SECOND SUMMATIVE ASSESSMENT (SA-2)-March-2025

**CLASS: 9ᵀᴴ STD**   **SUBJECT: MATHEMATICS**

TIME :3.15h   **Max.Marks:80**

I. Four alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet.   **1 × 8 = 8**

1. The abscissa of any point on y-axis is
    A) 1   B)   C) -1   D) 0

2. Formula to find the curved surface area cone of radius of base 'r' ?
    A) $\pi r l$ B) $2\pi r h$ C) $\pi r^2 l$ D) $2\pi r l$

3. The two diagonals of quadrilateral are always equal if it is a
    A) Parallelogram   B) Trapezium   C) Rhombus   D) Rectangle
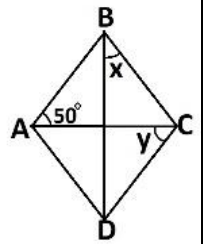
4. In the given figure ABCD is a rhombus with one angle $\angle BAC = 50^0$.
    Then value of $\angle x$ and $\angle y$ respectively are .
    A) 50^0 , 40^0 B) 40^0 , 50^0 C) 65^0 , 25^0 D) 25^0 , 65^0

5. Zero of the polynomial $2x + 3$ is
    A) $\frac{2}{3}$ B) $-\frac{2}{3}$ C) $\frac{3}{2}$ D) $-\frac{3}{2}$

6. Which of the following number is irrational
    A) $\frac{2\sqrt{3}}{\sqrt{27}}$ B) 1   C) $3\sqrt{2}$ D) - 0.675

7. The following pair of corresponding side are correct if $\Delta SKY \cong \Delta ICE$

    A) KS$\leftrightarrow CE$ B) KS$\leftrightarrow IE$ C) YS$\leftrightarrow IE$ D) KY$\leftrightarrow IE$
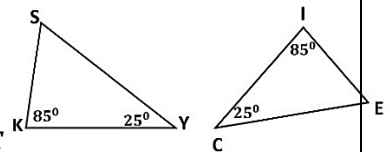
8. If a ray stands on a line, then the sum of two adjacent angles so formed is
    A) 360^0 B) 90^0 C) 180^0 D) 45^0

II Answer the following questions: **1x8=8**

9. The degree of the polynomial $2x^3 + 3x^4 - 5x^2 + 6$ is?

10. Write a formula to find the total surface area of hemisphere of radius r ?

11. Name the quadrant in which the graph of point $p(x, y)$ lies when
    i) $x > 0 \; and \; y > 0$ ii) $x < 0 \; and \; y < 0$

12. Express the following linear equation in the form $ax + by + c = 0$ and indicate the values of a, b and c $3x + 2y = 17$

13. In the figure AB and CD are chords of circle of centre 'O' if BP=4cm, if OP=OR find length of CD

14. "Given two distinct points, there is a unique line that passes through them". Draw a suitable figure for this axioms.

15. State Side Angle Side[SAS] congruence rule.
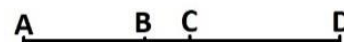
16. Write any two properties of Parallelogram.
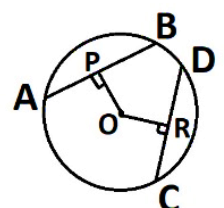
III Answer the following questions   2x8=16

17. Express the $0.\overline{6}$ in the form $\frac{p}{q}$ where p and q are integers and q ≠ 0.

18. Factorise :   x² + 7x + 12

A _____ B C _____ D

19. In the figure if AC=BD , then prove that AB = CD .

OR

If a point C lies between two points A and B such that AC = BC, then prove that
AC = $\frac{1}{2}$ AB,   explain by drawing the figure.

20. Simplify : $5\sqrt{8} + 2\sqrt{32} - 2\sqrt{2}$

OR

Simplify the following expression :   (3+$\sqrt{2}$) (5 + $\sqrt{3}$)

21. Write four solution for this equation: $2x + y = 12$

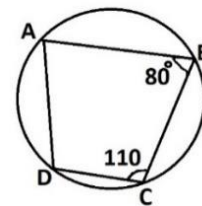22. The total surface area of a sphere is 154cm² find the radius of the sphere

23. a) Write the coefficient of x² in the polynomial   3 + 5x² + 6x

   b) Classify the following as linear, quadratic and cubic polynomials
        $x^2 + 5x$, $x - x^3$, $2x + x^2$, $3x - 1$, $5x^3 - 2x + 1$, $7x$

24. In the figure A,B,C and D points lie on a circle

   i.   Name the quadrilateral ABCD

   ii.   What is the value of ∠A

   iii. What is the value of ∠D

III Answer the following questions: 3x9=27

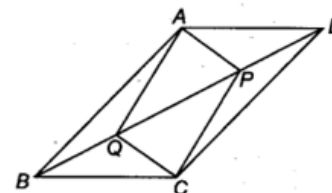25. i) Rationalise the denominator $\frac{1}{\sqrt{3}-\sqrt{2}}$

   ii)   Simplify: $2^{\frac{2}{3}}$ X $2^{\frac{1}{5}}$

26. Diagonal AC of a parallelogram ABCD bisects ∠ A Show that
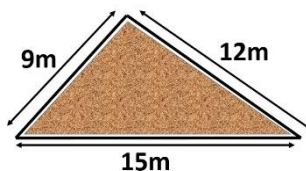   (i) it bisects ∠ C also,   (ii) ABCD is a rhombus.

OR

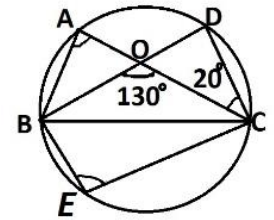In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ
(see figure). Show that   (i) Δ APD ≅ Δ CQB   (ii) AP = CQ

27. A triangular plot has perimeters of 9m, 12m, and 15m. Find the area of this land.
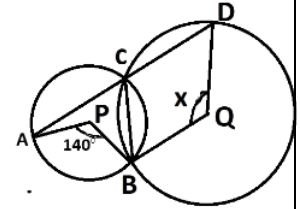
28. In the figure A, B, C, and D are four points on a circle. AC and BD Intersect at a point O Such that ∠BOC = 130° and ∠OCD = 20°. Find ∠BAC and ∠BEC
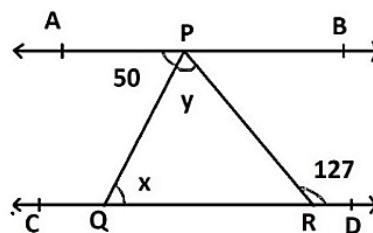

OR

In the given figure, P and Q are centers of two circles intersecting at B and C. ∠APB = 140^0, ACD is a straight line. Then find the measure of ∠BQD or value of x

29. In figure if AB || CD, ∠ APQ = 50° and ∠ PRD = 127°, find x and y.

30. The following table gives the students are reading NEWS paper daily in home are given.

| NEWS PAPER	Number of Students will read
PRAJAVANI	2%
KANNADA PRABHA	3%
VIJAYA KARNATAKA	9%
MYSURU MITRA	10%
DECAN HERALD	4%
TIMES OF INDIA	5%

Represent the given information with the help bar graph representation.

31. Prove that "Angles opposite to equal sides of an isosceles triangle are equal".

32. A heap of wheat is in the form of a cone whose diameter is 10.5 m and height is 3 m. Find its volume. The heap is to be covered by canvas to protect it from rain. Find the area of the canvas required.

OR

Calculate the amount of ice-cream that can be put into a cone with base diameter 7 cm and height 12 cm. included hemispherical part at the top of cone as shown in the figure.
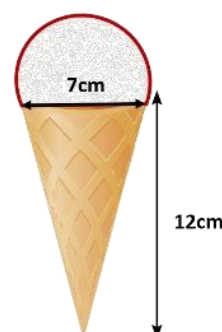
33.i) Find the value of k if $x - 1$, is a factor of $4x^3 + 3x^2 - 4x + k$

ii)Find the product by using suitable identities : (x+2)(x+3)

OR

i) Expand using suitable identities: $(3a + 4b + 2c)^2$

ii) If $2x + y + z = 0$, value of $8x^3 + y^3 + z^3$ is

IV Answer the following questions: 4x4=16

34. The following table gives the distribution of students of two sections according to the marks obtained by them

Section A		Section B	
Marks	Frequencey	Marks	Frequencey
0-10	4	0-10	3
10-20	10	10-20	14
20-30	18	20-30	16
30-40	12	30-40	10
40-50	5	40-50	2

Represent the marks of the students of both the sections on the same graph by two frequency polygons. From the two polygons compare the performance of the two sections.

35. Represent $\sqrt{3.5}$ on the number line.

36. In the figure if PQ ∥ RS , ∠MXQ =135° and ∠MYR = 40° find ∠XMY

[Hint: Draw a line parallel to PQ through point M]
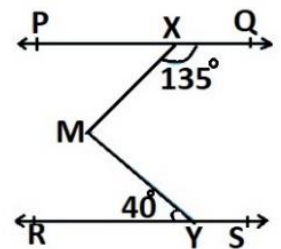
OR

In figure, if PQ || ST, ∠ PQR = 110° and ∠ RST = 130°, find ∠QRS.

[Hint: Draw a line parallel to ST through point R]
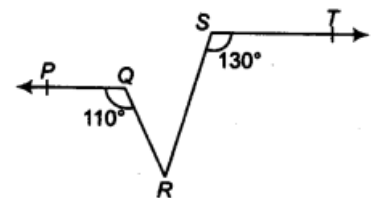
37. In the figure Line ℓ is the bisector of an angle ∠ A and B is any point on l. BP and BQ are perpendiculars from B to the arms of ∠ A Show that: (i) Δ APB ≅ Δ AQB   (ii) BP = BQ or B is equidistant from the arms of ∠ A.
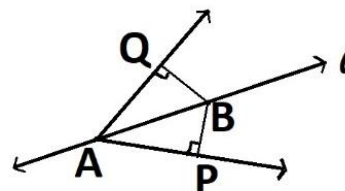
V Answer the following question: 5x1=5

38. State and prove mid point theorem

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