INDIAN SCHOOL AL WADI AL KABIR

Mid Term Examination 2025-26

SUB: Mathematics - Set 1

Date:23 /09/2025 Time Allowed :3 hours

Class: IX Maximum Marks: 80

General Instructions:

Read the following instructions carefully and follow them:

1. This question Paper contains 38 questions.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Questions no. 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Questions no. 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Questions no. 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Questions no. 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Questions no. 36-38 are case study based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each.
8. All Questions are compulsory. However, an internal choice in 2 Question of Section B, 2 Questions of Section C and 2 Questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required.
10. Use of calculators is not allowed.

SECTION A (1mark each)

1. The perimeter of an equilateral triangle is 60 cm. Then its area is :

(A) $10\sqrt{3}$ cm ^{2} **(B)** $15\sqrt{3}$ cm ^{2} **(C)** $20\sqrt{3}$ cm ^{2} **(D)** $100\sqrt{3}$ cm ^{2}

2. The point (6, 0) lies in the direction of:

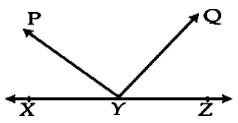
(A) negative y - axis **(B)** negative x - axis

(C) positive y - axis **(D)** positive x - axis

3. In ΔABC and ΔDEF, AB = FD, ∠A = ∠D. These triangles are congruent by SAS congruence if:

(A) AC = DE **(B)** DF = AC **(C)** BC = EF **(D)** AC = EF

4. In the given figure XYZ is a straight line. If ∠XYP + ∠ZYQ = 75^o, then ∠PYQ:



(A) 15^o **(B)** 105^o **(C)** 95^o **(D)** 115^o

5. The value of $\frac{16\sqrt{75}}{5\sqrt{12}}$ is:

(A) 16 **(B)** 8 **(C)** $\frac{25}{4}$ **(D)** $\frac{5}{4}$

6. Boundaries of solids are known as:

(A) Surfaces **(B)** Curves **(C)** Lines **(D)** Points

7. Every point on a number line represents:

(A) a unique real number **(B)** a natural number

(C) a rational number **(D)** an irrational number

8. If P (– 1, 1), Q (3, – 4), R(1, –1), S(–2, –3) and T (– 4, 4) are plotted on the graph paper, then the point(s) in the fourth quadrant are:

(A) P and T **(B)** Q and R **(C)** Only S **(D)** P and R

9. The class mark of a particular class is 6.5 and the class size is 3. The next class, if all the classes are continuous is:

(A) 5 - 8 **(B)** 8 - 11 **(C)** 10- 13 **(D)** 11-14

10. The perimeter of an isosceles triangle is 32 cm. The ratio of equal sides to the base is 3 : 2.The sides of the triangle are:

(A) 8 cm, 8 cm, 12cm **(B)** 8cm, 8 cm, 8cm **(C)** 8cm,12cm, 12cm **(D)** 12cm,12cm, 12cm

11. The value of $\left(\frac{64}{25}\right)^{\frac{-3}{2}}$ is:

(A) $\frac{125}{512}$ **(B)** $\frac{512}{125}$ **(C)** $\frac{8}{5}$ **(D)** $\frac{5}{8}$

12. It is given that $\Delta ABC \cong \Delta FDE$ and AB = 5 cm, $\angle B = 40°$ and $\angle A = 80°$. Then

The incorrect statement is:

(A) DF = 5 cm, $\angle F = 80°$ **(B)** DF = 5 cm, $\angle E = 60°$ **(C)** DE = 5 cm, $\angle E = 60°$ **(D)** $\angle F = 80°$, $\angle D = 40°$

13. If a straight line falling on two straight lines makes the interior angles on the same side of it, taken together as 120°, then the two straight lines, if produced indefinitely, meet on the side on which the sum of angles is:

(A) equal to 180° **(B)** greater than 120° **(C)** equal to 120° **(D)** greater than 180°

14. Axioms are:

(A) universal truths in all branches of mathematics **(B)** universal truths specific to geometry

(C) theorems **(D)** definitions

15. Two angles are supplementary, and one angle is 20^0 more than 3 times the other. The angles are:

(A) 20º, 160º **(B)** 40º, 140º **(C)** 60º, 120º **(D)** 70º, 110º

16. An isosceles right triangle has area 8 cm^2. The length of its hypotenuse is:

(A) $\sqrt{32}$ cm **(B)** 4 cm **(C)** $\sqrt{48}$ cm **(D)** $\sqrt{24}$ cm

17. The points (other than origin) for which abscissa is equal to the ordinate will lie in:

(A) I quadrant only **(B)** I and II quadrants **(C)** I and III quadrants **(D)** II and IV quadrants

18. The marks obtained (out of 100 by a class of 80 students are given below. The adjusted frequency of the class 70 – 100 is:

Marks	10-20	20-30	30-50	50-70	70-100
Number of students	6	17	15	18	24

(A) 32 **(B)** 8 **(C)** 30 **(D)** 10

Direction for questions 19 & 20: In question numbers 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

(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 and reason (R) is not the correct explanation of assertion

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

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

19. **Assertion(A)**: The perpendicular distance of the point (5, 7) from x-axis is 5.

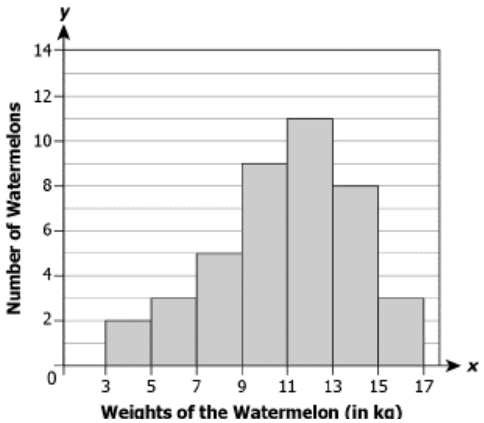
Reason(R): The perpendicular distance of the point from x-axis is called y – coordinate.

20. **Assertion (A):** A transversal intersects two parallel lines. If one interior angle is 110° , the adjacent interior angle on the same side of the transversal is 70°.

Reason (R): Interior angles on the same side of a transversal are supplementary when lines are parallel.

SECTION B (2 marks each)

21. The below histogram show the weights of watermelons (in kg) at a store.



(i) Find the class marks of

the classes 9 – 11 and 15 – 17.

(ii) How many water melons weigh less than 11 kg?

22. Find the coordinates of the point

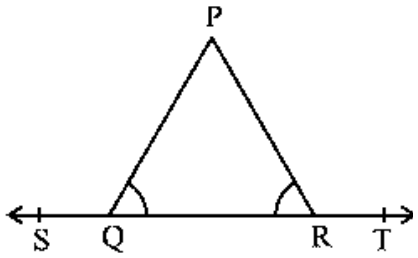
(i) Which lies on both x and y-axis.

(ii) Whose abscissa is 4 and lies on x-axis.

(iii)Whose ordinate is -2 and lies on y-axis.

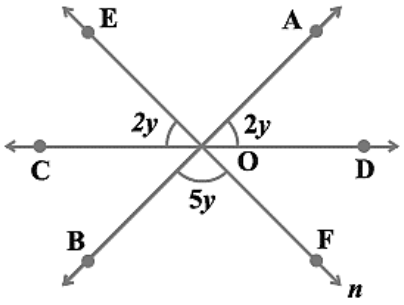
(iv)If $(x + 1, y - 2) = (3,1)$, find the values of x and y.

23. (a)In the Fig. , $\angle PQR = \angle PRQ$, then prove that $\angle PQS = \angle PRT$.

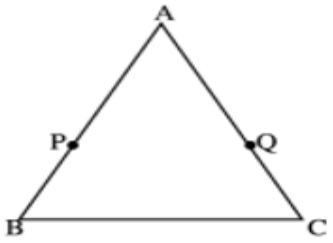


OR

(b)In the Fig. , AB, CD and EF are three lines concurrent at O. Find the value of y and $\angle FOC$.



24. If AB = AC and AP = AQ, prove that BP = CQ. State the Euclid's Axiom used.



25. (a)Express $18.\overline{48}$ in the form $\frac{p}{q}$, where p and q are integers and q ≠ 0.

OR

(b)Simplify $\sqrt{72} + \sqrt{800} - \sqrt{18}$

SECTION C (3 marks each)

26. Simplify: $\frac{2}{(216)^{\frac{-2}{3}}} - \frac{1}{(243)^{\frac{-2}{5}}} + \frac{3}{(144)^{\frac{-1}{2}}}$

27. Draw a quadrilateral with vertices (-4, 4), (-6, 0), (-4, -4) and (-2, 0). Find the area of the quadrilateral so formed.

28. (a) Locate $\sqrt{10.5}$ geometrically on a number line.

OR

(b) Simplify: $\frac{4+\sqrt{5}}{4-\sqrt{5}} + \frac{4-\sqrt{5}}{4+\sqrt{5}}$

29. Find the cost of turfing a triangular field at the rate of ₹ 500 per m^2 having lengths of its sides as 40 m, 70 m and 90 m. (Take $\sqrt{5}$ = 2.24)

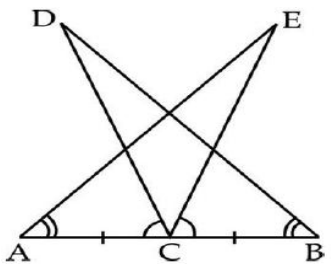
30. (a)State any three Euclid's axioms.

OR

(b)Prove that an equilateral triangle can be constructed on any given line segment.

31.

In the given figure if AC = BC, ∠DCA = ∠ECB and ∠DBC = ∠EAC, then prove that BD = AE.



SECTION D (5marks each)

32.

(i) Find the value of a and b, if $\frac{2-\sqrt{5}}{2+3\sqrt{5}} = b + a\sqrt{5}$.

(ii) Find 2 irrational numbers between $\frac{1}{3}$ and $\frac{1}{2}$.

33. Two triangles have the same perimeter of 60 cm. The first triangle has sides in the ratio 3:4:5, while the second triangle has sides measuring (2x - 4) cm, (2x + 1) cm, and (x + 8) cm. Calculate the area of each triangle using Heron's formula.

34. (a)Draw a histogram for the marks of the students given below:

Marks	0-10	10-30	30-45	45-50	50-60
No. of students	8	32	18	10	6

OR

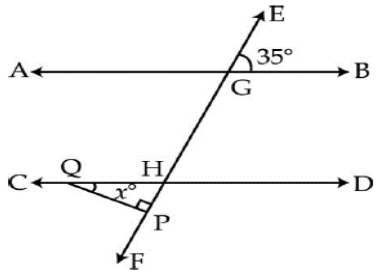
(b)The following table shows a frequency distribution for the speed(km/hr) of the cars passing through a particular spot on a highway:

Speed	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100
Frequency	3	6	25	40	50	28	14

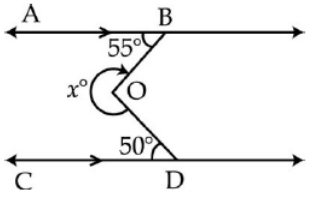
Draw a histogram with frequency polygon on the same graph representing the above data.

35.

a) (i) In the given figure AB ∥ CD and EF is a transversal intersecting them at G and H respectively. If ∠EGB=35^0 and QP ⊥ EF, then find ∠PQH.



ii) In the given figure find *x*, if AB ∥ CD



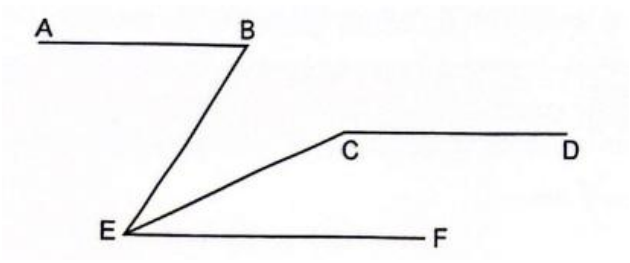
OR

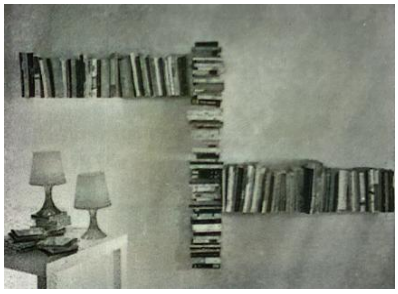
b) If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel.

SECTION E (4 Marks each)

36. Three book shelves AB, CD and EF, made up of wooden boards are fitted on the wall horizontal to the floor as shown in the figure. To give stability and a good look the two shelves AB and CD were joined by a wooden plank BE. CD and EF were joined by CE. The entire arrangement was such that AB ‖ EF and AB ‖ CD. The angles measured as follows: ∠ABE=76°, ∠BEC = 26°

Based on the above information and the given figure answer the following questions:





(i) What type of lines are CD and EF? Justify your answer. (1m)

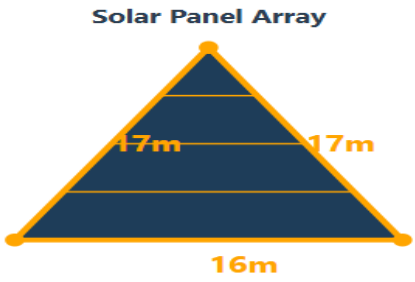
(ii)Find ∠CEF. Give reason. (1m)

(iii)(a) If DC produced intersect BE at G, find ∠GCE. Give reason. (2m)

OR

(b)Find reflex ∠ECD. Give reason. (2m)

37. A renewable energy company is installing triangular solar panel arrays on rooftops. Each array forms an isosceles triangle to maximize sun exposure while fitting the available roof space efficiently. Isosceles triangles have equal sides of 17 m each and a base of 16 m.



Based on the above information answer the following:

(i) What is the semi-perimeter(s) of the triangular solar panel array? (1m)

(ii) Calculate the value of (s - c) where 'c' represents the base of the triangle. (1m)

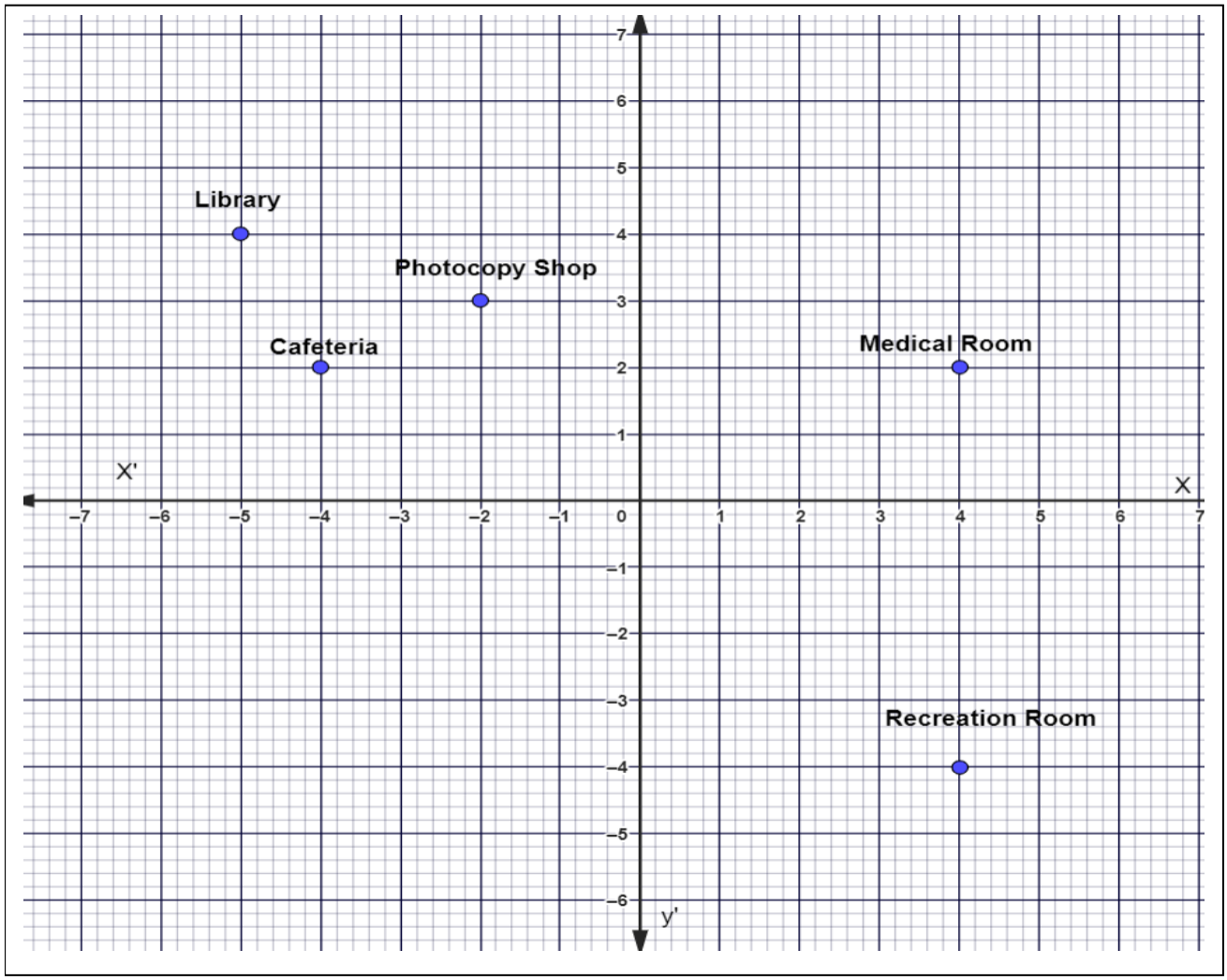
(iii) (a)Find the area of the solar panel array using Heron's formula. If each square meter of solar panel generates 200 watts of power, calculate the total power generation capacity of this array. (2m)

OR

(b) The company plans to install 5 identical triangular arrays. If the installation cost is ₹1,200 per square meter, find the total installation cost for all arrays. (2m)

38. A university administrator guides a group of new students about the central campus building and the facilities they provide to the students. A few facilities are marked in the cartesian plane given.

Scale on the Axes: 1unit = 1m



Based on the above information answer the following questions:

(i)Find the coordinates of photocopy Shop and Recreation Room. (1m)

(ii)Find the distance between Cafeteria and Medical Room. (1m)

(iii)(a) Identify the quadrant or axis on which the following points lie.

(i) (-3, 0) (ii) (2, -1) (iii) (4, 3) (iv) (-15, -1) (2m)

OR

(b) Starting from the Origin if one moves 3 steps towards west and then 4 steps towards south you will reach the playground. Identify the coordinates of the playground. Also, find the difference of abscissa of Photocopy Shop and ordinate of the Medical Room. (2m)

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