Sample paper 4
Class IX
Subject: Mathematics

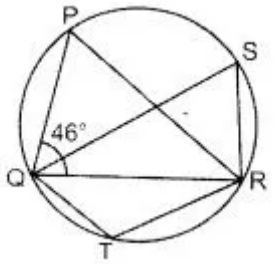
Time : 1hr **M.M 40**

General Instructions:

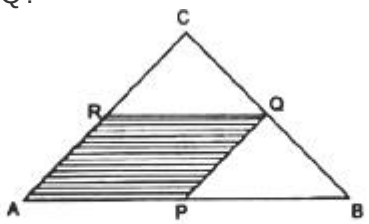
1. All questions are compulsory.
2. The paper consists of 17 questions divided into 4 section A, B , C and D . Section A comprises of 6 questions of 1mark each. Section B comprises of 2 questions of each 2 marks. Section C comprises of 6 questions of 3 marks each. Section D comprises of 3 questions of 4 marks each.
3. There is no over all choice in this question paper. Although internal choices have been provided in the same question.

Section A (6 marks)

1. In the figure, PQR is an isosceles triangle with PQ = PR. if PQR = 46°. Find QTR.
   (i) 100°
   (ii) 13°
   (iii) 92°
   (iv) 45°



2. In the figure P, Q and R are the mid-point of the sides AB, BC and AC respectively, which of the following is the area of BPQ?



(i) ar (ΔABC) (ii) $\frac{1}{2}$ ar (ΔABC) (iii) $\frac{1}{4}$ ar (ΔABC) (iv) $\frac{1}{3}$ ar (ΔQPB)

3. Choose the correct value of $14^3 + 13^3 - 27^3$
   (a) -14742
   (b) -14526
   (c) 25463
   (d) 54215

4. Identify the roots of polynomial $6 - x - x^2$ are

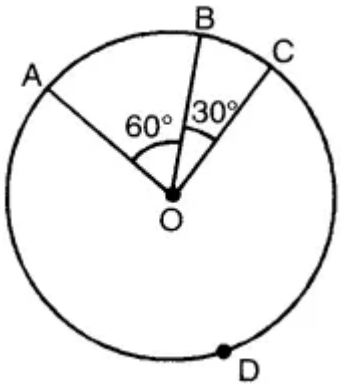
(a) 2,-3
(b) 3,-2
(c) 4,-3
(d) 2,-2

5. Find x, if $(2/3)^x = 81/16$.

   (a) 1
   (b) 4
   (c) -4
   (d) -1/4

6. In the figure, O is the centre of the circle. What is the measure of ∠ADC?

   (i) 60°
   (ii) 180°
   (iii) 90°
   (iv) 30°



Section B (4 marks)

7. PQRS is a square. T and U are respectively, the mid points of PS and QR. Find the area of ΔOTS, if PQ = 8 cm, where O is the point of intersection of TU and OS.
   .

8. Simplify and factorize $(a + b + c)^2 - (a – b - c)^2 + 4b^2 - 4c^2$

   .

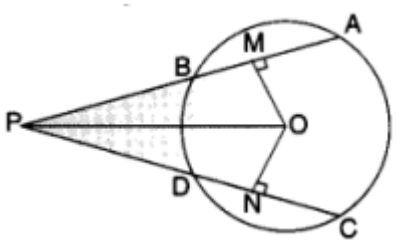
Section C (18 marks)

9. If $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ Find the value of $x^2 + y^2$.

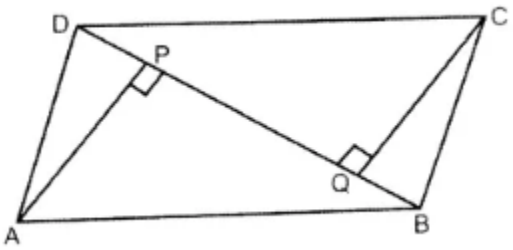
10. If x - 2 and x - 1/2 are factors of $px^2 + 5x + r$, then show that p = r.?

11. In the figure, AB and CD are two chords of a circle with centre O such that MP = NP.

    If OM ⊥ AB and ON ⊥ DC, show that AB = CD.



12. ABCD is a parallelogram and AP and CQ are perpendiculars from A and C to the diagonal BD.
Show that AP = CQ.



13. Draw the graphs of y = x+1 and x + y = 5 on the same Cartesian plane. Shade the triangle formed by these graphs and y-axis and also find its area.

14. $$(5a - \frac{2}{3})^2 - (2a - \frac{1}{3})^2$$

(i) Factorize

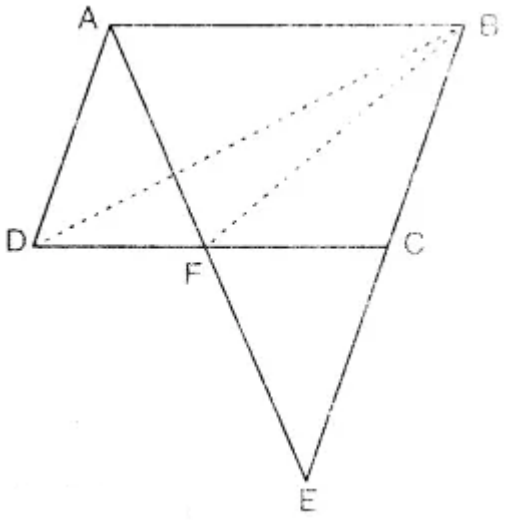
(ii) Find the value of k, if x - 2 is a factor of $p(x) = x^2 + kx + 2k$.

Section D (12 marks)

15. Point A (4,2), B (-1,2) and D (4,-5) are three vertices of a rectangle ABCD. Plot these points and hence find the vertex C.

16. A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.

17. ABCD is a parallelogram in which BC is produced to E such that CE = BC(figure). AE intersects CD at F. If ar(DFB) = 3 cm^2. Find the area of the parallelogram ABCD..


A
B
D
C
F
E