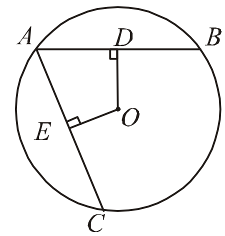
1. AB and AC are two equal chords of a circle whose centre is O. If OD ⊥ AB and OE ⊥ AC then :

(A) OD > OE (B) OD < OE (C) OD = OE (D) None of these

Sol. **(C)**



$$AB = AC$$

$$OO \perp AB \Rightarrow AD = DB \Rightarrow AD=DB = AE$$

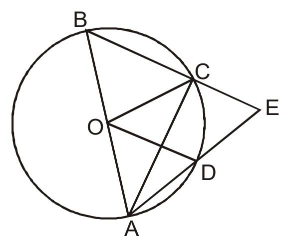
$$OE \perp AC \Rightarrow AE = CE = CE$$

$$PA = OB = OC = \text{Radius of circle}$$

$$OD = \sqrt{OA^2 - AD^2}$$

$$= \sqrt{OA^2 - AE^2} = OE$$

2. In the given figure, O is centre, ∠ COD = 40°, then ∠ AEB = :



(A) 50° (B) 65° (C) 70° (D) 75°

Sol. **(C)**

$$\angle CAD = 20°$$

$$\angle AEB = ?$$

$$\angle COD = 40°$$

$$\angle ACB = 90° = \angle ACE$$

In ΔACE

$$\angle CAD + \angle ACE + \angle AEC = 180°$$

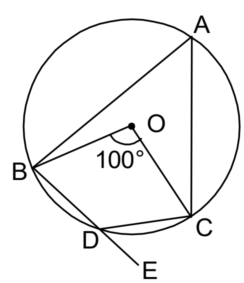
$$20° + 90° + \angle AEC = 180°$$

$$\angle AEC = 180° - 110°$$

$$= 70°$$

$$\angle AEC = \angle AEB = 70°$$

3. O is the centre of the circle. Find ∠BDC.



(A) 160º (B) 90º (C) 80º (D) 130º

Sol. **(D)**

$$\angle BOC = 100°$$

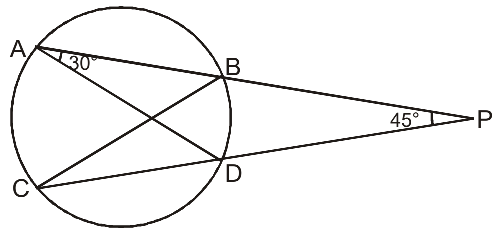
$$\angle BAC = \frac{1}{2} \angle BOC = 50°$$

$$\angle BAC + \angle BDC = 180°$$

$$\angle BDC = 180° - 50°$$

$$= 130°$$

4. Two chords AB and CD of a circle cut each other when produced outside the circle at P. AD and BC are joined. If $\angle PAD = 30°$ and $\angle CPA = 45°$, find $\angle CBP$.



(A) 105° (B) 115° (C) 135° (D) None of these

Sol. **(A)**

Given, $\angle PAD = 30°$

$\angle CPA = 45°$

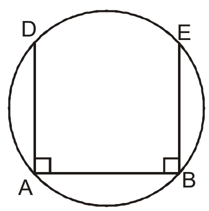
$\angle DAB = \angle DCB$

In ΔCBP

$\angle PCB + \angle CBP + \angle BPC = 180°$ $\Rightarrow 30° + \angle CBP + 45° = 180°$

$\angle CBP = 105°$

5. Given a chord AB in a circle as shown. If two more chords AD and BE are drawn perpendicular to AB ,If AD =10 cm then



(A) BE=20cm (B) BE =40cm (C) BE=10cm (D) None of these

Sol. **(C)**

Join point A to E and also join point B to D. AE and BD are the diameter of circle.

$AE^2 = BD^2$

$AE^2 = AB^2 + BE^2$

$BD^2 = AB^2 + AD^2$

$BE = AD$

6. PQ, PR are tangents to a circle and QS is a diameter, if $\angle QPR=60°$ then find $\angle SOR$.

(A) 60 (B) 90

(C) 30 (D) None of the foregoing

Sol.
(A)

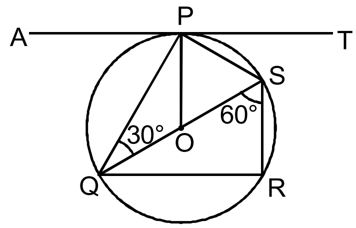
Lets, O is centre of circle

$\angle QPR = 60$

$\angle QOR = (180° – 60)$

$\angle SOR = 60$

7. In the following figure, QS is the diameter and APT the tangent at P. Then $\angle APQ$ is equal to :



(A) 60° (B) 30° (C) 40° (D) 50°

Sol. **(A)**

In ΔPOQ

$OP = OQ$ (Radius of circle)

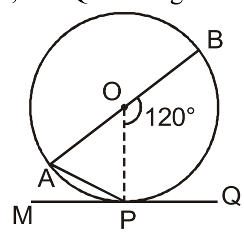
$\angle OQP = \angle OPQ = 30°$

$\angle APO = 90°$

$\angle APQ = \angle APO - \angle OPQ$

$= 90° - 30° = 60°$

8. In the adjoining figure AOB is a diameter, MPQ is a tangent at P, then the value of $\angle APQ$ is equal to :



(A) 135° (B) 60° (C) 130° (D) 150°

Sol. **(D)**

$\angle AOP + \angle BOP = 180°$

$\angle AOP = 180° - 120°$

$= 60°$

$\angle OAP = \angle OPA$ (Isosceles Triangle)

In ΔAOP

$\angle OAP + \angle OPA + \angle AOP = 180°$

$2\angle OAP = 180° - 60° = 120°$

$\angle OAP = 60°$

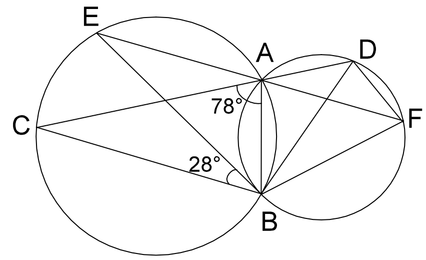
Equilateral triangle

$\angle QPA = \angle QPO + \angle APO$

$= 90° + 60°$

$= 150°$

9. In the given figure, ∠ BFD = :

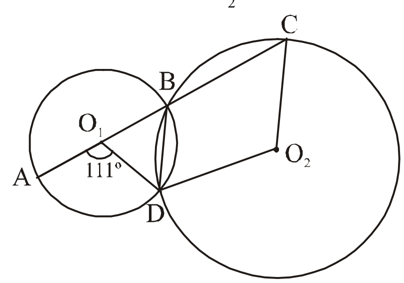


(A) 75° (B) 76° (C) 77° (D) 78°

Sol. **(D)**

$$\angle BAF = 180° - 78°$$
$$\angle BFD = 180° - \angle BAF = 180° - (18° - 78°) = 78°$$

10. O_1 and O_2 are the centres of the two circles. Find ∠ DO_2C.



(A) 69° (B) $\left(\frac{69}{2}\right)^{\circ}$ (C) 111° (D) $\left(\frac{111}{2}\right)^{\circ}$

Sol. **(C)**

$$\angle ABD = \frac{111°}{2} \Rightarrow DBC = 180° - \left(\frac{111°}{2}\right)$$

$$\angle DO_2C = 2\left(180° - \left(180° - \frac{111°}{2}\right)\right)$$

$$= 111°$$