PRE ANNUAL EXAMINATION
SESSION 2025- 2026
CLASS - IX

Time – 3 Hrs **MATHEMATICS** **Max Mark-80**

General instructions:

1. This question paper has 5 sections A, B, C, D and E
2. **Section A** has **20 Multiple Choice Questions** carrying 1 mark each.
3. **Section B** has **5 Short Answer-I type questions** carrying 2 marks each.
4. **Section C** has **6 Short Answer-II type questions** carrying 3 marks each.
5. **Section D** has **4 Long Answer type questions** carrying 5 marks each.
6. **Section E** has **3 Case Based integrated** units of assessment 4 marks each.
7. All questions are compulsory. However, an internal choice in two questions of 2 marks and 2 questions of 3 marks and 2 questions of 5 marks has been provided.
8. Draw neat figures wherever required.

SECTION – A

1. The perpendicular distance of the point (-4, -3) from the x- axis is:

(A) – 3 units (B) 4 units (C) 3 units (D) – 4 units

2. If x+1 is a factor of $2x^2 + kx$, then the value of k is

(A) -3 (B) 4 (C) 2 (D) -2

3. The product of any two irrational numbers is

(A) always an irrational number
(B) always a rational number
(C) always an integer
(D) sometimes rational, sometimes irrational

4. The degree of polynomial $\sqrt{2}$ is

(A) 1 (B) ½ (C) 0 (D) not define

5. In which quadrant does the point (−3, 4) lie?

(A) I (B) II (C) III (D) IV

6. The graph of the linear equation 3x+ 4y=6 cuts the y axis at the point

(A) (1.5, 0) (B) (3, 4) (C) (2,0) (D) (0,1.5)

7. In Δ ABC, BC = AB and ∠B = 80°. Then ∠A is equal to

(A) 80° (B) 40° (C) 50° (D) 100°

8. The diagonals AC and BD of a parallelogram ABCD intersect each other at the point O. If ∠DAC = 32º and ∠AOB = 70º, then ∠DBC is equal to

(A) 24º (B) 86º (C) 38º (D) 32º

$x = 0.37$

$10x = 3.7$ (ii)

$100x = 37.7$ (i)

100 | 37·7
10 | 3·7
90 | 34 | 0

= 34 17
90 45

9. If the surface area of a sphere is 324π m^2, then its volume is:
(A) 972π m^3 (B) 324π m^3 (C) 256π m^3 (D) 486π m^3 (1)

10. The length of each side of an equilateral triangle having an area of $9\sqrt{3}$ cm^2
(A) 8 cm (B) 36 cm (C) 4 cm (D) 6cm (1)

11. The total surface area of a cone whose radius is $\frac{r}{2}$ and slant height $2l$ is (1)

(A) $2\pi r(l + r)$ (B) $\pi r(l + \frac{r}{4})$ (C) $\pi r(l + r)$ (D) $2\pi rl$

12. The p/q form of $0.3\overline{7}$
(A) $\frac{17}{100}$ (B) $\frac{37}{100}$ (C) $\frac{34}{99}$ (D) $\frac{17}{45}$ (1)

13. The number of dimension(s), a point has :
(A) 0 (B) 1 (C) 3 (D) 2 (1)

14. If $p(x) = x^2 - 2\sqrt{2}x + 1$, then $p(2\sqrt{2})$ is equal to (1)

(A) 0 (B) 1 (C) $4\sqrt{2}$ (D) $8\sqrt{2} + 1$

15. A cone is 8.4 cm high and the radius of its base is 2.1 cm. It is melted and recast into a sphere. The radius of the sphere is :
(A) 4.2 cm (B) 2.1 cm (C) 2.4 cm (D) 1.6 cm (1)

16. Which of the following is irrational?
(A) 0.14 (B) $0.14\overline{16}$ (C) $0.\overline{1416}$. (D) 0.40140014000014... (1)

17. The class mark of the class 90-120 is :
(A) 90 (B) 105 (C) 115 (D) 120 (1)

$\frac{U+L}{2}$

18. Three angles of a quadrilateral are 75º, 90º and 75º. The fourth angle is
(A) 90º (B) 95º (C) 105º (D) 120º (1)

In the following question, a statement of assertion (A) is followed by a statement of reason (R). Read the given statements carefully and choose the correct option

(a) Both assertion and Reason are true and reason is the correct explanation of assertion.

(b) Both assertion and reason are true and reason is not the correct explanation of assertion

(c) Assertion is true but reason is false. (1)

(d) Assertion is false but the reason is true

$\frac{\sqrt{3}a^2}{4}$

$9\sqrt{3} = \frac{\sqrt{3}a^2}{4}$

$\frac{9\sqrt{3} \times 4 = 36}{\sqrt{3}}$

$a^2 = 36$

$a = \sqrt{36}$ $a = 6$

19. **Assertion (A):** The graph of a linear equation in two variables is a straight line.
Reason (R): A linear equation in two variables has only one solution.

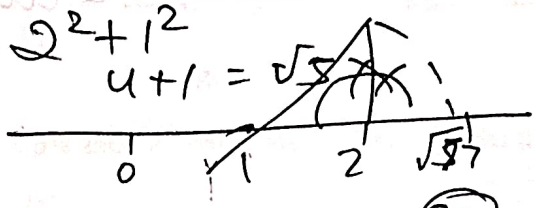
20. **Assertion (A):** If a polynomial has three distinct zeroes, then its degree must be at least 3.
Reason (R): A polynomial of degree n can have at most n zeroes.

SECTION – B

21. Simplify : $\sqrt{45} - 3\sqrt{20} + 4\sqrt{5}$.

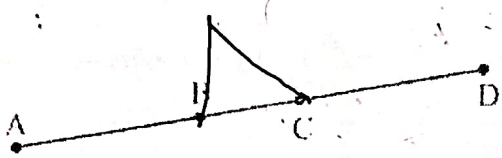
OR

Draw $\sqrt{5}$ on number line.



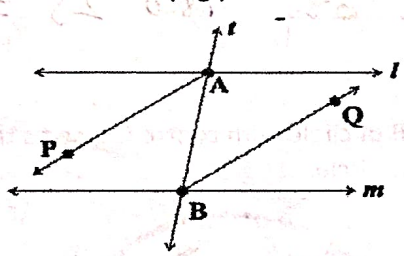
22. If $a+b+c = 9$ and $ab+bc+ca=26$ then find the value of $a^2 + b^2 + c^2$

23. In Fig., if AC = BD, then prove that AB = CD.



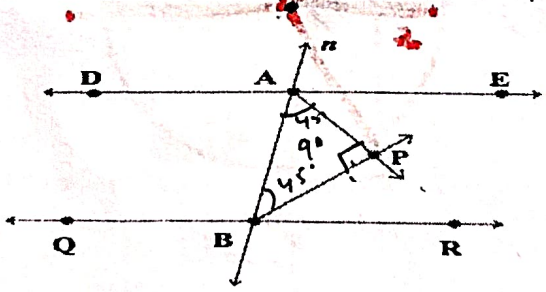
24. A conical tent is 28 m high and the diameter of its base is 42 m.
Find (i) slant height of the tent.
(ii) find the curved surface area of the tent.

25. AP and BQ are the bisectors of the two alternate interior angles formed by the intersection of a transversal t with parallel lines l and m (Fig.) Show that AP || BQ.



OR

In Fig., DE || QR and AP and BP are bisectors of ∠ EAB and ∠ RBA, respectively. Find ∠APB



SECTION – C

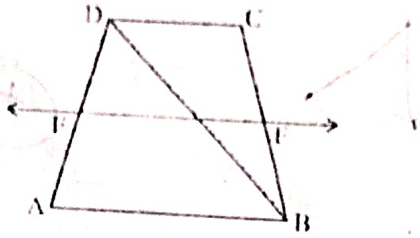
26. Factorise : $x^3 - 23x^2 + 142x - 120$

27. The perimeter of an isosceles triangle is 32 cm. The ratio of the equal side to its base is 3: 2. Find the area of the triangle.

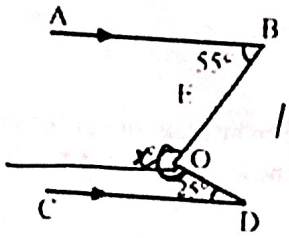
OR

The perimeter of a triangle is 900 meters and its sides are in the ratio of 2:3:4. Find the area of the triangle?

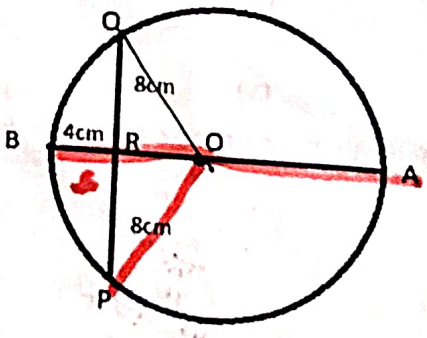
28. ABCD is a trapezium in which AB || DC, BD is a diagonal and E is the mid-point of AD. A line is drawn through E parallel to AB intersecting BC at F (see Fig). Show that F is the mid-point of BC.



29. In each of the figures given below, AB || CD. Find the value of x°



30. In the given figure, diameter AB of circle with centre O bisects the chord PQ. If PR = QR = 8 cm and RB = 4 cm, find the radius of the circle.



OR

ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If ∠ DBC = 70°, ∠ BAC is 30°, find ∠ BCD. Further, if AB = BC, find ∠ ECD.

31. Find the coordinates of the point

(i) which lies on x and y axes both.

(ii) whose ordinate is – 4 and which lies on y-axis.

(iii) whose abscissa is 5 and which lies on x-axis.

SECTION-D

32. Simplify $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}} - \frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}}$

OR

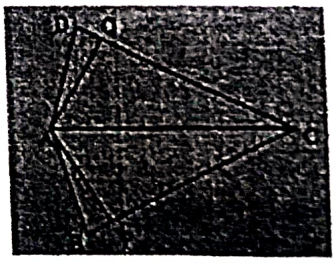
Find the value of a and b: $\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = a + \frac{7}{11}\sqrt{5}b$

33. The length of 40 leaves of a plant are measured correct to one millimetre, and the obtained data is represented in the following table:

Length (in mm)	Number of leaves
118 - 126	3
127 - 135	5
136 - 144	9
145 - 153	12
154 - 162	5
163 - 171	4
172 - 180	2

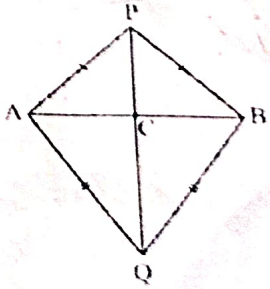
Draw a histogram to represent the given data

34. the adjoining figure, AB = AD, ∠BAP = ∠QAD and ∠PAC = ∠CAQ. Prove that AP = AQ.



OR

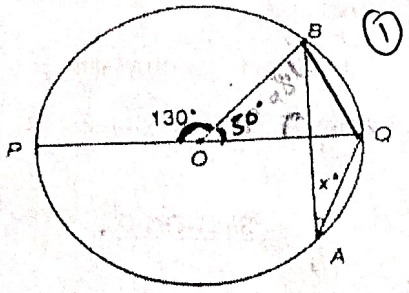
AB is a line-segment. P and Q are points on opposite sides of AB such that each of them is equidistant from the points A and B (see fig). Show that the line PQ is the perpendicular bisector of AB.



5

35. (1) Prove that "The angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle."

(2) In the adjoining figure, O is the centre of the circle. If ∠AOC = 130°, find the value of x.



SECTION-E

36. A polynomial $p(x)=6x^2+17x+5$ is given to a group of students. They are asked to apply their knowledge of **Factor Theorem** and **splitting the middle term method** to solve problems related to this polynomial.

Based on the above information, answer the following questions:

(i) Find the degree of the polynomial p(x). 1

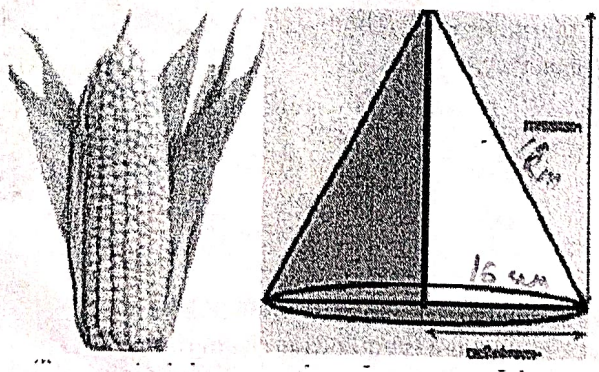
(ii) Identify whether p(x) is linear, quadratic, or cubic polynomial. 1

(iii) Factorize p(x) using the splitting the middle term method. 2

OR

Find the value of p (−3) + p (3).

37. Once upon a time in Ghaziabad was a corn cob seller. During the lockdown period in the year 2020, his business was almost lost. So, he started selling corn grains online through Amazon and flipkart. Just to understand how many grains he will have from one corn cob, he started counting them. Being a student of mathematics let's calculate it mathematically. Let's assume that one corn cob (see Fig.), shaped somewhat like a cone, has the **radius of its broadest end as 12 cm and length as 16 cm.**



$l^2 = \sqrt{1721}$

(ii) Find the slant height of the corn cob.

(iii) Find the curved surface area of the corn cob?

(iii) If each 1 cm^2 of the surface of the cob carries an average of four grains, find how many grains you would find on the entire cob? [9]

OR

Find the volume of the corn cob.

38. Sarita distributes chocolates on the occasion of children's Day. She gives 5 chocolates to each child and 20 chocolates to adults. If number of children is represented by 'x' and total distributed chocolates as 'y'.

i) Form linear equation in two variables.

ii) Express the linear equation in standard form and write the value of a, b, c.

iii) If she distributed 145 chocolates in total, find number of children.

OR

If the number of children is 20, find the total chocolates she distributed

HARSHITA '16

ARMY PUBLIC SCHOOL, DHAULA KUAN
PRE-ANNUAL EXAMINATION (2025-26)

CLASS: IX | **SUBJECT:MATHS**
Time: 3 hours | **M.M:80**

General Instructions:

1. This question paper has 5 sections A, B, C, D and E.
2. Section A has 20 questions (MCQs) carrying 1 mark each.
3. Section B has 5 short answer-I (SA-I) type questions carrying 2 marks each.
4. Section C has 6 short answer -II (SA-II) type questions carrying 3 marks each.
5. Section D has 4 long answer (LA) type questions carrying 5 marks each.
6. Section E has 3 case based integrated units of assessment (4 marks each) with subparts of the values 1, 1 and 2 marks each respectively.
7. Draw neat figures wherever required.

Section A

1. Each side of an equilateral triangle measures $2\sqrt{2}$ cm. The area of the triangle is:
   a) $16\sqrt{3} cm^2$ b) $2\sqrt{3} cm^2$ c) 48 cm^2 d) $\sqrt{3}$ cm^2

2. The value of $(32)^{\frac{2}{5}}$ is:
   a) 2 b) 5 c) 5 d) 4

3. The zero of the polynomial p(x) = -5y - 5 is:
   a) 1 b) -1 c) zero d) 9

4. The value of $f(x) = 5 - x^2 + 3x$ when $x = 1$, is:
   a) 6 b) -6 c) -7 d) 7

5. The linear equation 6x – y = 14 has:
   a) One solution b) Infinitely many solutions c) No solution d) Only two solutions

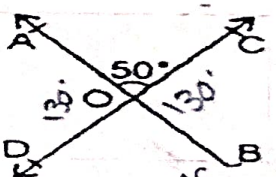
6. If (2, 0) is a solution of the linear equation 2y +3x = k, then the value of k is:
   a) 4 b) 6 c) 5 d) 2

7. The point (a, a), where a ≠ 0 lies on:
   a) X-axis b) y-axis c) the line x = y d) the line y + x = 0

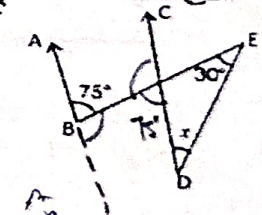
8. Which of these statements do not satisfy Euclid's axiom?
   a) Things which are equal to the same thing are equal to one another
   b) If equals are added to equals, the wholes are equal.
   c) If equals are subtracted from equals, the remainders are equal.
   d) The whole is lesser than the part.

9. If two complementary angles are in the ratio 8 : 7, then the angles are:
   a) 64°, 26° b) 96°, 84° c) 100°, 80° d) 48°, 42°

10. In the given figure, if ∠ AOC = 50° then (∠AOD + ∠COB) is equal to:
   a) 100° b) 130° c) 140° d) 260°



11. In the given figure, AB || CD then value of x is:
   a) 45° b) 60° c) 90° d) 105°



12. The base area of a cone is 154 sq.cm and its height is 12cm. The volume of this cone is:
   a) 924 cu.cm b) 616 cu. cm c) 1848 cu. cm d) 599 cu. cm

13. In ΔABC, BC = AB and ∠B = 60°. Then ∠A is equal to:
   a) 80° b) 40° c) 60° d) 100°

14 In ΔABC and ΔPQR, three equality relations between corresponding parts are as follows: $AB=PQ$, $\angle B=\angle P$ and $BC=PR$. State which of the following congruence rules applies:

a) SAS b) ASA c) SSS d) RHS

15 The Diagonals AC and BD of a parallelogram ABCD intersect each other at point O. If $\angle DAC = 32°$ and $\angle AOB = 70°$, then $\angle DBC$ is equal to:

a) 86° b) 38° c) 32° d) 24°

16 ABCD is a rhombus such that $\angle ACB=40°$. Then $\angle ADB$ =?

a) 140° b) 40° c) 110° d) 50°

17 In which of the following quadrilaterals, the diagonals are equal?

a) Rhombus b) Square c) Parallelogram d) Trapezium

18 Which one of the following is an irrational number?

a) 1.010101 ... b) 2.5 c) $\sqrt[4]{16}$ d) 6.3289 ....

In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

(a)Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b)Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c)Assertion (A) is true but reason (R) is false.

(d)Assertion (A) is false but reason (R) is true.

19 Assertion : The point (-2, 0) lies on x -axis and (0, 4) on y -axis.
Reason : Every point on the x -axis has zero distance from x -axis and every point on the y -axis has zero distance from y -axis

20 Assertion : Angles opposite to equal sides of a triangle are not equal.
Reason : Sides opposite to equal angles of a triangle are equal

Section B

21 Show that 1.34545..... can be expressed in the form of p/q where p and q are integers and $q\neq 0$.

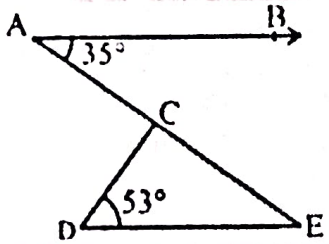
22 Factorize: $6x^2 - 13x - 5$.

OR

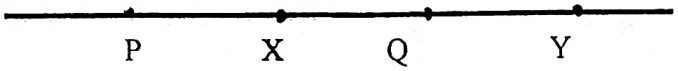
Find the value of k if (x-1) is a factor of $x^3 + ax^2 + 2x + a - 1$.

23 Find any two solutions of the linear equation x - 3y=12.

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

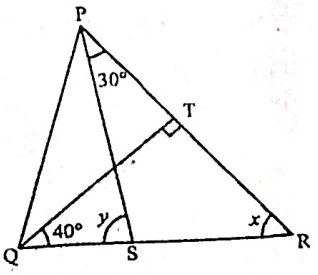


OR



In the given figure, PQ = XY. Show that PX = QY

25 In the given figure, if $QT \perp PR$, $\angle TQR = 40°$ and $\angle SPR=30°$ find x and y.



Section C

26 Find the value of a and b:

$$\frac{5+2\sqrt{2}}{5-2\sqrt{2}} = a + b\sqrt{2}$$

OR

$$\sqrt[3]{27} - 3\sqrt[3]{216} + 5\sqrt[5]{243} + \sqrt[3]{125}$$

27 Factorise: $8x^3 + 27y^3 + 36x^2y + 54xy^2$.

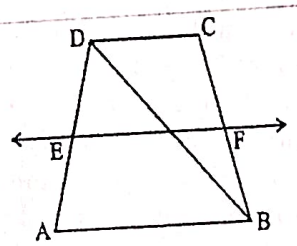
28 Simplify:

$$\left[5\left(8^{\frac{1}{3}} + 27^{\frac{1}{3}}\right)^3\right]^{\frac{1}{4}}$$

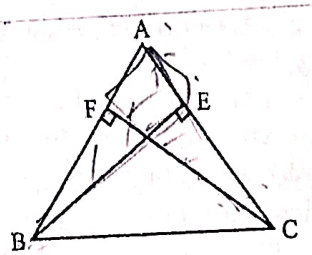
29 Show that if the diagonals of a quadrilateral are equal and bisect each other at right angles, then it is a square.

OR

ABCD is a trapezium in which AB || DC, BD is a diagonal and E is the midpoint of AD. A line is drawn through E parallel to AB intersecting BC at F (see Fig). Show that F is the midpoint of BC.



30 ABC is a triangle in which altitudes BE and CF to sides AC and AB are equal. Show that -
(i) $\Delta ABE \cong \Delta ACF$.
(ii) AB = AC, i.e. ABC is an isosceles triangle.



31 An isosceles triangle has perimeter 30 cm and each of the equal sides is 12 cm. Find the area of the triangle.

Section D

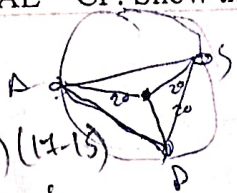
32 Represent $\sqrt{5.3}$ on the number line.

33 The difference between the sides at right angles in a right-angled triangle is 14 cm. The area of the triangle is 120 sq. cm. Find the perimeter of the triangle.

OR

A circular park of radius 20m is situated in a colony. Three boys, Ankur, Syed and David, are sitting at equal distances on its boundary, each having a toy telephone in his hands to talk to each other. Find the length of the string of each phone.

34 E and F are points on diagonals AC of a parallelogram ABCD such that AE = CF. Show that BFDE



is a parallelogram.

35 A dome of a building is in the form of a hemisphere. From inside, it was whitewashed at the cost of Rs. 4989.60. If the cost of white-washing is 20 per square meter, find the
(i) inside surface area of the dome (ii) volume of the air inside the dome
(Assume $\pi = 22/7$)

OR

What length of tarpaulin 3 m wide will be required to make a conical tent of height 8 m and base radius 6m? Assume that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 cm. [Use π=3.14]

SECTION E

36 Read the passage given below and answer the following questions:
Once four friends Rahul, Arun, Ajay and Vijay went for a picnic at a hill station. Due to peak season, they did not get a proper hotel in the city. The weather was fine so they decided to make a conical tent at a park. They were carrying 300 m^2 cloth with them. They made a conical tent of height 8 m and diameter 12 m. The remaining cloth was used for the floor.
i) Find the slant height of the tent.
ii) Calculate the base area of the tent.
iii) Find the volume of the tent.

37 On his birthday, Manoj planned that this time he will celebrate his birthday in a small orphanage centre. He bought apples to give to children and adults working there. Manoj donated 2 apples to each child and 3 apples to each adult working there along with a birthday cake. He distributed a total of 60 apples.
i) Represent the above situation in linear equations in two variables by taking the number of children as 'x' and the number of adults as 'y'.
ii) If the number of children is 15, then find the number of adults.
iii) Find the value of b, if x = 5, y = 0 is a solution of the equation $3x + 5y = b$.

38 Aditya is a Class IX student residing in a village. One day, he went to a city hospital along with his grandfather for a general checkup. From there he visited three places - School, Library and Police Station. After returning to his village, he plotted a graph by taking Hospital as origin and marked three places on the graph as per his direction of movement and distance. The graph is shown below:

i) What are the coordinates of the Library?
ii) In which quadrant the point (-1, 4) lies?
iii) What are the coordinates of the School & Police Station?