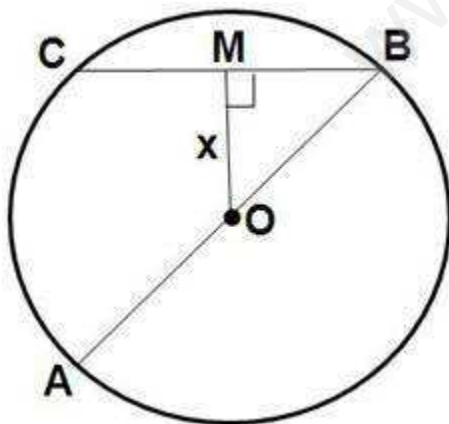
Marks (2)

Q 11 If ON and OM are perpendiculars to CD and AB respectively, then find the length of AM in the figure given below.



Marks (2)

Q 12 Find the value of x in the figure given below, where $BC = 6$ cm and $AB = 10$ cm.



Marks (2)

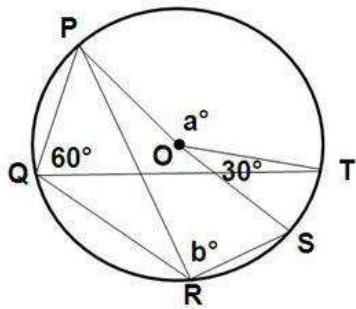
Q 13 Prove that diameter is the greatest chord in a circle.

Marks (2)

Q 14 ABCD is a cyclic quadrilateral in which $AB \parallel CD$. If $\angle B = 65^\circ$, then find other angles.

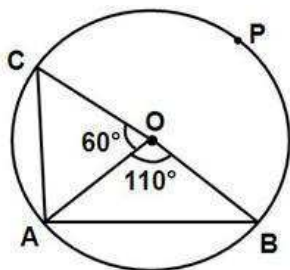
Marks (2)

Q 15 Find the value of a and b in the figure given below where $\angle \text{SOT} = 30^\circ$.



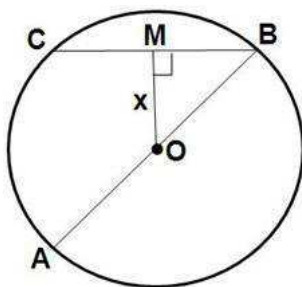
Marks (2)

Q 16 Find the value of angle CAB in the figure given below.



Marks (2)

Q 17 Find the value of x in the figure given below, where $BC = 6$ cm and $AB = 10$ cm.

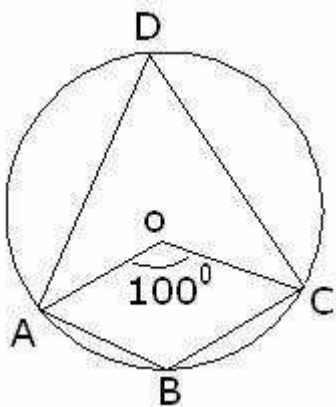


Marks (2)

Q 18 Two equal circles intersect in P and Q. A straight line through P meets the circles in A and B. Prove that $QA = QB$.

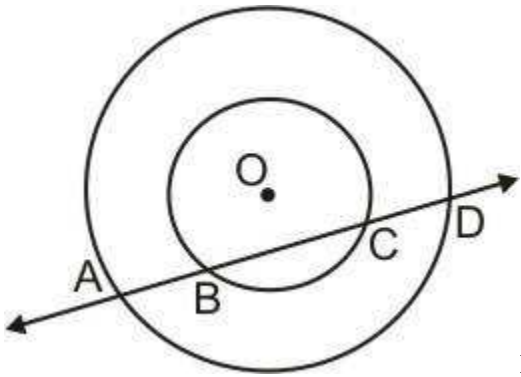
Marks (3)

Q 19 O is the centre of a circle and the measure of arc ABC is 100° . Determine $\angle ADC$ and $\angle ABC$.



Marks (3)

Q 20 If a line intersects two concentric circles (circles with the same centre) with centre O at A, B, C and D, prove that $AB = CD$.



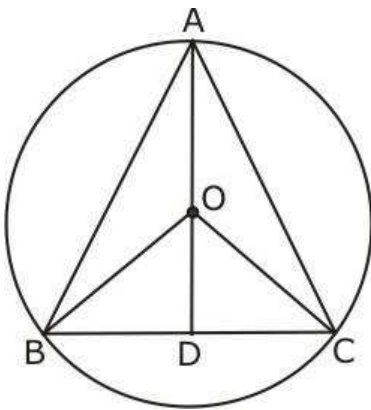
Marks (3)

Q 21 Prove that the line joining the centre of a circle to the mid-point of a chord is perpendicular to the chord.

Marks (3)

Q 22 Prove that equal chords of a circle subtend equal angles at the centre.

Marks (3)

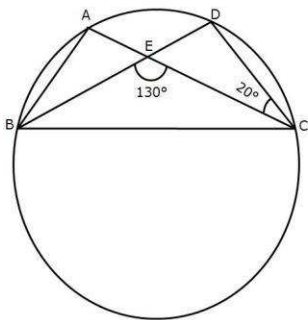


Q 23

Bisector AD of $\angle BAC$ of $\triangle ABC$ passes through the center O of the circumcircle of $\triangle ABC$. Prove that $AB = AC$.

Marks (3)

Q 24 A, B, C and D are the four points on a circle. AC and BD intersect at point E such that $\angle BEC = 130^\circ$ and $\angle ECD = 20^\circ$. Find $\angle BAC$.

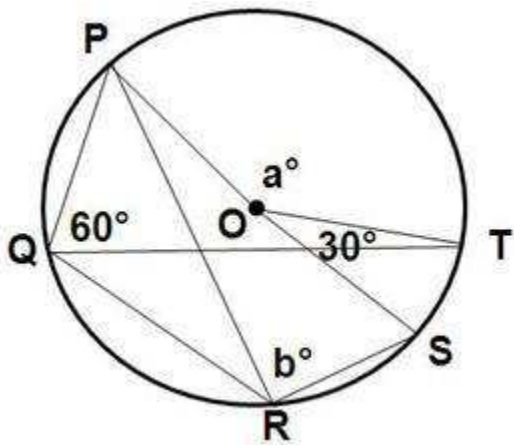


Marks (3)

Q 25 A, B, C and D are four consecutive points on a circle such that $AB = CD$. Prove that $AC = BD$.

Marks (3)

Q 26 Find the value of a° and b° in the figure given below.



Marks (3)

Q 27 If a chord of length 24 cm is at a distance of 5 cm from the centre in the circle, then find the area of the circle.

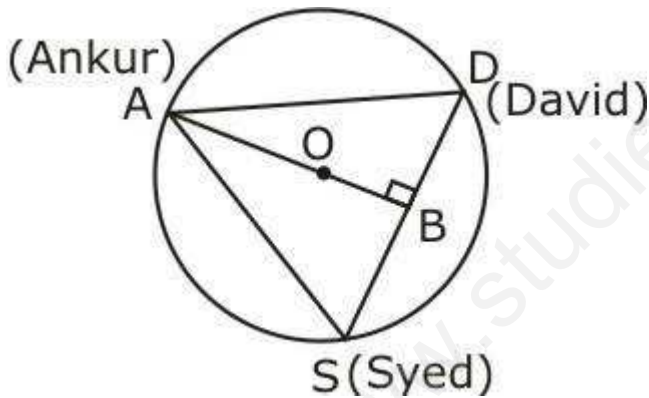
Marks (3)

Q 28 Prove that all the chords of a circle through a given point within it, the least is one which is bisected at that point.

Marks (3)

Q 29 AB and CD are the two chords of the circle such that $AB = 6$ cm, $CD = 12$ cm and $AB \parallel CD$. If the distance between AB and CD is 3 cm, find the radius of the circle.

Marks (4)



Q 30

A circular park of radius 20 m is situated in a colony. Three boys Ankur, Syed and David are sitting at equal distance on its boundary each having a toy telephone in his hands to talk to each other. Find the length of the string of each telephone.

Marks (4)

Q 31 Two equal chords AB and CD of circle with center O, when produced meet at a point E. Prove that $BE = DE$ and $AE = CE$.

Marks (4)

Q 32 In a circle with centre O, chords AB and CD intersect inside the circle at E. Prove that $\angle AOC + \angle BOD = 2\angle AEC$.

Marks (4)

Q 33 OA and OB are respectively perpendicular to chords CD and EF of a circle whose centre is O. If $OA = OB$, prove that $CD = EF$.

Marks (4)

Q 1 What is a Circle?

Q 2 What is the fixed point and fixed distance in a circle are called.

Q 3 In how many parts a circle divides the plane on which it lies. Name them.

Q 4 What is diameter and what is its relation with the radius .

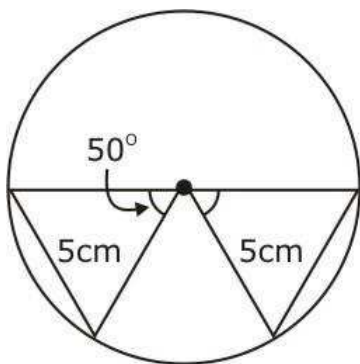
Q 5 Define Arc, Major arc and Minor arc, Semicircle.

Q 6 Mark the statements as right(\square) or wrong(\square).

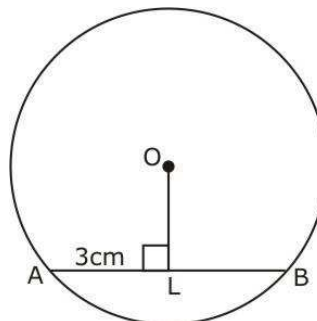
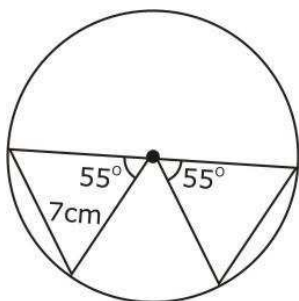
- (a) The centre of a circle lies in the interior of the circle.
- (b) The longest chord of a circle is the diameter of circle.
- (c) Segment of a circle is the region between an arc and two radii.
- (d) Sector of a circle is the region between a chord and either of its arc.
- (e) Line from the centre to any point on the circle is radius.

Q 7 If major arc and minor arc are equal. What we call these arcs, and the regions formed.

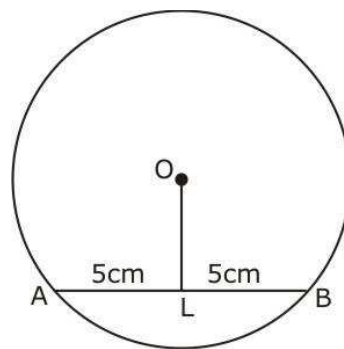
Q 8 There are two equal chords of length 5 cm each in a circle. One chord subtends an angle of 50° at the centre. What is the angle subtended by other chord at the centre.



Q 9 Two chords make angles of 55° at the centre, if one chord is 7 cm long what is the length of another chord.



Q 10 In the given figure, OL perpendicular to AB, if $AL = 3$ cm, find BL.



Q 11 In the given figure below $AL = 5\text{cm}$ and $BL = 5\text{cm}$. Find $\angle OLA$.

Q 12 In a circle of radius 5cm how far from the centre will be a chord of length 6cm.

Q 13 How many circles can be drawn through

(a) One given point

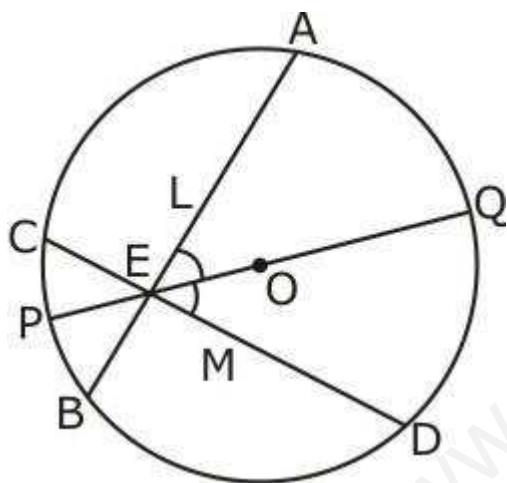
(b) Two given points

(c) Three given points

Q 14 If a circle is given, how can you find its centre using suitable construction.

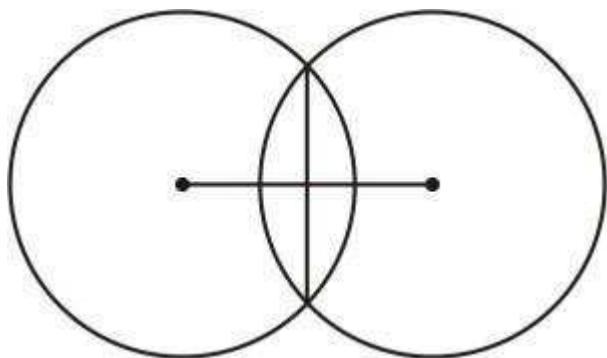
Q 15 An arc of a circle is given, complete the circle.

Q 16 In the figure given below AB and CD are chords and PQ is the diameter. If $\angle AEQ = \angle DEQ$, prove that $AB = CD$.

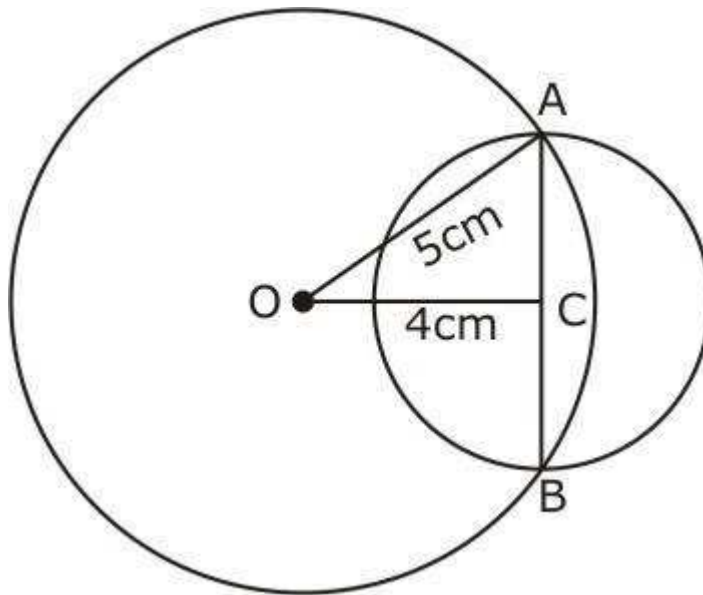


Q 17 If two circles intersect at two points, prove that the perpendicular bisector of the common chord will pass through their centres.

Q 18 If two circles intersect at two points, prove that the line through their centres is the perpendicular bisector of the common chord.

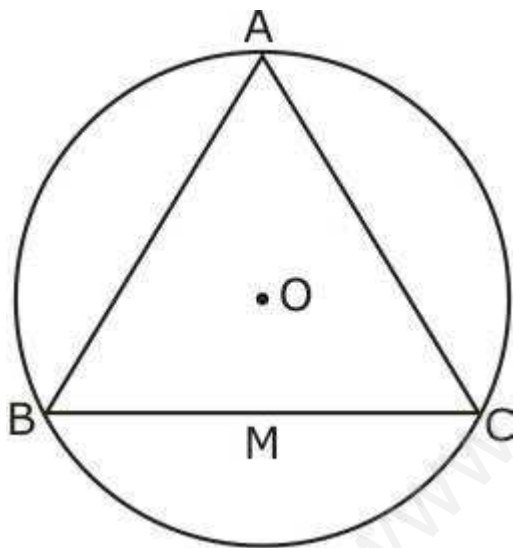


Q 19 Two circles having radii 5cm and 3cm intersect at two points and the distance between their centres is 4cm. Find the length of

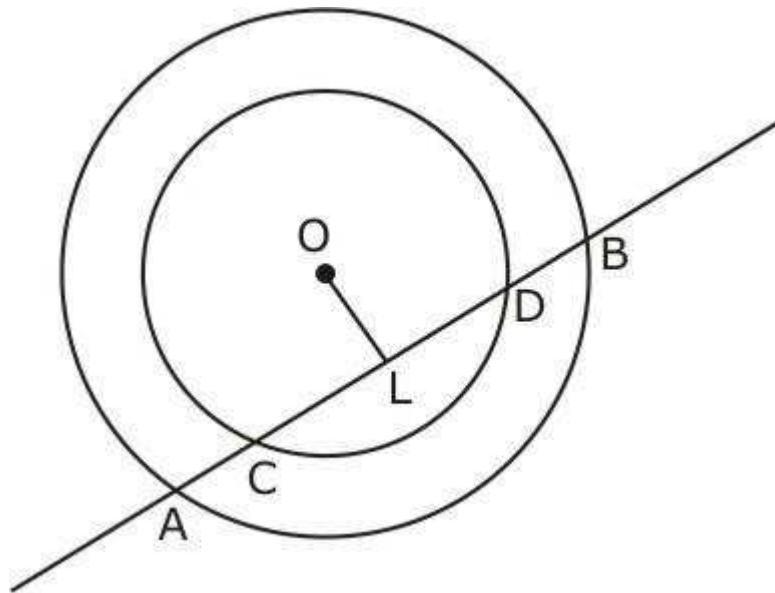


the common chord.

Q 20 Three boys are sitting on the circumference of a circular park with equal distance between them. If radius of the park is 20m find the linear distance between them.

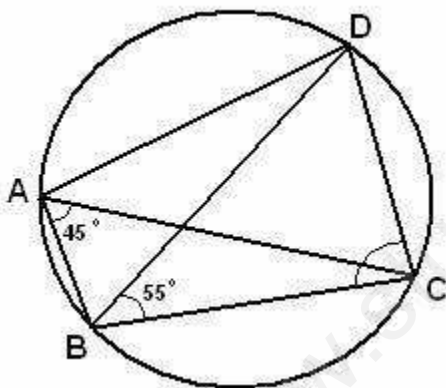


Q 21 A chord meets two concentric circles at points A, B, C & D as shown in the figure below. Prove that $AC = BD$.

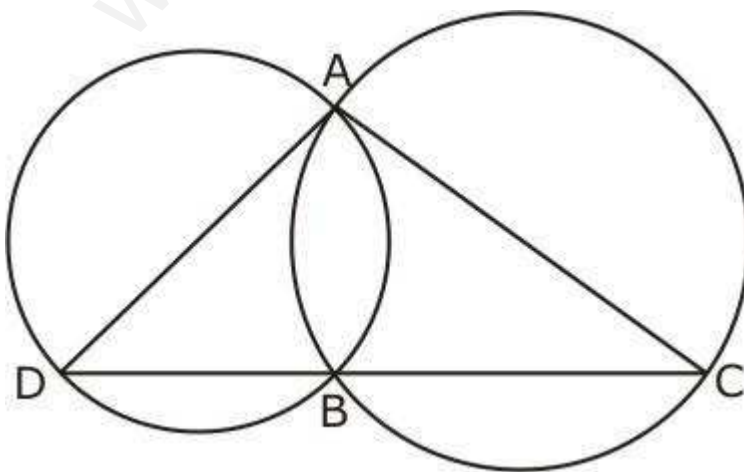


Q 22 Two equal chords intersect within the circle, prove that the line joining the point of intersection and the centre makes equal angles with the chords.

Q 23 In the given figure below, $\angle DBC = 45^\circ$ and $\angle BAC = 45^\circ$. Find $\angle BCD$.

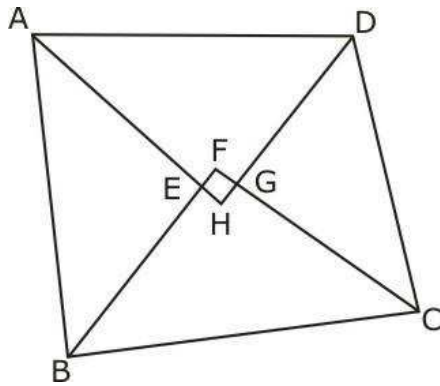


Q 24 In the figure shown, AD and AC are the diameters of the circles. Prove that the intersection point of circles lie on the third side

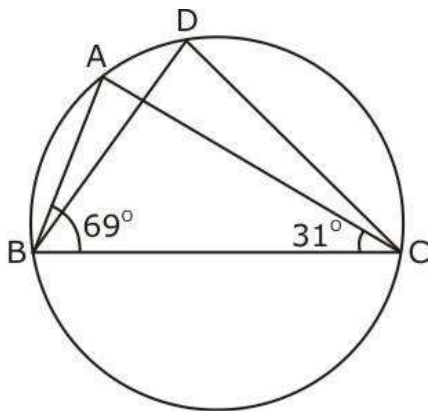


of the triangle ACD.

Q 25 Prove that the quadrilateral formed (if possible) by the internal angle bisectors of any quadrilateral is cyclic.

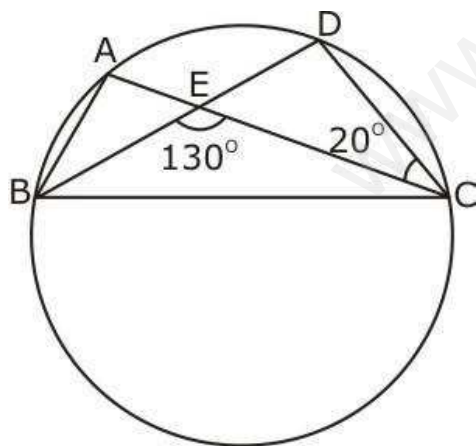


Q 26 In the given figure, find $\angle BDC$.

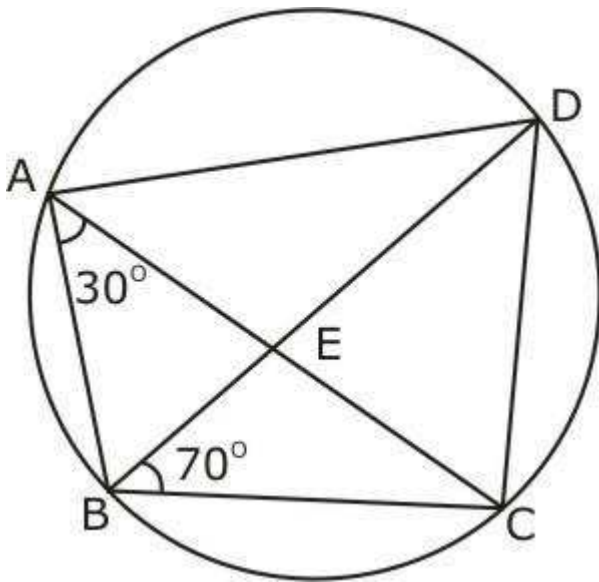


Q 27 A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.

Q 28 In the given figure, find $\angle BAC$.



Q 29 In the figure below find $\angle BCD$. Further if $AB = BC$ find $\angle ECD$.



Q 30 If diagonals of a cyclic quadrilateral are diameters of the circle through the vertices of the quadrilateral, prove that it is a rectangle.

Q 31 If non-parallel sides of a trapezium are equal, prove that it is cyclic.

Q 32 ABC and ADC are two right triangles with common hypotenuse AC . Prove that $\angle CAD = \angle CBD$.

