

Chapter - 10

(Circle)

Key Concept

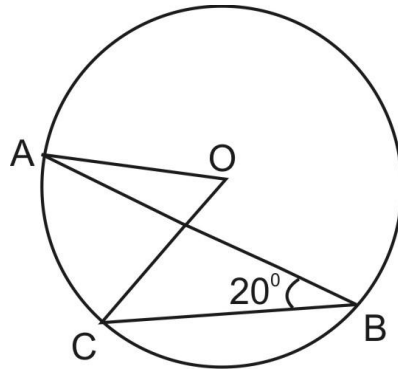
- * Circle - circle is locus of such points which are at equidistant from a fixed point in a plane.
- * Concentric circle - Circle having same centre called concentric circle.
- * Two arc of a circle called congruent if they have the same degree measure.
- * If two arc equal then their corresponding chords are equal.
- * The perpendicular from centre to chord of circle, it bisects the chord and converse.
- * There is one and only one circle passing through three non-collinear points.
- * Equal chords of circle are equidistant from centre.
- * The angle subtend by an arc at the centre of circle is twice the angle which subtend at remaining part of circumference.
- * Any two angles in the same segment of the circle are equal.
- * Angle of semicircle is right angle.
- * Equal chords of circle subtend equals angle at the centre of circle.
- * If the all vertices of a quadrilateral lie on the circumference of circle then quadrilateral called cyclic.
- * In a cycle quadrilateral the sum of opposite angles is 180° and converse.
- * The exterior angle of a cycle quadrilateral is equal to the opposite interior angle.

Section - A

- Q.1 AD is diameter of a circle and AB is a chord If $AD = 34\text{cm}$, $AB=30\text{cm}$. The distance of AB from centre of circle is.

- (a) 17cm (b) 15cm (c) 4 cm (d) 8cm

Q.2 In given figure, O is centre of circle if $\angle ABC = 20^\circ$ then $\angle AOC$ is equal to :

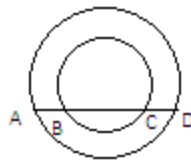


- (a) 20° (b) 40° (c) 60° (d) 10°

Q.3 Given three collinear points then the number of circles which can be drawn through these three points are.

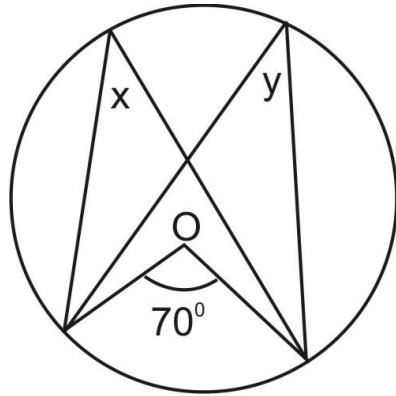
- (a) one (b) two (c) infinite (d) none

Q.4 Given two concentric circles with centre O. A line cut the circle at A, B, C and D respectively if $AB = 10\text{cm}$ then length of CD.



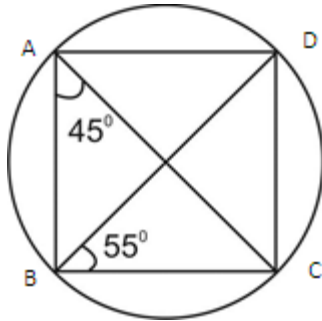
- (a) 5cm (b) 10cm (c) 3.5cm (d) 7.5cm

Q.5 In given figure value of y is



- (a) 35° (b) 45°
 (c) 70° (d) 140°

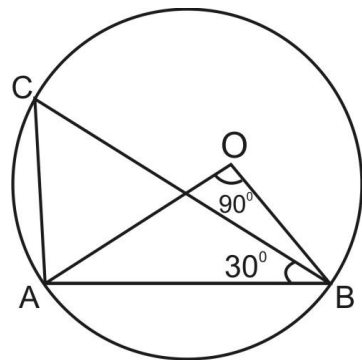
Q.6 In the given figure, $\angle DBC = 55^\circ$, $\angle BAC = 45^\circ$ then $\angle BCD$ is



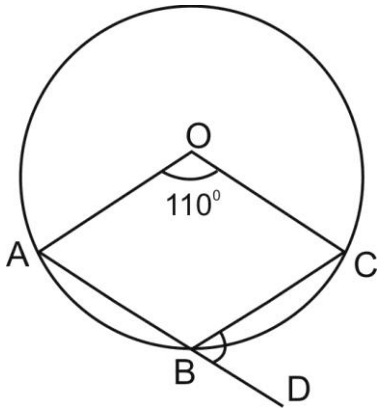
- (a) 45° (b) 55° (c) 100° (d) 80°

Section - B

Q.7 In the given figure, $\angle CAB$ is, given $\angle AOB = 90^\circ$, $\angle CBA = 30^\circ$



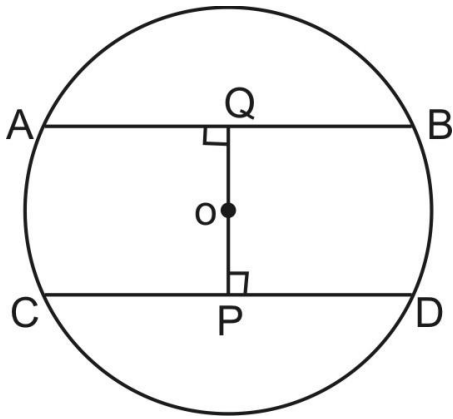
Q.8 If O is centre of circle as shown in the figure, $\angle CBD$.



Q.9 In the given figure, O is the center of the circle with radius 5cm. $OP \perp CD$,

$OQ \perp AB$

$AB \parallel CD$, $AB = 6\text{cm}$ and $CD = 8\text{cm}$ determine PQ .

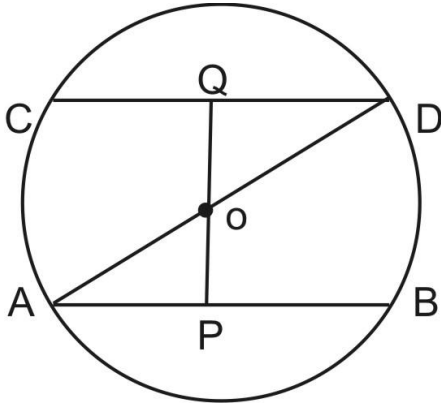


Q.10 Prove that the circle drawn on any equal side of an isosceles triangle as diameter, bisects the base.

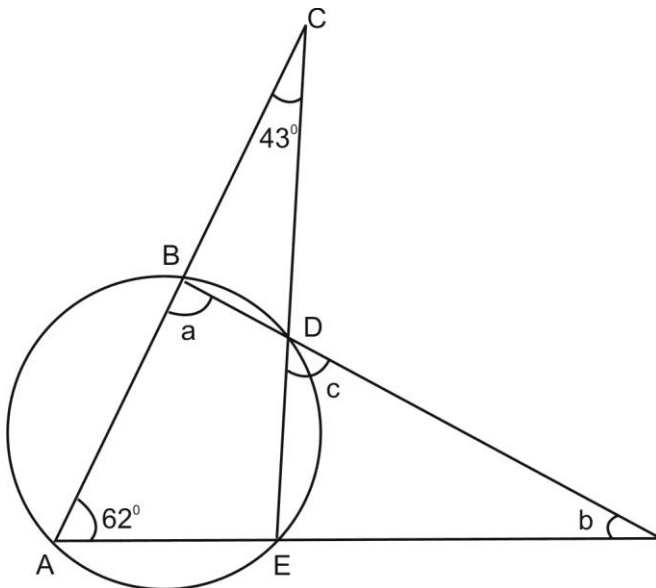
Q.11 Prove that cyclic parallelogram is always a rectangle.

Section - C

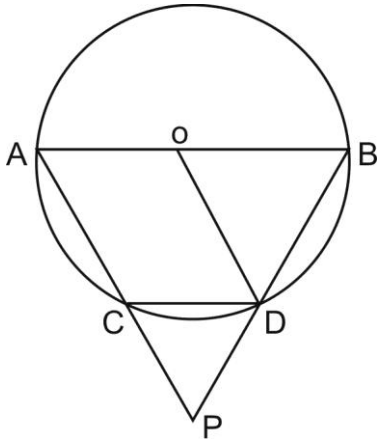
Q.12 In the given figure AD is diameter of the circle, whose centre is O and $AB \parallel CD$,
 Prove that $AB = CD$



Q.13 In the given figure determine a, b and c.



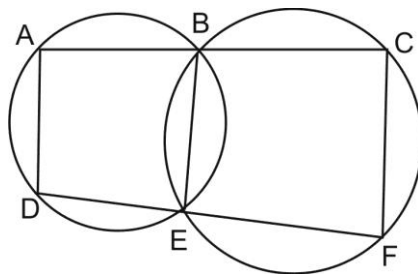
Q.14 AB is a diameter of circle C (O, r). Chord CD is equal to radius OD. AC and BD produced intersect at P. Prove that $\angle APB = 60^\circ$



- Q.15 If two non parallel side of a trapezium are equal, prove that it is cyclic.
- Q.16 ABC is a right angle triangle, right angled at A. A circle is inscribed in it. The length of two sides containing angle A is 12cm and 5cm find the radius.

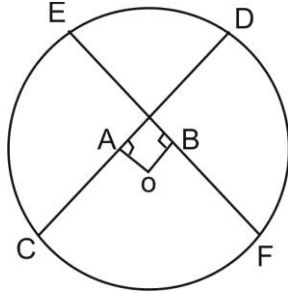
Section - D

- Q.17 A circle has radius $\sqrt{2}cm$. It is divided into two segments by a chord of length 2cm. Prove that the angle subtended by the chord at a point in major segment is 45° .
- Q.18 Two circles intersect each other at points A and B. AP and AQ are diameters of the two circles respectively. If $\angle APB = 40^\circ$ and $\angle AQB = 70^\circ$, find $\angle PAB$ and $\angle QAB$
- Q.19 ABCD is a parallelogram. The circle through A, B and C intersects CD produced at E. If $AB=10cm$, $BC=8cm$, $CE=14cm$. Find AE.
- Q.20 Prove the sum of either pair of opposite angles of a cycle quadrilateral is 180° .
- Q.21 In the given figure, B and E are points on line segment AC and DF respectively show that $AD \parallel CF$.

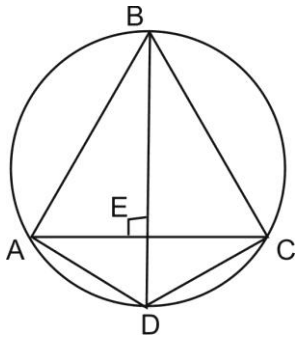


Self evaluation

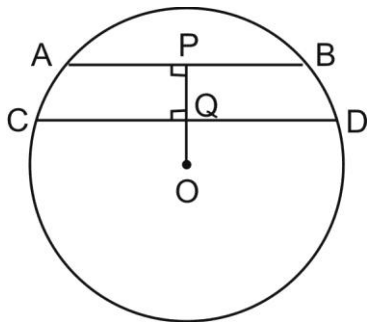
Q.22 In the given figure, OA and OB are respectively perpendiculars to chords CD and EF of a circle whose centre is O. If $OA = OB$, prove that $\widehat{EC} = \widehat{DF}$



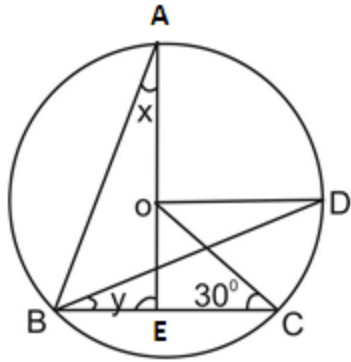
Q.23 In the given figure $\angle BAC = 55^\circ$, $\angle BCA = 62^\circ$, the altitude BE produced meets the circle at D, determine $\angle ACD$, $\angle DAC$ and $\angle ADB$



Q.24 In the given figure, O is centre of circle of radius 5cm. $OP \perp CD$, $AB \parallel CD$, $AB = 6\text{cm}$ and $CD = 8\text{cm}$. Determine PQ



Q.25 In the given figure. O is the centre of circle, $\angle BCO = 30^\circ$ $\angle AEB = 90^\circ$ and $OD \parallel BC$ find x and y.



Q.26 O is circumcentre of the triangle ABC and D is the mid-point of the base BC.

Prove that $\angle BOD = \angle A$

Answers:

- | | | | |
|------------------------------------|-------------------------|----------------|---------------|
| 1. (d) | 2. (b) 40° | 3. (d) None | 4. (b) |
| 5. (a) 35° | 6. (d) 80° | 7. 105° | 8. 55° |
| 9. 7 cm. | 13. $a=105, b=13, c=62$ | 16. 2cm. | |
| 18. $50^\circ, 20^\circ$ | | | |
| 19. 8cm. | | | |
| 23. $35^\circ, 28^\circ, 62^\circ$ | | | |
| 24. 1cm | | | |
| 25. $30^\circ, 15^\circ$ | | | |