WEST BENGAL BOARD CLASS 9 MATHS SAMPLE PAPER

Mathematics

Class: IX **Total Marks: 90**

General Instructions:

1. **All** questions are **compulsory**.
2. **Section A** comprises of **14** questions carrying 1 mark each.
3. **Section B** comprises of **13** questions carrying 2 marks each.
4. **Section C** comprises of **11** questions carrying 3 marks each.
5. **Section D** comprises of **5** questions carrying 4 marks each.
6. Use of a calculator is **not allowed**.

SECTION – A

MULTIPLE CHOICE QUESTIONS: - $14 \times 1 = 14$

1. Which of the following is a rational number in between 6 and 6.5?

a) 7.52

b) 6.65

c) 6.25

d) 6.55

2.The reduction in price offered on the marked price or listed price is called as:

a) C.P

b) S.P

c) Discount

d) Profit

3. The degree of the polynomial $4p^3q^3 - 3q^2p^3 + 6pq$is:

a) 3

b) 2

c) 5

d) 6

4. Which of the following is the value of $a^3 + b^3$?

a) $(a+b)(a^2 - ab + b^2)$

b) $(a+b)^2(a+b)$

c) $(a-b)(a^2+ab+b^2)$

d) $(a+b)^2(a-b)$

5. Which of the following $(m,n)$is the solution of the linear equation $9m-2n+2=0$?

a) (10,2)

b) (2,10)

c) (-2,10)

d) (10,-2)

6. If$3^x=81$. Find the value of x?

a) 2

b) 3

c) 4

d) 5

7. What is true for $\log_a \frac{X}{Y}$?

a) $\log_a X+\log_a Y$

b) $\log_a X-\log_a Y$

c) $\log_a X \div \log_a Y$

d) $\log_a X \times \log_a Y$

8.Which point lies in II Quadrant?

a) (2,2)

b) (2,-2)

c) (-2,-2)

d) (-2,2)

9. What is the supplement of 120° ?

a) $60°$

b) $70°$

c) $80°$

d) $120°$

10.A triangle whose two sides are equal is called _____ triangle.

a) Scalene

b) Isosceles

c) Equilateral

d) Right angled

11. The perimeter of a rectangle is 176 m. If the difference between the length and breadth of the rectangle is 24m. Find the length and breadth of the rectangle (l, b)?

a) 65m, 32m

b) 32m, 56m

c) 56m, 32m

d) 56m, 23m

12. The circumference of a circle is given as $352cm.$ Find the radius of the circle.

a) 56cm

b) 76cm

c) 65cm

d) 67cm

13. What is the mean of the data $12, 15, 35, 47, 52, 16, 21$?

a) 18.5

b) 21.2

c) 28.2

d) 33.8

14. What is the range of the data $7,19,85,66,43,38$?

a) 78

b) 19

c) 65

d) 42

SECTION -B

Solve the following questions. Each question carries 2 marks. $13 \times 2 = 26$

15. Express the recurring decimal 5.639639639... In $\frac{m}{n}$ form.

16. A seller marked the price of his goods at 20% above the cost price. If he gives a discount of 7%, then determine his gain %?

17. Factorise: $p(p+q)^3 - 3p^2q(p+q)$

18. Make a graph for the linear equation $7x - 2y = 28$

19. Write four solutions of the equation $3m - n = 2$

20. The difference of ages of Raju and Sanju is 3 years. Sanju is elder to Raju. Also, two times of Sanju's age is 19 less than 3 times of Raju's age. Find their ages.

21.In a right -angled triangle, where $\angle A = 90°, AB = BC$. What is the value of $\angle B$.

22. Find the distance between the points $(3, 1)$ and $(5, 3)$

23. Find the area of a triangle whose vertices are $(-2, 3), (3, 1)\ and\ (1, 4)$

24. Find the area of a triangle whose sides are 6cm, 5cm, and 3cm using Heron's formula.

25. One diagonal of a parallelogram is given as 50 cm and perpendicular distance of this diagonal from either of the vertices is 25 cm. Find the area of the parallelogram.

26. Find the mode of 38, 13, 38, 18, 38, 14, 24, 14, 55.

27. Find the median of the values $17, 31, 62, 25, 43, 36, 54, 37, 16.$

SECTION -C

Answer the following questions. Each question carries 3 marks. $\mathbf{10 \times 3 = 30}$

28.

a) Write remainder theorem. Divide the polynomial $(4x^3 - 2x^2 - 5x - 1)$ by $(x - 1)$ and find the remainder by using remainder theorem

Or

b) Add the following polynomials.

(i) $(5x^3 - 2x^2 - 7)$ and $(x^3 + 2x^2 + 7)$

(ii) $(8p^4 + 3p^3 - 6)$ and $(5p^5 - 3p^3 + 2p^2 + 13)$

(iii) $(m^3 + 5m^2 - 9)$and $(3m^3 + 6m - 1)$

29.

a) Factorise:$27p^3 - 125q^3 + 343 + 315pq$

Or

b) Solve the following polynomial into factors:

$(y^2 - 3y)^2 - 5(y^2 - 3y) - 50$

30.

a) Solve linear simultaneous equation by using substitution method.

$7p + 6q = 16; \quad 5p + 6q = 10$

Or

b) Solve linear simultaneous equation by using cross-multiplication method.

$2m - 3n = 11; \quad 3m + 2n = 10$

31.

a) A two-digit number is such that if we interchange the digits, then the reversed number is 327 less than 4 times the original number. Also, the original number is 45 more than the reversed number. Find the original number.

Or

b) The cost of 5 trousers and 6 shirts is Rs. 2060 and the cost of 4 trousers and 3 shirts is Rs.1270. Find the cost of 1 trouser and 1 shirt.

32.

a) If $e^2 = df$ and $p + r = 2q$, then prove that $d^{q-r}e^{r-p}f^{p-q} = 1$

Or

b) Find the value of p if $5 \times 125^p = 25^{p+4}$

33.

a) If $\frac{\log p}{q-r} = \frac{\log q}{r-p} = \frac{\log r}{p-q} = k$, Prove that $p^p q^q r^r = 1$

Or

b) Find the value of $\frac{\log\sqrt{343} + \log 8 - \log\sqrt{1000}}{\log 2.8}$

34.

a) Find the relation between x and y if the points $(x, y), (6,3), (3,-6)$ are collinear.

Or

b) Find three solutions for the linear equation 3x + 4y = 2.

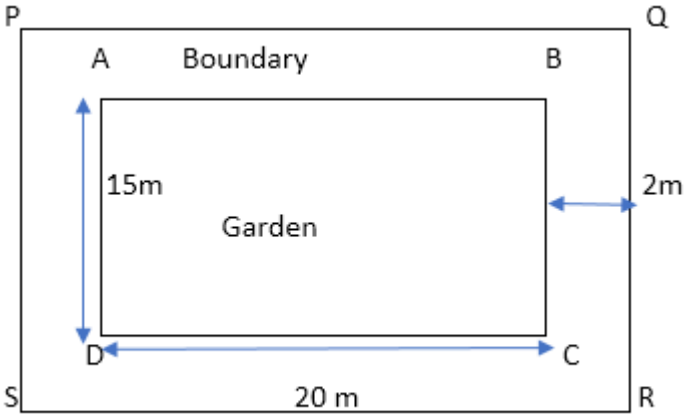
35.

a) There is a rectangular pool of length 210 m and breadth 190 m inside a circular grass ground. If the area of grass portion of the ground is 98,700 sq. m, then find the radius of the ground.

Or

b) As shown in the figure, there is a rectangular garden with length as 20 m and breadth as 15 m. around the garden, there is a boundary which is 5 m broad.

Find the area of the boundary of the garden.



Answer any 2 out of 3 questions

36. Let $A(4,2), B(2,6)\ and\ C(2,4)$ be the vertices of a ΔABC. The median from A meets BC at D. Find D.

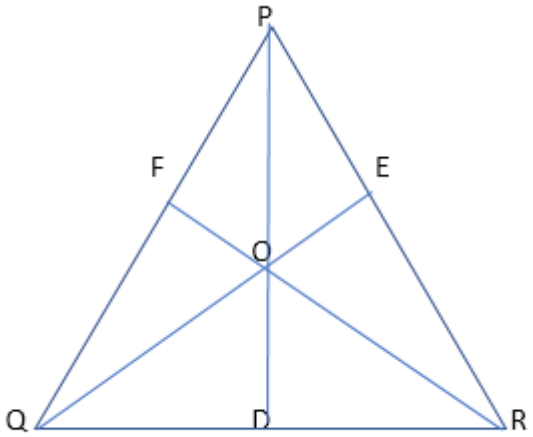
37. The radius of the circle is 12cm and the length of tangent to the circle from a point P is 5 cm. Find the length of P to the centre of the circle.

38. As shown in the figure, there is an equilateral triangle such that

AB = BC = AC and OF = 8cm, OE = 10cm, OD = 11cm

Also, OF⊥PQ, OE ⊥ PR, OD ⊥ QR.

Find the area of the equilateral triangle.



SECTION -D

Solve the following. Each question carries 4 marks. $5 \times 4 = 20$

39.

a) Simplify:

$$\frac{5\sqrt{2} + 7\sqrt{3}}{\sqrt{6} - \sqrt{3}} + \frac{5\sqrt{2} - 7\sqrt{3}}{\sqrt{6} + \sqrt{3}}$$

Or

b) A fruit vendor bought apples at 6 for Rs. 50 and sold them at 4 for Rs. 60.

Find the gain %.

40.

a) Draw the graph of following linear equations in two variables

(i) 2x + y = 2
(ii) x + 2y = 3

Or

b) Where does the following points lie? Plot and verify.

1. (-6,5)

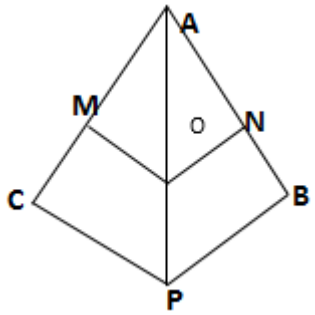
2. (3,4)

3. (-1,-2)

4. (3,-1)

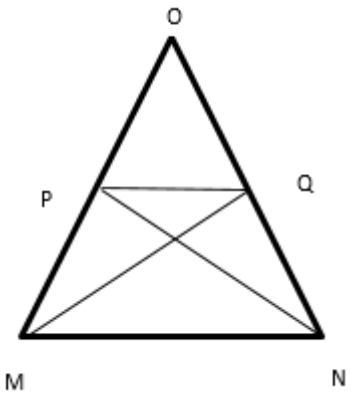
41.

a) In The figure, ON || PB and OM || PC. Prove $\frac{AM}{AC} = \frac{AN}{AB}$.



Or

b) In the figure, if $\Delta OMQ \cong \Delta ONP$, show that $\Delta OMN \cong \Delta OPQ$.



42.

a) Draw a line segment of 12 cm and divide it in the ratio $3:5$. Measure the two parts.

Or

b) Construct a ΔXYZ where base $XY = 5.5\,cm$, $XZ + YZ = 11cm$ and $\angle X = 50°$.

43.

a) Given below are the marks scored by students in Maths exam.

Student Name	Marks
Sri	75
Raj	85
Mani	65
Chris	90

Rafi	95

(i) Draw a bar graph to represent the result.
(ii) Who scored the maximum marks in exam?

Or

b) The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x.

29, 32, 48, 50, x, x + 2, 72, 78, 84, 95