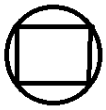
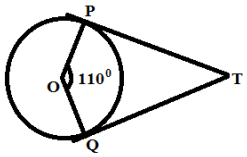
10th Standard Mid Term Examination September – 2019 Marks : 80

I. Four alternatives are given for each of the following questions/incomplete statements. Only one of them is correct or most appropriate. Choose the correct alternative and write the complete answer along with its letter of alphabet : - 8 X 1 = 8

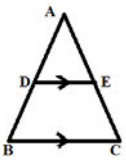
1. The value of 'd' in the Arithmetic Progression 3, 1, – 1, – 3, ... is
   A) 3 B) – 1 C) – 2 D) 1
2. Similar figures in the following is
   A)  B)  C)  D) 
3. The characteristic of equations representing lines x = 0 and y = 0 is,
   A) Parallel B) Coincident
   C) non – intersecting D) mutually perpendicularly intersects
4. In the figure, TP and TQ are tangents drawn to a circle with centre 'O' such that $\angle PAB = 110^0$. The measure of $\angle PTQ$ is
   A) 80^0 B) 70^0 C) 60^0 D) 90^0



5. Area of sector with radius 'M' and angle n^0 is
   A) $\frac{n}{360^0}\ X\ 2\pi M^2$ B) $\frac{n}{180^0}\ X\ 2\pi M^2$ C) $\frac{n}{360^0}\ X\ 2\pi M$ D) $\frac{n}{720^0}\ X\ 2\pi M^2$
6. Maximum number of tangents drawn from an external point to a circle
   A) 2 B) 1 C) 4 D) 3
7. The distance between from the origin to the point (4, – 3) is
   A) 7units B) 25 units C) 5 units D) 6 units
8. The reason for which $\frac{3}{4}$ is rational number
   A) It is of the form $\frac{p}{q}$ where q ≠ 0
   B) It has repeating & terminating decimal expansion
   C) It's denominator can be expressed as $2^n X5^m$
   D) HCF (3,4) ≠ 1

II. Answer the following : - 8 X 1 = 8

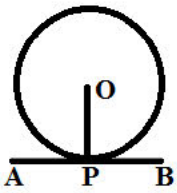
9. Write the 10th term of Arithmetic Progression 5, 9, 13, ...
10. Raju saves Rs.50 in the first month then he increases his saving by Rs.100 in successive months. How much amount was with him after one year ?
11. In ΔABC, DE ∥ BC. DE = 3cm, BC = 9cm and AD = 2cm. What is the length of AB ?



12. If the length of hypotenuse of a right angled triangle is 13cm and its base is 5cm the find the length of its height.

13. Which type of lines do the lines $2x - 3y = 4$ and $6x - 9y = 12$ represents ?

14. In the figure, AB is the tangent drawn to a circle with centre 'O'. Write the measure of $\angle OPA$.



15. Find the co – ordinates of the mid points by line segment joining the points (6,2) and (4,4).

16. Find the radius of a circle whose perimeter is numerically equal to area.

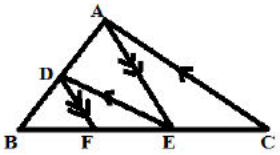
III.

17. Find the sum of first 20 terms of A.P. $2 + 5 + 8 + \ldots\ldots$

OR (2)

Which term of the A.P. 3, 8, 13, 18, ... is 78 ?

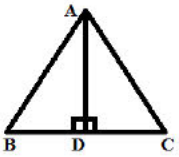
18. In figure, DE $\parallel$ AC and DF $\parallel$ AE . Prove that $\frac{FB}{FE} = \frac{BE}{CE}$



(2)

OR

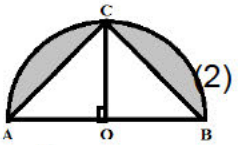
In ΔABC, $AD \perp BC$ and $AD^2 = BD \times CD$ prove that $AB^2 + AC^2 = (BD+CD)^2$.



19. $\Delta ABC \sim \Delta DEF$ and their areas respectively are 64 cm^2 and 121 cm^2. If EF = 15.4cm then find BC. (2)

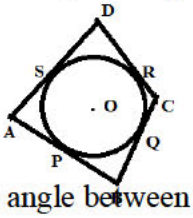
20. Solve the pair of linear equations by suitable method : $x + y = 5$
$2x + 3y = 12$ (2)

21. AB is the diameter of length 14cm of a semi circle and $OC \perp AB$. Find the area of shaded region.



(2)

22. A Circle is circumscribed in a quadrilateral ABCD. Prove that AB + CD = AD + BC.



(2)

23. Draw a pair of tangents to a circle of radius 4.5cm such that the angle between the tangent is 60^0. (2)

24. Show that $7 + \sqrt{3}$ is an irrational number. (2)

IV.

25. The Marks obtained by Rahul in first four tests in Mathematics subjects are increased in Arithmetic Progression. If the sum of the marks obtained by him in second and fourth test is 22 and the product of marks got by him in first and fourth tests is 85, how many marks did Rahul scored in each test ? (3)

OR

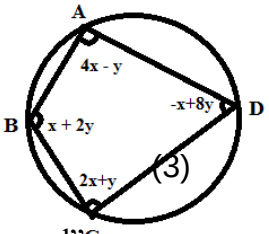
A sum of Rs.700 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is Rs.20 less than its preceding prize, find the value of each of the prizes.

26. Five years ago, the age of Gowri will be three times that of Ganesh. Ten years later, Gowri will be twice as old as Ganesh. How old are Gowri and Ganesh now ? (3)

OR

A fraction becomes $\frac{9}{11}$, if 2 is added to both the numerator and denominator. If 3 is added to both numerator and the denominator it becomes $\frac{5}{6}$. Find the fraction.

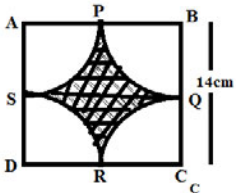
27. In the figure ABCD is a cyclic quadrilateral. Its opposite angles are (4x – y) and (2x + y) & (x + 2y) and (– x + 8y) .
Find the measures of angles of quadrilateral.



(3)

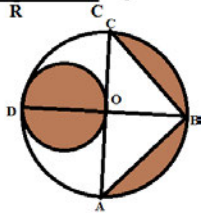
28. Prove that "the tangents drawn from the external point to a circle are equal" (3)

29. In the figure ABCD is a square of side 14cm and P, Q, R and S are the mid points of AB, BC, CD and AD respectively.
Find the area of shaded region. (3)



OR

In figure, AB and CD are two diameters of a circle with centre O perpendicular to each other and OD is the diameter of the smaller circle. If OA = 7cm, find the area of the shaded region.



30. Construct a triangle of sides 4cm, 5cm, and 6cm and then a triangle similar to it whose sides are $\frac{2}{3}$ of the corresponding sides of the given triangle. (3)

31. Draw a circle of radius 3cm. Take two points P and Q on one of its extended diameter each at a distance of 7cm from its Centre. Draw tangents to the circle from these two points. (3)

32. A(1, – 2), B(2,3), C(k, 2) and D(– 4, – 3) are the co – ordinates of the vertices of parallelogram ABCD. Find the value of 'k'. (3)

OR

Find the co – ordinates of the point which dives the line joining the points (- 2, 7) and (3,-3) in the ratio 3:2.

33. Show that the square of any positive integer is either of the form 3m or 3m+1 for some integer m. (3)

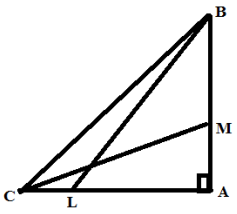
V.

34. Fourth term of an A.P is 10, its 11^{th} term exceeds three times the fourth term by 1. Find the sum of first 20 terms of the progression.

OR (4)

Third term of an Arithmetic progression is 12 more than its first term and if its last term is 205, then find the number of terms in A.P.

35. If BL and CM are medians of right triangle ABC then prove that $4(BL^2 + CM^2) = 5BC^2$. (4)



36. Solve a pair of linear equations by graphical method : $2x + y = 8$
$x – y = 1$ (4)

37. Find the area of the triangle formed by joining the mid points of the sides of the triangle whose vertices are A(0, – 1), B(2,1) and C(0,3). Also find the ratio of this area to the area of the given triangle. (4)

VI.

38. State and prove Thales Theorem. (5)

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