Codeyoung

Advanced_Grade-9_Circles

Basic Properties of Circles

1. Prove that the circle drawn on any one of the equal sides of an isosceles triangle as diameter, bisects the third side.

2. In the given figure, AB and CD are two parallel chords of a circle with centre O and radius 5 cm such that AB = 8 cm and CD = 6 cm. If OP is perpendicular to AB and OQ is perpendicular to CD, determine the length of PQ.
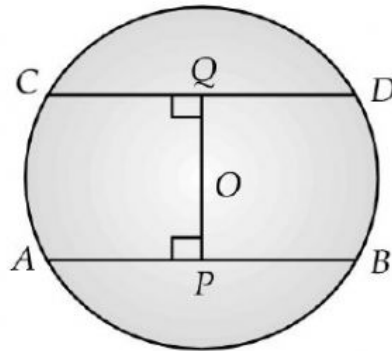

3. If two equal chords of a circle intersect within a circle, prove that the line segment joining the point of intersection to the centre makes equal angles with the chords.

4. In the given figure, a diameter PQ of a circle bisects the chord RS at the point O. If PS is parallel to RQ, prove that RS is also a diameter of the circle.
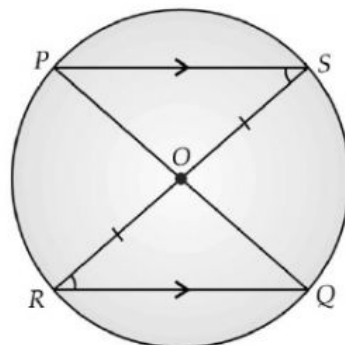
5. Two circles whose centres are O and O' intersect at P. Through P, a line parallel to 00', intersecting the circles at C and D is drawn as shown. Prove that CD = 2OO'
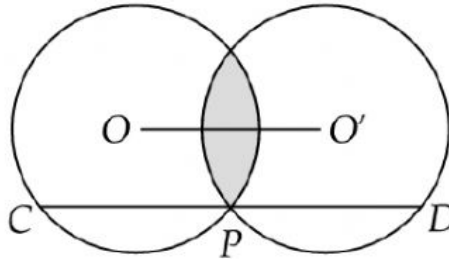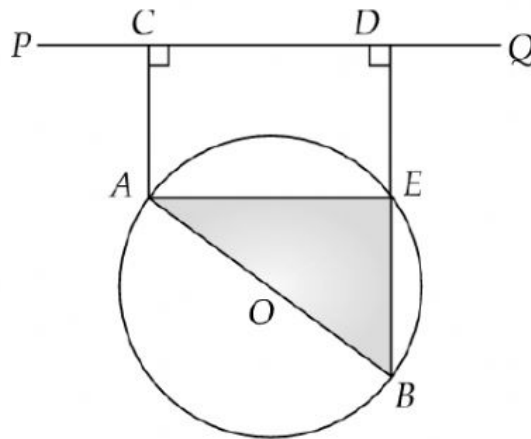

6. In the given figure, O is the centre of the circle, OD ⊥ AC, OE ⊥ BC and OD = OE. Show that ΔDBA = ΔEAB.
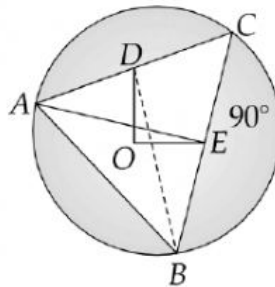

7. Prove that 'The angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.'

8. In the given figure, O is the centre of the circle and L and M are the mid-points of AB and CB respectively. If ∠OAB = ∠OCB, prove that BL = BM.
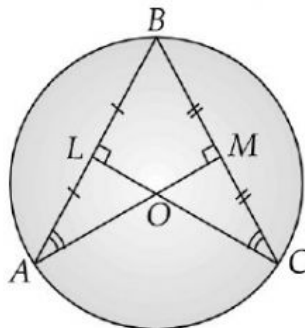
9. Two circles intersect at two points A and B. AD and AC are the diameters of the two circles. Prove that D, B and C are collinear.

10. In the given figure, AB is a diameter of the circle with centre O. If AC and BD are perpendiculars on a line PQ and BD meets the circle at E, then prove that AC = ED.

11. In the given figure, AB and CD are two chords of a circle, with centre O, intersecting each other at point E, prove that ∠AEC is equal to $\frac{1}{2}$(angle subtended by arc CXA at the centre + angle subtended by arc DYB at centre).
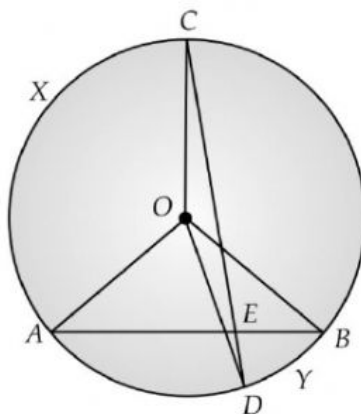
12. PQ = 16 cm and RS = 12 cm, find the distance between PQ and RS when they lie,
    (i) On the same side of centre O.
    (ii) On the opposite sides of centre O.