B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL

ANNUAL EXAMINATION (2026)
MATHEMATICS (041)-SET -2

Class: IX
Date: 20-02-2026
Adm No: _____

Duration: 3 Hrs
Max. Marks: 80
Roll number:

____

General Instructions:

1 This question paper has 5 sections A, B, C, D and E.
2 Section A has 18 MCQs carrying 1 mark each. There are two AS Qs carrying 1 mark each.
3 Section B has 5 questions carrying 2 marks each.
4 Section C has 6 questions carrying 3 marks each.
5 Section D has 4 questions carrying 5 marks each
6 Section E has 3 case based integrated units of assessment (04 marks each) with subparts of the values 1, 1 and 2 marks each respectively.
7 All questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2Qs of 3 marks and 2 Qs of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
8 Draw neat figures wherever required. Take $\pi = \frac{22}{7}$ / 3.14 wherever required if not stated.

SECTION – A

1. Which of the following is an irrational number?

(A) $\sqrt{16}$ (B) $\sqrt{9}$ (C) $\sqrt{100}$ (D) none of these

2. $(3\sqrt{6}) \times (4\sqrt{6})$ is equal to:

(A) 70 (B) 72 (C) $12\sqrt{6}$ (D) $7\sqrt{12}$

3. The degree of a non-zero constant polynomial is:

(A) 0 (B) 1 (C) $\frac{1}{2}$ (D) 2

4. The coordinates of a point are (-3, 4), then it lies in:

(A) First quadrant B) Second quadrant C) Third quadrant (D) Fourth quadrant

5. The value of k, if x = 1, y = 2 is a solution of the equation 2x + 3y = k.is:

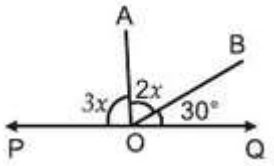
(A) 5 (B) 6 (C) 7 (D) 8

6. Which of the following needs a proof?

(A) Definition (B) Postulates (C) Theorems (D) Axioms

7. In the below given figure, POQ is straight line then value of x is

(A) 20^0 (B) 30^0 (C) 40^0 (D) 50^0



8. Which of the following is not a criterion for congruence of triangles?

(A) SAS (B) ASA (C) SSA (D) SSS

9. If AD is an altitude of an isosceles triangle ABC in which AB = AC. Then:

(A) BD = CD (B) BD > CD (C) BD < CD (D) None of the above

10. The quadrilateral whose all its sides are equal and angles are equal to 90 degrees, it is called:

(A) Rectangle (B) Kite (C) Square (D) Parallelogram

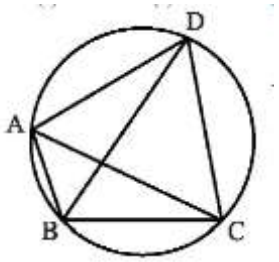
11. Three angles of a quadrilateral are 80 º, 95 º and 105º. The fourth angle is

(A) 80^0 (B) 90^0 (C) 85^0 (D) 70^0

12 In below figure, ABCD is a cyclic quadrilateral in which AC and BD are its diagonals. If $\angle DBC = 60^0$ and $\angle BAC = 55^0, find\ \angle BCD.$

(A) 80^0 (B) 65^0

(C) 100^0 (D) 105^0



13 The perimeter of an equilateral triangle is 180 m. The area is

(A) 900 cm^2 (B) $900\sqrt{3}\ cm^2$ (C) $300\sqrt{3}\ cm^2$ (D) $600\sqrt{3}\ cm^2$

14 The sides of a triangle are 8 cm and11cm. perimeter is 32 cm. then its area is

(A) $5\sqrt{30}cm^2$ (B) $8\sqrt{30}cm^2$ (C) $5\sqrt{12}cm^2$ (D) none of these.

15. The surface area of a sphere of radius 14 cm is:

(A) 1386 sq.cm B) 1400 sq.cm (C) 2464 sq.cm (D) 2000 sq cm

16. If the radius of a sphere is doubled, then what is the ratio of their surface area?:

(A)1 : 2 (B) 2 : 1 (C) 1 : 4 (D) 4 : 1

17 The mean of the data : 4, 6, 10, 9, 11 is

(A) 6 (B) 8 (C) 9 (D) 11

18. Class mark of class 90-130 is

(A) 210 (B) 110 C) 155 (D) none of these

Assertion and Reasoning questions: In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true and R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

19 **Assertion:** If $\Delta ABC \cong \Delta RPQ$ then BC = RQ
Reason: Corresponding parts of congruent triangles are equal

20 **Assertion:** All angles of a quadrilateral can be acute angles.
Reason: Sum of all the angles of a quadrilateral is 360^0

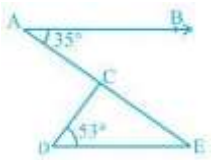
SECTION – B

21. Factorise the polynomial (splitting middle term): $x^2 + 10x + 21$.

22. If (4, 19) is a solution of equation $y = a\,x + 3$, find the value of a .

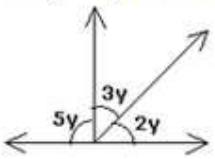
23. If a point C lies between two points A and B such that AC = BC, then prove that AC = ½ AB. Explain by drawing the figure.

24. If AB || DE, ∠BAC = 35° and ∠CDE = 53°, find ∠DCE.



OR

In the figure, find the value of y.



25 Find the radius of sphere of surface area is 154 cm^2

OR

Diameter of the base of a Cone is 10.5 cm and its slant height is 10 cm. Find its Curved Surface area.

SECTION – C

26 Rationalise the denominator and simplify: i) $\frac{4}{\sqrt{11}-\sqrt{7}}$ ii) Simplify: $(3 + \sqrt{3})^2$

27 Find SIX different solution of $x + 2y = 6$

OR

If $x = 3k + 2$ and $y = 2k-1$ is a solution of the equation $4x - 3y + 1 = 0$ Find the value of k

28 i) Expand using identities: $(2a - 3b)^3$
ii) Factorise: $8a^3 - b^3 - 12a^2b + 6ab^2$

29 Plot these points on graph paper: A (1, 4) , B (-2 , 2) and C (3 , 2) . Join AB, BC, CA. Name the so obtained figure.

30 Prove that the Equal Chords of a circle are Equidistant from the centre

OR

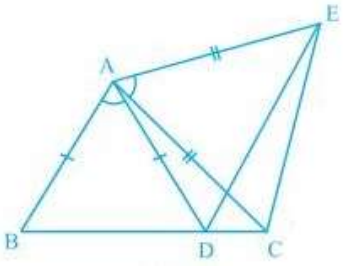
A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.

31 In a survey of diabetic patients in a village , the following observation were noted. Represent the Following data by frequency polygon.

Age in years	10-20	20-30	30-40	40-50	50-60	60-70
Number of patients	2	5	12	19	9	4

SECTION – D

32. AC = AE, AB = AD and ∠BAD = ∠EAC. Show that BC = DE.



OR

In an isosceles triangle ABC, with AB = AC, the bisectors of ∠B and ∠C intersect each other at O. Join A to O. Show that: (i) OB = OC (ii) AO bisects ∠A

33. Show that the diagonals of a square are equal and bisect each other at right angles.

34. The lengths of the sides of a triangle are in the ratio 3:4:5and its perimeter is 144 cm.Find the area of the triangle.

35. The volume of a sphere is 38808 cm^3. Find its i) radius ii) surface area. .

OR

A conical tent is 10 m high, and the radius of its base is 24 m. Find

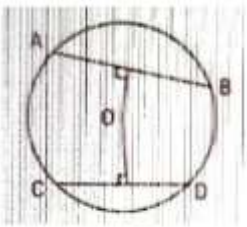
i) slant height of the tent.

ii) cost of the canvas required to make the tent, if the cost of 1 m^2 canvas is Rs 70.

SECTION – E

36. Read the following and answer the questions given below.

Rohan draws a circle of radius 10 cm with the help of compass and scale. He also draws two chords. AB and CD in such a way that AB and CD are 6 cm and 8 cm from the centre O. Now, he has some doubts that are given below. Help him out by answer these questions:



i) What is the length AB? 2

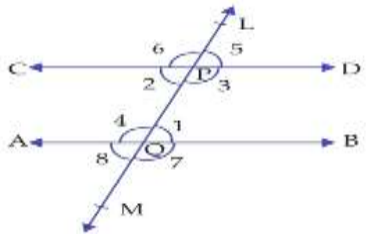
OR

What is the length CD?

ii) Equal Chords are equidistant from the ----------. 1

iii) Perpendicular from the centre of a circle bisects the ----------. 1

37 Two lines are parallel to each other, if the distance between these 2 lines always remains constant throughout and they never meet. There are various examples of parallel lines that we see in our daily life like railway line, 2 steps of ladder, opposite sides of a table etc. A line which cuts a pair of parallel lines is called a transversal as shown in the figure.



Answer the following questions:

i) If ∠5 = 65°. Then what is the ∠8? 1

ii) If ∠6 = $2x$ and ∠1 = 70°. Then find the value of x. 2

OR

If ∠8 = $3y$ and ∠7 = 40°. Then find the value of y.

iii) If ∠2 = 75°. Then what is the ∠1? 1

38. A group of students decided to make a project on Statistics. They are collecting the heights (in cm) of their 51 girls of Class IX-A, B and C of their school. After collecting the data, they arranged the data in the following frequency distribution table form:

Height (in cm)	Number of girls
135 - 140	4
140 - 145	7
145 - 150	18
150 - 155	11
155 - 160	6
160 - 165	5

Based on the information, answer the following questions:

i) Write the class interval with highest frequency. 1

ii) What is the width of the class? 1

iii) How many students of the height 150 cm and below are there? 2

OR

How many students of the height 145 cm and above are there?

**********ALL THE BEST**********