Sample paper 1
Class IX
Subject: Mathematics

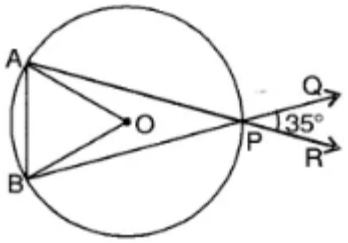
Time : 3hrs **M.M 80**

General Instructions:

1. All questions are compulsory.
2. The paper consists of 30 questions divided into 4 section A, B , C and D . Section A comprises of 6 questions of 1mark each. Section B comprises of 6 questions of each 2 marks. Section C comprises of 10 questions of 3 marks each. Section D comprises of 8 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

1. Linear equation x – 4 = 0 is parallel to which axis?
2. If three angles of quadrilateral are equal and fourth angle is 144º.Find all angles.
3. In the given figure, O is the centre of the circle with chords AP and BP being produced to R and Q respectively. If /_ QPR = 35, find /_AOB.



4. Choose the correct statement
   (a) a triangle has two right angles
   (b) all the angles of a triangle are more than 60°
   (c) an exterior angle of a triangle is always greater than the opposite interior angles
   (d) all the angles of a triangle are less than 60°

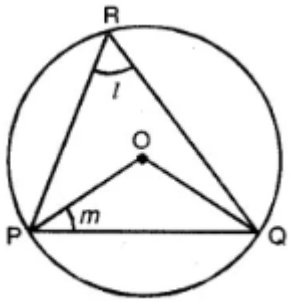
5. Which one is not a polynomial
   (a) $4x^2 + 2x - 1$
   (b) $y + \frac{3}{y}$
   (c) $x^3 - 1$
   (d) $y^2 + 5y + 1$

6. Which point lies on x-axis?
   (a) (3, 2)
   (b) (-3, 2)

(c) (2, 0)
(d) (-1,-2)

Section B

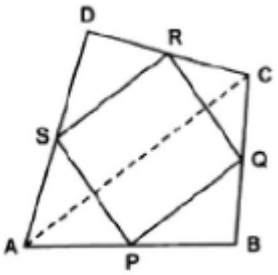
7. Find the value of k for which the cubic polynomial $3y^3 - \frac{3}{2}y^2 + ky + 5$ is exactly divisible by $\left(y - \frac{1}{2}\right)$.
8. The cost of pencil is twice Rs 7 less than twice the cost of pen. Find first 3 common multiples of 6 and 8. Write this statement as linear equation in two variables.
9. In the given figure O is the centre of the circle. PQ is a chord of the circle and R is any point on the circle if /_PRQ = I and /_OPQ = m. Find l+m.



10. Rationalize the denominator of $\frac{1}{\sqrt{7} - \sqrt{6}}$
11. Expand $(2a - 3b)^3$ and factorize $27 - 125a^3$.
12. Prove that any two sides of a triangle are together greater than twice the median drawn to the third side.

Section C

13. ABCD is a quadrilateral, in which P, Q, R and S are mid-points of the sides AB, BC, CD and DA (see figure). AC is a diagonal. Show that.



(i) SR || AC and SR = 1/2AC

(ii) PQ = SR

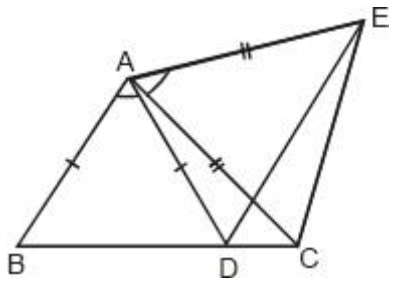
(iii) PQRS is a parallelogram

14. Prove that $3+\sqrt{5}$ is irrational ?

15. Using the long division method, determine the remainder when the polynomial $4x^5 + 2x^4 - x^3 + 4x^2 - 7$ is divided by $(x - 1)$.

16. In the figure, AX and CY are respectively the bisectors of opposite angles A and C of a parallelogram ABCD. Show that AX || CY.

17. In the figure, AC = AE, AB = AD and ∠BAD = ∠ESC. Show that BC = DE.



18. Simplify $1800 \div 10\{(12-6)+(24-12)\}$

19. Factorize $x^3 - 2x^2 - x + 2$

20. Show how $\sqrt{5}$ can be represented on the number line.

21. If PQ and RS are two intersecting lines which meet ar point O. If /_ POR :/_ ROQ= 5:7. Find all the angles.

22. In countries like USA and Canada, temperature is measured in Fahrenheit, whereas in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius.

$$F = \left(\frac{9}{5}\right)C + 32$$

(i) Draw the graph of the linear equation ahove using Celsius' for X–axis and Fahrenheit for y–axis.

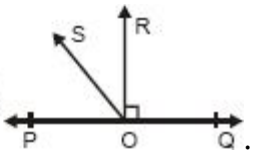
(ii) If the temperature is 30°C, what is the temperature in Fahrenheit?

(iii) If the temperature is 95°F, What is the temperature in Celsius?

Section D

23. Two circles having radii 5 cm and 3 cm intersect each other at two distinct points. If the distance between their centres is 4 cm, then what is the length of the common chord?
24. How does the graph of y=mx, depends on the value of m. Also draw graph when m=2,3.
25. The taxi fare in a town is Rs 10 for the first kilometer and Rs 6 per km for the subsequent distance. Taking the distance as x km and total fare as Rs. y, write a linear equation for this information, what will be the total fare for 15 km?
26. In the given figure, POQ is a line. Ray $\overline{OR} \perp PQ$, $\overline{OS}$ is another ray lying between rays $\overline{OP}$ and $\overline{OR}$. Prove that

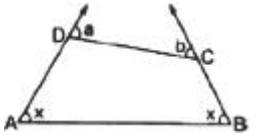
$$\angle ROS = \frac{1}{2}(\angle QOS - \angle POS).$$



27. Determine rational numbers p and q if

$$\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = p - 7\sqrt{5}\,q.$$

28. Factorize: $(a-b)^3 + (b-c)^3 + (c-a)^3$.
29. The sides AD and BC of a quadrilateral are produced as shown in the given figure. Prove that $x = \frac{a+b}{2}$.



30. Prove that angles opposite to equal sides of an isosceles triangle are equal.