



PARAMOUNT INTERNATIONAL SCHOOL

Session 2024-2025

Mid Term Examination

If you don't learn from your mistakes, there's no sense making them.

Class: IX

Subject: Mathematics

Time: 3 Hrs.

Maximum Marks: 80

Set - A

General Instructions:

1. This Question Paper contains – five Sections A, B, C, D and E. Each section is compulsory. However, there are internal choices in some questions.
2. Section A has 18 MCQ's and 02 Assertion – Reason based questions of 1 mark each.
3. Section B has 5 Very Short Answer (VSA) - type questions of 2 marks each.
4. Section C has 6 Short Answer (SA) – type questions of 3 marks each.
5. Section D has 4 Long Answer (LA)-type questions of 5 marks each.
6. Section E has 3 source based/passage based/integrated units of assessment of 4 marks each with sub-parts.

Section -A

(Section A consists of 20 questions of 1 mark each)

1. HCF (p, q) \times LCM (p, q) =
 (a) p + q (b) $\frac{p}{q}$ (c) p \times q (d) p^q
2. If $\sqrt[3]{32} = 2^x$ then x is equal to
 (a) 5 (b) 3 (c) $\frac{3}{5}$ (d) $\frac{5}{3}$
3. 0.737373... =
 (a) (0.73)³ (b) $\frac{73}{100}$ (c) $\frac{73}{99}$ (d) None of these
4. if $p(x) = x^2 - 2\sqrt{2}x + 1$, then $p(2\sqrt{2})$ is equal to
 (a) 0 (b) 1 (c) $4\sqrt{2}$ (d) $8\sqrt{2} + 1$
5. The value of $249^2 - 248^2$ is
 (a) 12 (b) 477 (c) 487 (d) 497
6. if $\frac{x}{y} + \frac{y}{x} = -1$ (x, y \neq 0), the value of $x^3 - y^3$ is
 (a) 1 (b) -1 (c) 0 (d) 1/2
7. Points (1, - 1), (2, - 2), (4, - 5), (- 3, - 4)
 (a) lie in II quadrant (b) lie in III quadrant
 (c) lie in IV quadrant (d) do not lie in the same quadrant
8. The point whose ordinate is 4 and which lies on y-axis is
 (a) (4, 0) (b) (0, 4) (c) (1, 4) (d) (4, 2)
9. The perpendicular distance of the point P (3, 4) from the y-axis is
 (a) 3 (b) 4 (c) 5 (d) 7
10. Any point on the line y = x is of the form
 (a) (a, a) (b) (0, a) (c) (a, 0) (d) (a, - a)

11. If a linear equation has solutions $(-2, 2)$, $(0, 0)$ and $(2, -2)$, then it is of the form
(a) $y - x = 0$ (b) $x + y = 0$ (c) $-2x + y = 0$ (d) $-x + 2y = 0$
12. How many linear equations in x and y can be satisfied by $x = 1$ and $y = 2$?
(a) Only one (b) Two (c) Infinitely many (d) Three
13. Boundaries of solids are:
(a) surfaces (b) curves (c) lines (d) points
14. It is known that if $x + y = 10$ then $x + y + z = 10 + z$. The Euclid's axiom that illustrates this statement is:
(a) First Axiom (b) Second Axiom (c) Third Axiom (d) Fourth Axiom
15. The angles of a triangle are in the ratio $5 : 3 : 7$. The triangle is
(a) an acute angled triangle (b) an obtuse angled triangle
(c) a right triangle (d) an isosceles triangle
16. If one of the angles of a triangle is 130° , then the angle between the bisectors of the other two angles can be
(a) 50° (b) 65° (c) 145° (d) 155°
17. In ΔABC , $BC = AB$ and $\angle B = 80^\circ$. Then $\angle A$ is equal to
(a) 80° (b) 40° (c) 50° (d) 100°
18. Which of the following is not a criterion for congruence of triangles?
(a) SAS (b) ASA (c) SSA (d) SSS
19. **DIRECTION:** In the question number 19, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct option.

Assertion (A): when two triangles are congruent then their corresponding angles are equal.

Reason (R): two triangles are congruent if their shapes and size are not same.

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

20. **DIRECTION:** In the question number 20, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct option.

Assertion (A): if a right angle is added to an obtuse angle, then the resulting angle will be reflex angle.

Reason (R): the measure of an obtuse angle lies between 90° to 180°

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

Section -B

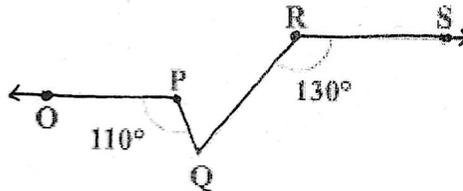
(Section B consists of 5 questions of 2 mark each)

21. express $0.12333 \dots$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$
 22. Without actually calculating the cubes, find the value of $48^3 - 30^3 - 18^3$.

OR

Find the product: $(x - 2y + 3)(x^2 + 4y^2 + 2xy + 6y - 3x + 9)$

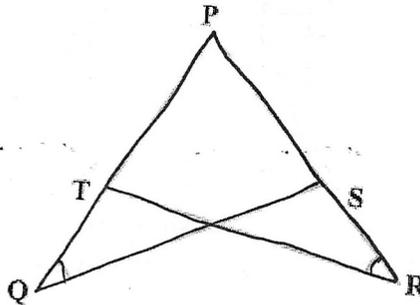
23. If the point $(3, 4)$ lies on the graph of $3y = ax + 7$, then find the value of a .
 24. In Figure, if $OP \parallel RS$, $\angle OPQ = 110^\circ$ and $\angle QRS = 130^\circ$, then $\angle PQR$ is equal to



OR

In a quadrilateral ABCD, $AB \parallel CD$ & $AD \parallel BC$. Prove that $\angle ABC = \angle ADC$

25. In figure $PQ = PR$ and $\angle Q = \angle R$. Prove that $\Delta PQS \cong \Delta PRT$



Section -C

(Section C consists of 6 questions of 3 mark each)

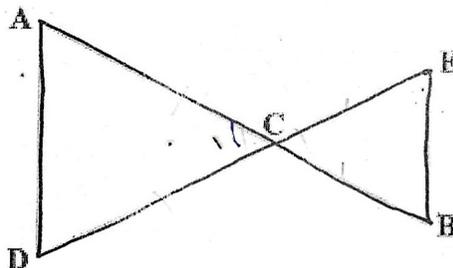
26. Find the value of a in the following:

$$\frac{6}{3\sqrt{2} - 2\sqrt{3}} = 3\sqrt{2} - a\sqrt{3}$$

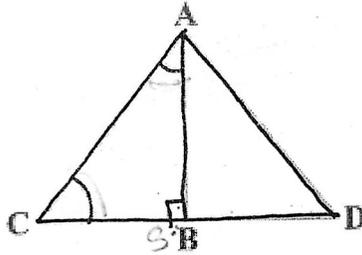
OR

If $x = 2 + \sqrt{3}$ then find the value of $\sqrt{x} + \frac{1}{\sqrt{x}}$

27. If $a + b + c = 9$ and $ab + bc + ca = 26$, find $a^2 + b^2 + c^2$.
 28. Factorise $9x^2 + 4y^2 + 16z^2 + 12xy - 16yz - 24xz$
 29. Write the linear equation such that each point on its graph has an ordinate 3 times its abscissa.
 30. In the Figure, we have $AC = DC$, $CB = CE$. Show that $AB = DE$.

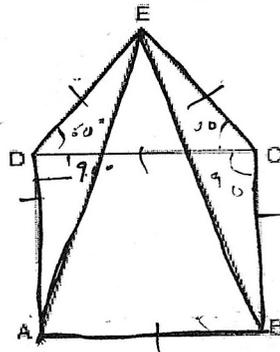


31. in the given figure, ABC is a right triangle and right angles at B such that $\angle BCA = 2 \angle BAC$. Show that hypotenuse $AC = 2BC$



OR

ABCD is a square and DEC is an equilateral triangle. Prove that $AE = BE$.



Section -D

(Section D consists of 4 questions of 5 mark each)

32. Find the value of

$$\frac{4}{(216)^{-\frac{2}{3}}} + \frac{1}{(256)^{-\frac{3}{4}}} + \frac{2}{(243)^{-\frac{1}{5}}}$$

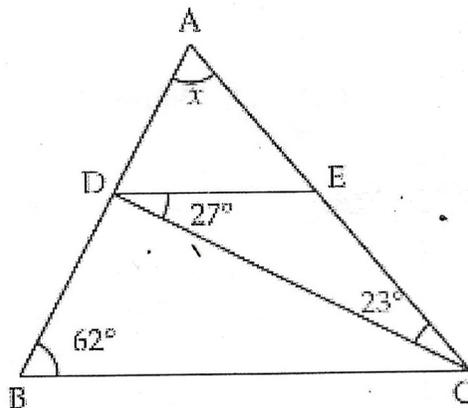
OR

If x is a positive real number and exponents are rational numbers, simplify

$$\left(\frac{x^b}{x^c}\right)^{b+c-a} \cdot \left(\frac{x^c}{x^a}\right)^{c+a-b} \cdot \left(\frac{x^a}{x^b}\right)^{a+b-c}$$

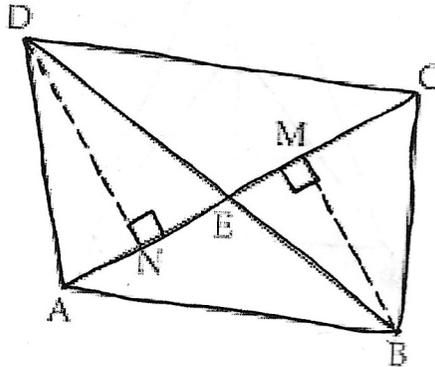
33. Factorise $2\sqrt{2}a^3 + 8b^3 - 27c^3 + 18\sqrt{2}abc$

34. In the adjoining diagram, $DE \parallel BC$. Find the value of x .



Handwritten notes in blue ink:
 $\frac{1}{2} + \frac{1}{3} + \frac{1}{6} = \frac{3}{6} + \frac{2}{6} + \frac{1}{6} = \frac{6}{6} = 1$
 $\frac{1}{2} + \frac{1}{3} + \frac{1}{6} = 1$
 $\frac{1}{2} + \frac{1}{3} + \frac{1}{6} = 1$

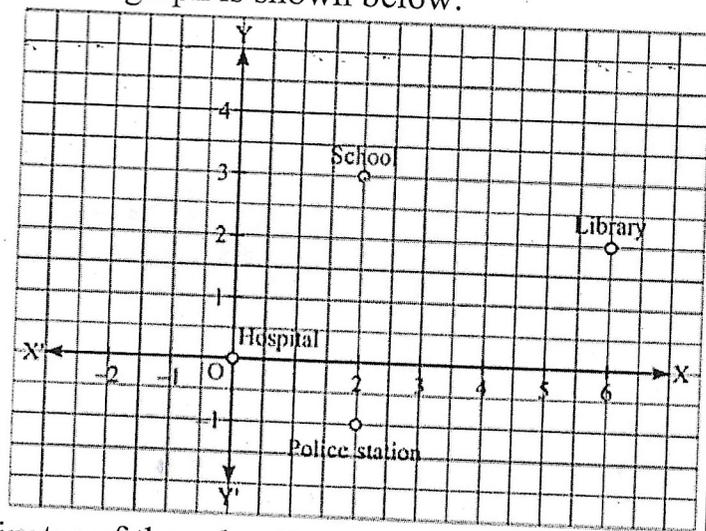
35. In the given figure, BM and DN are perpendiculars to the line segment AC. If $BM=DN$, prove that AC bisects BD.



Section -E

(This section comprises of 3 case-study questions of 4 marks each with three sub-parts (i), (ii) and (iii) of marks 1, 1, 2 respectively.)

36. Aditya is a Class IX student residing in a village. One day, he went to a city Hospital along with his grandfather for 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:

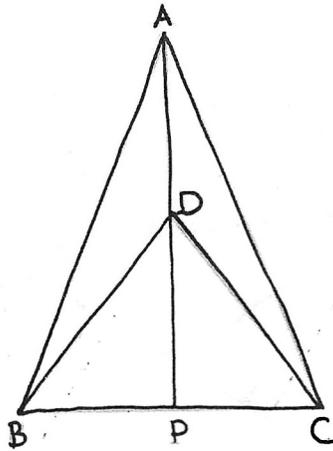


- (i) What are the coordinates of the school?
- (ii) What are the coordinates of the Police Station?
- (iii) What is the distance between school and police station?

OR

In which quadrant does the point $(-1, 4)$ lie?

37. In the given figure, ABC & DBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC . If AD is extended to intersect BC at P , show that

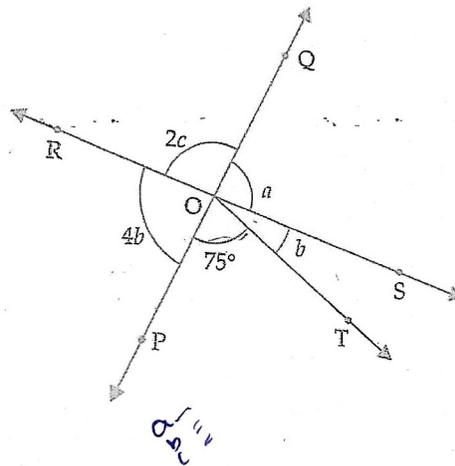


- (i) $\triangle ABD \cong \triangle ACD$
- (ii) $\triangle ABP \cong \triangle ACP$
- (iii) AP bisects $\angle A$

OR

AP bisects $\angle D$

38. In the given figure, two straight lines PQ and RS intersect each other at O . If $\angle POT = 75^\circ$, then answer the following questions.



- (i) find the value of $a - b$
- (ii) find the value of $2a + c$
- (iii) find the value of $a - 2b$

OR

Find the value of $a + b - c$