BLUE PRINT : SA-I (IX) : MATHEMATICS

Unit/Topic	MCQ (1 mark)	Short answer (2 marks)	Short answer (3 marks)	Long answer (4 marks)	Total
Number System	1(1)	2(1)	6(2)	8(2)	**17(6)**
Algebra Polynomials	--	4(2)	9(3)	12(3)	**25(8)**
Geometry Euclids Geometry, Lines and Angles, Triangles	1(1)	4(2)	12(4)	20(5)	**37(12)**
Coordinate Geometry	1(1)	2(1)	3(1)	--	**6(3)**
Mensuration	1(1)	--	--	4(1)	**5(2)**
Total	4(4)	12(6)	30(10)	44(11)	**90(31)**

SAMPLE PAPER – III

Class – IX **Max. Marks: 90**
Subject: Mathematics **Time Allowed: 3 hrs**

General Instruction:

(i) All questions are compulsory.
(ii) The question paper consists of 31 questions divided into four sections A, B. C and D.
(iii) Section A contains 4 multiple-choice questions of 1 mark each. Section B contains 6 questions of 2 marks each. Section C contains 10 questions of 3 marks each. Section D contains 11 questions of 4 marks each.
(iv) Use of calculator is not permitted.

SECTION – A

1. Simplify: $\left(4\sqrt{3}-2\sqrt{2}\right)\left(3\sqrt{2}+4\sqrt{3}\right)$.

2. Write the coordinates of the point lying on y-axis with y-coordinate –3.

3. Solve the equation $a - 15 = 25$ and state which axiom do you use here.

4. If the area of an equilateral triangle is $64\sqrt{3}$ cm^2, then find the length of its side.

SECTION – B

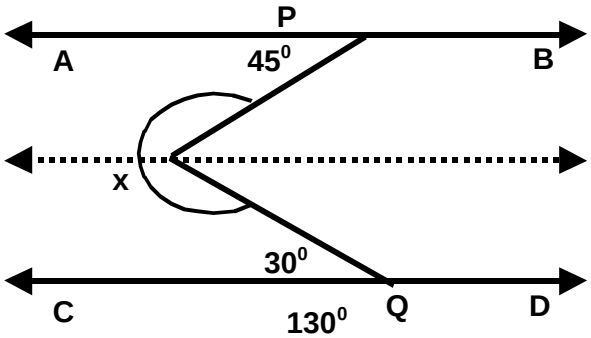
5. The coordinates of the three vertices of a rectangle ABCD are A(3, 2), B(–4, 2), C(–4, 5). Plot these points and write the coordinates of D.

6. Without actually calculating the cubes, find the value of $(28)^3 + (-15)^3 + (-13)^3$

7. How would you rewrite Euclid's fifth postulate so that it would be easier to understand?

8. Find the value of m so that $2x - 1$ be a factor of $8x^4 + 4x^3 - 16x^2 + 10x + m$.

9. In the adjoining figure, find the value of x



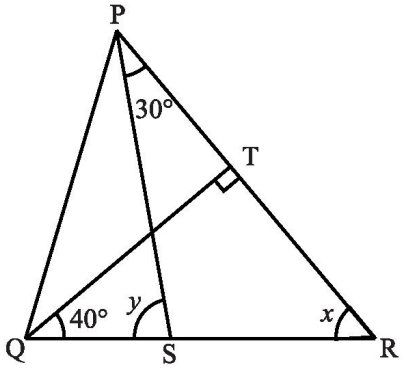
10. Simplify: $\left(\frac{625}{81}\right)^{-\frac{1}{4}}$

SECTION – C

11. Plot the following points and write the name of the figure thus obtained : P(–3, 2), Q (–7, –3), R (6, –3), S (2, 2)

12. Visualize $4.\overline{26}$ on the number line, using successive magnification upto 4 decimal places.

13. In the below figure, if QT ⊥ PR, ∠TQR = 40° and ∠SPR = 30°, find x and y.



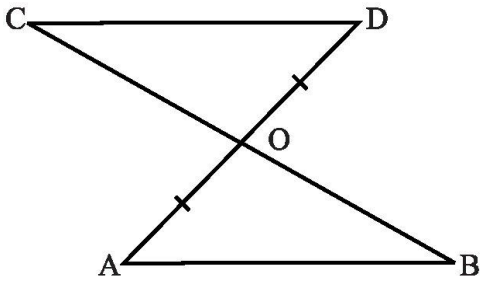
14. Show that 0.23535353……. can be expressed in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

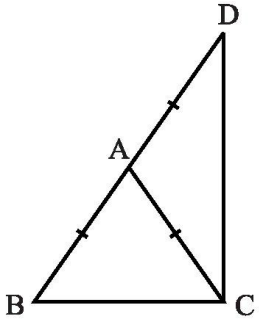
15. Factorise : $27x^3 + y^3 + z^3 - 9xyz$

16. If $x + y = 12$ and $xy = 27$, find the value of $x^3 + y^3$.

17. If $a + b + c = 9$ and $ab + bc + ca = 26$, find $a^2 + b^2 + c^2$.

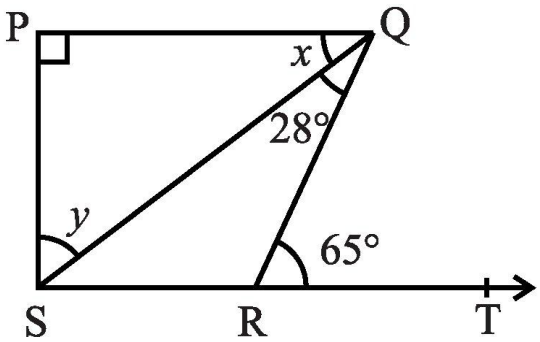
18. Line-segment AB is parallel to another line-segment CD. O is the mid-point of AD (see the adjoining figure). Show that (i) $\Delta AOB \cong \Delta DOC$ (ii) O is also the mid-point of BC.





19. ΔABC is an isosceles triangle in which AB = AC. Side BA is produced to D such that AD = AB (see the above right sided figure). Show that $\angle BCD$ is a right angle.

20. In the below figure, if PQ ⊥ PS, PQ || SR, ∠ SQR = 28° and ∠QRT = 65°, then find the values of *x* and *y*.



SECTION – D

21. Find the value of a and b in $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$

22. Prove that the sum of any two sides of a triangle is greater than twice the median drawn to the third side.

23. If polynomials $ax^3 + 3x^2 - 3$ and $2x^3 - 5x + a$ leaves the same remainder when each is divided by $x - 4$, find the value of a.

24. Factorise $x^3 - 23x^2 + 142x - 120$.

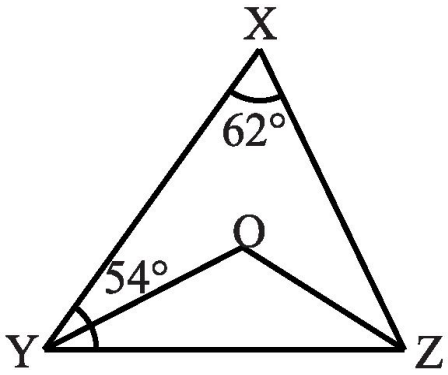
25. Simplify $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} + \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ by rationalizing the denominator.

26. If $x^3 + ax^2 + bx + 6$ has $(x - 2)$ as a factor and leaves a remainder 3 when divided by $(x - 3)$, find the values of a and b.

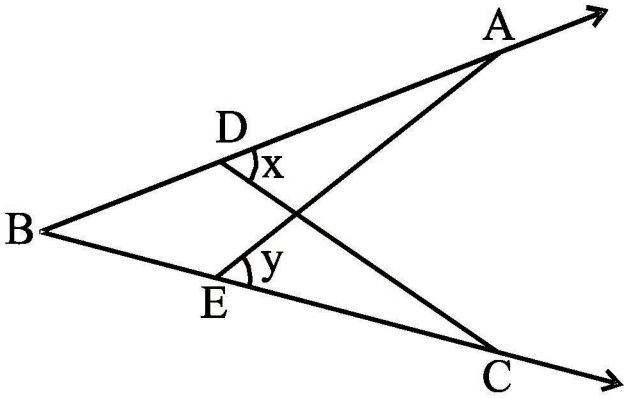
27. AD is an altitude of an isosceles triangle ABC in which AB = AC. Show that (i) AD bisects BC (ii) AD bisects $\angle A$.

28. Sanya has a piece of land which is in the shape of a rhombus. She wants her one daughter and one son to work on the land and produce different crops for the poor people of the village. She divided the land in two equal parts. If the perimeter of the land is 400 m and one of the diagonals is 160 m, how much area each of them will get for their crops? What values depicted from this?

29. In below figure, $\angle X = 62°$, $\angle XYZ = 54°$. If YO and ZO are the bisectors of $\angle XYZ$ and $\angle XZY$ respectively of triangle XYZ, find $\angle OZY$ and $\angle YOZ$.



30. In the figure if $\angle x = \angle y$ and AB = CB. Prove that AE = CD.



31. AB and CD are respectively the smallest and longest sides of a quadrilateral ABCD. Show that $\angle A > \angle C$ and $\angle B > \angle D$.