Axis Tutorials Pvt. Ltd.

SUBJECTIVE TEST

Class X Mathematics

Time: 3 Hour **M.M.: 120**

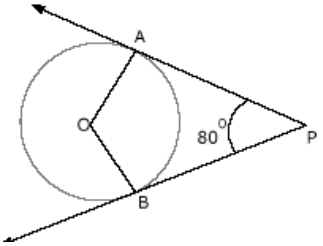
1. There are 42 questions in this paper with four sections.
2. No candidates is allowed to carry any textual material, printed or written, bits of papers, pager, mobile phone, any electronic device, etc. inside the examination hall/room.
3. On completion of the test, the candidate must hand over the Answer Sheet and Question booklet as well to the Invigilator on duty in the Room / Hall. Candidates are not allowed to take away this Test Booklet with them.
4. Do not fold or make any stray marks on the Answer Sheet.

Name of Student	
Father's Name	
Roll No.	
Batch/Stream	
Contact No.	
Student's Signature	
Invigilator's Signature	

1. A circle touches all the four sides of a quadrilateral ABCD whose sides AB = 6 cm, BC = 7 cm, CD = 4 cm Then AD = --- **[1]**

   (a) 2 cm (b) 3 cm (c) 5 cm (d) 6cm

2. If tangent PA and PB from a point P to a circle with centre O are inclined to each other at an angle of 80°, then what is the value of $\angle POA$?



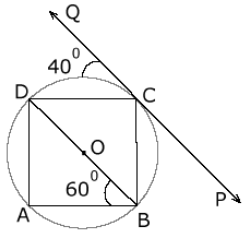
   (a) 30° (b) 50° (c) 70° (d) 90° **[1]**

3. A tangent PQ at a point P to a circle of radius 5 cm meets a line through the centre O at a point Q so that OQ = 13cm the length of PQ.

   (a) 11cm (b) 12cm (c) 10cm (d) None of these **[1]**

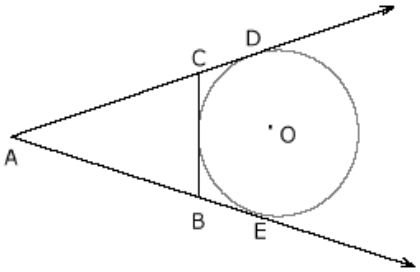
4. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at angle of 80° then ∠POA is equal to **[1]**
(a) 50° (b) 60° (c) 70° (d) 80°

5. In the given fig ABCD is a cyclic quadrilateral and PQ is a tangent to the circle at C. If BD is a diameter, $\angle OCQ = 40°$ and $\angle ABD = 60°$ find ∠BCP. **[2]**

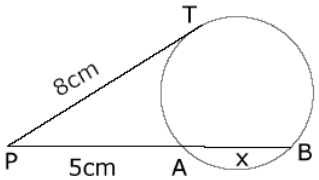


6. Two chords AB and CD of a circle Intersect each other at P outside the circle. If AB = 5 cm, BP = 3 cm and PD = 2cm, find CD **[2]**

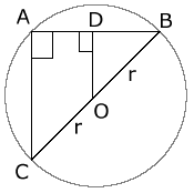
7. In the adjoining fig, if AD, AE and BC are tangents to the circle at D, E and F respectively than AD=AB+BC+CA **[2]**



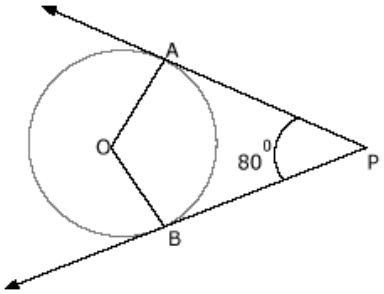
8. Find the unknown length x **[2]**



9. In the given fig OD is perpendicular the chord AB of a circle whose centre is O. if BC is a diameter. Find $\frac{CA}{OD} = ?$ **[2]**

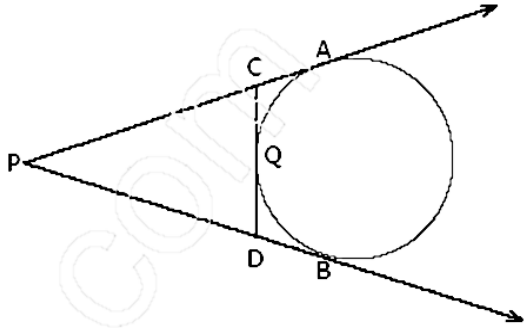


10. In fig PA and PB are tangents from P to the circle with centre O. R is a point on the circle Prove that PC + CR = PD + DR **[2]**

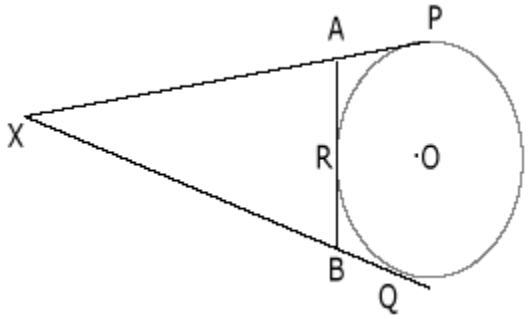


11. The length of tangents from a point A at distance of 26 cm from the centre of the circle is 10cm what will be the radius of the circle? **[2]**

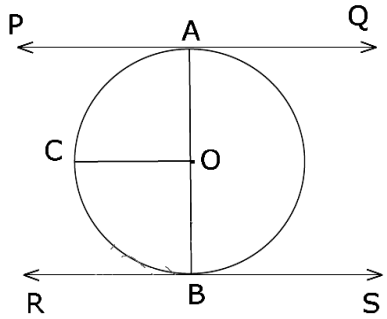
12. In the fig given below PA and PB are tangents to the circle drawn from an external point P. CD is a third tangent touching the circle at Q. If PB = 10 cm and CQ = 2 cm what is length of PC? **[2]**



13. In the given fig XP and XQ are tangents from X to the circle with centre O. R is a point on the circle such that ARB is a tangent to the circle prove that
XA + AR = XB + BR **[2]**



14. Prove that the segment, joining the points of contact of two parallel tangents, passes thro the centre. **[2]**



15. If AB, AC, PQ are tangents in the given fig and AB = 25cm find the perimeter of ΔAPQ. **[2]**

16. If x + 1, 3x and 4x + 2 are in A.P, Find the value of x **[2]**

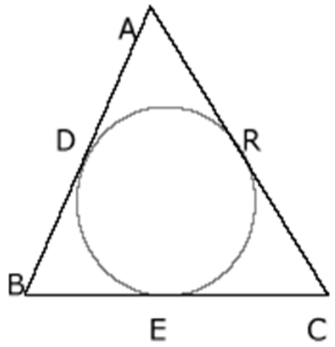
17. Find the sum of first n odd natural no. **[2]**

18. Find the sum of first hundred even natural no. divisible by 5. **[2]**

19. In an A.P the sum of first n terms is $\frac{3n^2}{2}+\frac{13}{2}n$. Find its 2^{nd} term. **[2]**

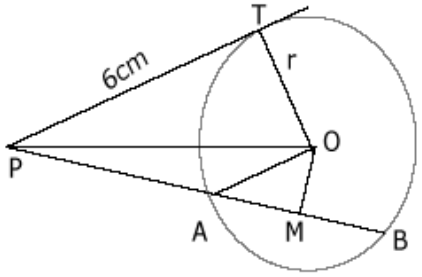
20. Prove that the parallelogram circumscribing a circle is a rhombus **[3]**

21. In the given fig. if AB = AC prove that BE = EC **[3]**



22. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$. **[3]**
23. A circle is touching the side BC of ΔABC at P and touching AB and AC produced at Q and R respectively. Prove that AQ = $\frac{1}{2}$(perimeter of ΔABC) **[3]**
24. If PA and PB are two tangents drawn from a point P to a circle with centre O touching it at A and B. prove that OP is the perpendicular bisector of AB. **[3]**
25. In the given fig. PQ is tangent at point R of the circle with centre O. if $\angle TRQ$ Ð = 30° find m $\angle PRS$. **[3]**
26. Determine the AP whose third term is 16 and the 7th term exceeds the 5th term by 12. **[3]**
27. Find the sum of AP in -5 + (–8) + (–11) + ... + (–230) **[3]**
28. Find $a_{30} - a_{20}$ for the A.P in -9, -14, -19, -24,…….. **[3]**
29. Find the sum of first 24 terms of the list of no. whose n^{th} term is given by $a_n = 3 + 2n$. **[3]**
30. If $(p+1)^{th}$ term of an A.P is twice the $(q+1)^{th}$ term show that $(3p+1)^{th}$ term is twice the $(p+q+1)^{th}$ term. **[4]**
31. Find the sum of all integers between 84 and 719 which are multiples of 5. **[4]**
32. If m^{th} term of an A.P is $\frac{1}{n}$ and the n^{th} term is $\frac{1}{m}$, show that the sum of mn term is $\frac{1}{2}(mn+1)$. **[4]**
33. If the sum of first p terms of an AP is the same as the sum of its first q term, show that the sum of the first (p + q) term is zero. **[4]**
34. For the A.P a_1, a_2, a_3 .....if find $\frac{a_6}{a_8}$. **[4]**
35. In an AP p^{th}, q^{th} and r^{th} terms are respectively a, b and c. Prove that $p(b-c)+q(c-a)+r(a-b)=0$ **[4]**
36. If the sum of n terms of an AP is $3n^2 + 5n$ and its mth term is 164, find the value of m **[4]**
37. If the sum of three no. in AP, be 24 and their product is 440, find the no. **[4]**
38. If S_1, S_2, S_3 be the sum of n, 2n and 3n terms respectively of an AP, prove that $S_3 = 3(S_2 - S_1)$ **[4]**
39. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle **[5]**

40. In the given fig, PT is tangent and PAB in a secant. If PT = 6 cm, AB = 5 cm. Find the length PA **[5]**



41. A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of length 8 cm and 6cm respectively. Find the sides AB and AC **[5]**

42. From a point P two tangents are drawn to a circle with centre O. if OP = diameter of the circle, show that ΔAPB is equilateral. **[5]**