

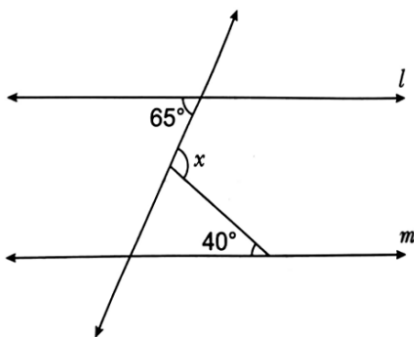


Roll No.

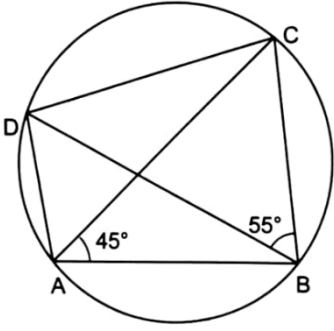
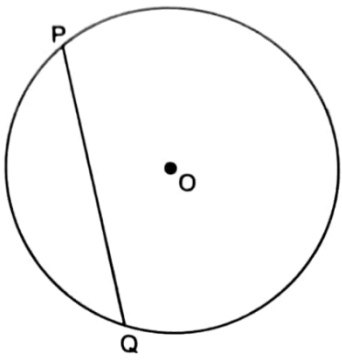
--	--	--	--	--

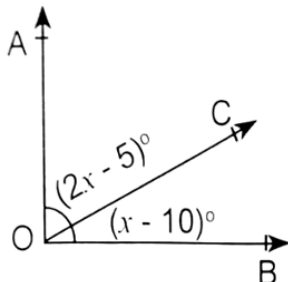
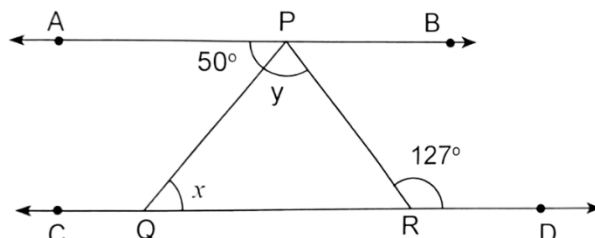
INDIAN SCHOOL SALALAH**FINAL EXAMINATION – FEBRUARY (AY- 2024-25)****Class: IX****MATHEMATICS (041)****Date: 09/02/2025****Time: 3 hours****Maximum Marks: 80****General Instructions:**

- This Question Paper has 5 Sections A, B, C, D and E.
- Section A has 20 MCQs carrying 1 mark each
- Section B has 5 questions carrying 02 marks each.
- Section C has 6 questions carrying 03 marks each.
- Section D has 4 questions carrying 05 marks each.
- Section E has 3 case-based integrated units of assessment (04 marks each) with sub- parts of the values of 1, 1 and 2 marks each respectively.
- All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2marks questions of Section E
- Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

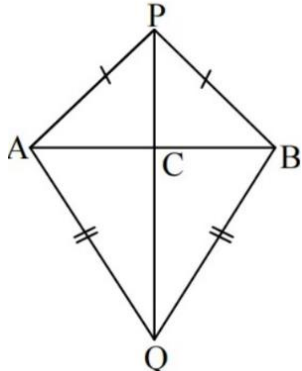
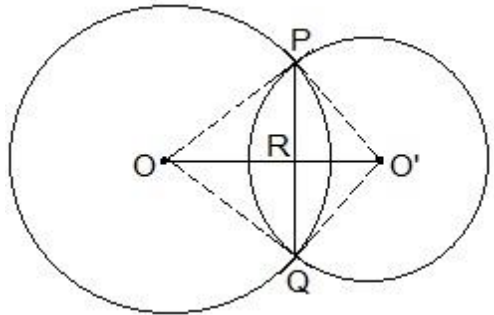
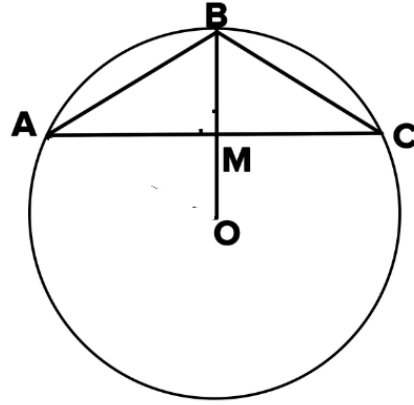
NO	SECTION A	MARKS
1	<p>Which of the following statements is/are correct?</p> <p>(i) Every integer is a rational number.</p> <p>(ii) Every rational number is an integer.</p> <p>(iii) A real number is either rational or irrational.</p> <p>(iv) Every whole number is a natural number.</p> <p>a) (ii) b) (iii) c) (i) and (iii) d) all of these.</p>	1
2	<p>In the figure if $l \parallel m$, then the value of x is</p>  <p>a) 25^0 b) 40^0 c) 65^0 d) 105^0</p>	1

3	The diagonals AC and BD of a parallelogram ABCD intersect each other at the point 'O'. If $\angle DAC = 30^\circ$ and $\angle AOB = 72^\circ$, then $\angle DBC$ measures a) 38° b) 42° c) 32° d) 144°	1
4	"If equals are added to equals, the wholes are equal" is stated by Euclid in the form of a) an axiom b) a definition c) a postulate d) a proof	1
5	The area of a right-angled triangle having sides 6cm, 8cm and 10 cm is a) 40 cm^2 b) 24 cm^2 c) 30 cm^2 d) 48 cm^2	1
6	The equation $3x - y = 5$ has a) a unique solution b) only two solutions c) infinitely many solutions d) none of these	1
7	If one angle of a triangle is equal to the sum of the other two angles, then the triangle is a) an isosceles triangle c) an obtuse triangle b) an equilateral triangle d) a right-angled triangle.	1
8	The value of the polynomial $6y^2 + 7y - 3$ when $y = -1$ is a) -4 b) 4 c) -3 d) 10	1
9	In $\triangle ABC$ and $\triangle PQR$, $AB = PQ$, $\angle B = \angle Q$. The two triangles will be congruent by SAS rule of congruency if a) $AC = PR$ b) $BC = PQ$ c) $AC = QR$ d) $BC = QR$	1
10	The degree of any non-zero constant polynomial is a) 1 b) 0 c) any natural number d) not defined	1
11	Which of the following is a polynomial? a) $\frac{x^2}{2} - \frac{2}{x^2}$ b) $\sqrt{2x} - 1$ c) $x^2 + \frac{3x^2}{\sqrt{x}}$ d) $\frac{x-1}{x+1}$	1
12	Which of the following is a linear equation in two variables? a) $2x + 3 = y + 2x$ c) $x + 5 = 0$ b) $2x = 5y$ d) $x^2 = 5y + 3$	1
13	The class mark of the class 90 – 120 is a) 90 b) 105 c) 115 d) 120	1
14	The value of $(81)^{0.16} \times (81)^{0.09}$ is equal to a) 9 b) 3 c) 81.25 d) 27	1

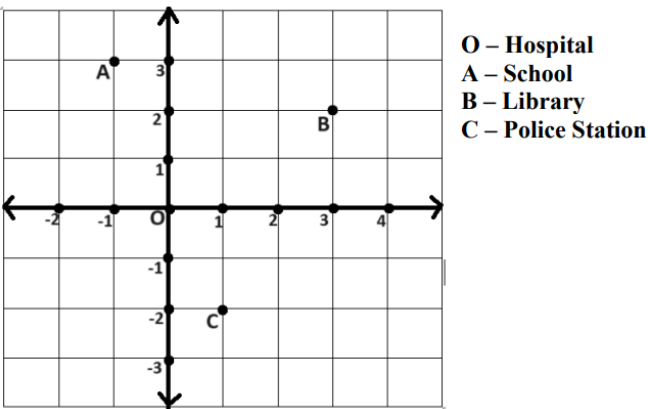
15	<p>In the fig: if $\angle CAB = 45^\circ$, $\angle DBC = 55^\circ$ then the value of $\angle DCB$ is</p>  <p>a) 70° b) 90° c) 110° d) 80°</p>	1
16	<p>$(0, -3)$ and $(4, 0)$ are the solutions of the linear equation</p> <p>a) $3x + 4y = 12$ b) $4x - 3y = 12$ c) $4x + 3y = 12$ d) $3x - 4y = 12$</p>	1
17	<p>The volume of a sphere of radius '$3r$' units is</p> <p>a) $4\pi r^3$ b) πr^3 c) $36\pi r^3$ d) $108\pi r^3$</p>	1
18	<p>A circle with centre O and radius 10 cm is given</p>  <p>What is the length of PQ if it is 8 cm away from the centre?</p> <p>a) 4 cm b) 5 cm c) 6 cm d) 12 cm</p>	1
	<p>Question number 19 and 20 are Assertion and Reason based questions carrying 1 mark each. Two statements are given, one labelled as Assertion (A) and the other is labelled as Reason (R). Select the correct answer to these questions from the codes (a) , (b), (c) and (d) as given below.</p> <p>(a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).</p> <p>(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).</p> <p>(c) Assertion (A) is true, but the Reason (R) is false.</p> <p>(d) Assertion (A) is false, but Reason (R) are true.</p>	

19	<p>Assertion (A): If the diagonals of a parallelogram are equal, then it is a rectangle.</p> <p>Reason (R): The diagonals of parallelogram bisect each other at right angles.</p>	1												
20	<p>Assertion (A): For all the values of k, $(\frac{-3}{2}, k)$ is a solution of the equation $2x + 3 = 0$.</p> <p>Reason (R): The linear equation $ax + b = 0$ can be expressed as a linear equation in two variables $ax + y + b = 0$.</p>	1												
SECTION B														
21	<p>(a) Represent $\sqrt{2}$ on the number line.</p> <p style="text-align: center;">OR</p> <p>(b) Show that $0.\overline{35}$ can be expressed in the form $\frac{p}{q}$.</p>	2												
22	The surface area of a hemispherical bowl is 462 cm^2 . Find its radius.	2												
23	<p>(a) In the figure, $AO \perp OB$. Find the measures of $\angle AOC$ and $\angle BOC$.</p> <div style="text-align: center;"></div> <p style="text-align: center;">OR</p> <p>(b) In the given figure $AB \parallel CD$, $\angle APQ = 50^\circ$, $\angle PRD = 127^\circ$. Find the values of x and y.</p> <div style="text-align: center;"></div>	2												
24	<p>A histogram is to be constructed for the following table:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"><tr><td>Class interval</td><td>0 – 20</td><td>20 – 30</td><td>30 – 40</td><td>40 – 50</td><td>50 – 80</td></tr><tr><td>Frequency</td><td>56</td><td>32</td><td>45</td><td>52</td><td>48</td></tr></table> <p>Find the adjusted frequency for the class intervals</p> <p>(i) 0 – 20 (ii) 50 – 80</p>	Class interval	0 – 20	20 – 30	30 – 40	40 – 50	50 – 80	Frequency	56	32	45	52	48	2
Class interval	0 – 20	20 – 30	30 – 40	40 – 50	50 – 80									
Frequency	56	32	45	52	48									

25	Find four solutions of the equation $2x - y = 4$.	2												
	SECTION C													
26	(a) ABC is a triangle with $\angle B = 2 \angle C$. D is a point on the side BC of triangle ABC such that AD bisects $\angle BAC$ and $AD = CD$. Show that $\angle BAC = 72^\circ$. OR (b) ABC is a triangle in which the altitudes BE and CF to sides AC and AB are equal. Show that (i) $\triangle ABE \cong \triangle ACF$ (ii) $\triangle ABC$ is isosceles.	3												
27	If $a + b + c = 5$ and $ab + bc + ca = 6$, then find the value of $a^3 + b^3 + c^3 - 3abc$.	3												
28	Draw a histogram to represent the following data: <table border="1"><tr><td>Class interval</td><td>10 – 15</td><td>15 – 20</td><td>20 – 25</td><td>25 – 30</td><td>30 – 35</td></tr><tr><td>Frequency</td><td>3</td><td>6</td><td>7</td><td>9</td><td>5</td></tr></table>	Class interval	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	Frequency	3	6	7	9	5	3
Class interval	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35									
Frequency	3	6	7	9	5									
29	(a) Evaluate: $\frac{(27)^{\frac{3}{2}} \times (8)^{\frac{2}{3}}}{(9)^{\frac{3}{2}}}$. OR (b) If $x = 1 + \sqrt{2}$, find the values of $\left(x - \frac{1}{x}\right)^3$.	3												
30	If $x - \frac{1}{x} = 5$ then find the value of $x^3 - \frac{1}{x^3}$.	3												
31	Find the values of m and n if $\frac{3 - \sqrt{5}}{3 + 2\sqrt{5}} = m\sqrt{5} + n$.	3												
	SECTION D													
32	(a) A cloth having an area of 550 m^2 is shaped into the form of a conical tent of radius 7m. (i) Find the slant height and the height of the conical tent. (ii) What will be the volume of air present inside the conical tent? OR (b) The amount of liquid in a hemispherical container is 2.4255 litres. Find (i) The diameter of the bowl (ii) The curved surface area of the bowl.	5												
33	Factorise $2x^3 + 7x^2 - 5x - 4$.	5												

34	<p>In the figure given below, $\triangle APB$ and $\triangle AQB$ are two isosceles triangles lying on the same base AB such that $AP = BP$ and $AQ = BQ$. Show that $\angle ACP = 90^\circ$.</p> 	5
35	<p>(a) In the figure given below two circles with centre O and O' intersect at two distinct points P and Q. Prove that OO' is the perpendicular bisector of PQ.</p>  <p style="text-align: center;">OR</p> <p>(b) In the figure BA and BC are two equal chords of a circle with centre O and radius 5 cm. If $BA = BC = 6$ cm then find the length of AC using suitable steps.</p> 	5
	SECTION E	
36	<p>Case Study.1:</p> <p>Abhinav is a Class IX student residing in a village. One day, he went to a city Hospital along with his grandfather for general check-up. From there he visited</p>	

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 direction of movement and distance. The graph is shown below.



Based on the above, answer the following questions:

- a) Identify the coordinates of the point which represent the School.
- b) What is the perpendicular distance of Library from X – axis.
- c) Find Ordinate of Police Station – Abscissa of School.

1
1
2

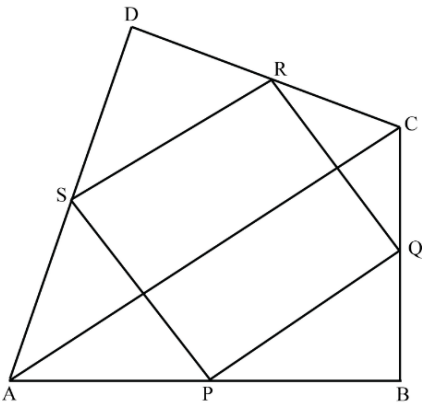
OR

Find Abscissa of Library – Ordinate of School.


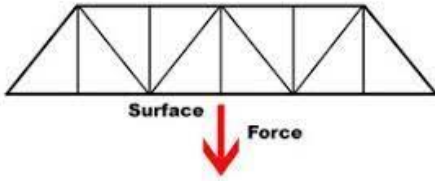
37

Case Study.2:

Activity-based learning- ensures active engagement of learner with concepts and instructional materials. Learning is hands-on and experiential, providing learners with the opportunity of learning through manipulation of materials and objects. Teachers model the process, and students work independently to copy it.



Sanjay sir Maths teacher of class 9th wants to explain the properties of parallelograms in a creative way, so he gave students yellow colored paper in the shape of a quadrilateral with P, Q, R and S marked as the mid – points of

	<p>AB, BC, CD and AD respectively. He then asked the students to make a parallelogram from it by using paper folding and coloured it with green colour. Based on the above information answer the following questions.</p> <p>a) Show that PQRS is a parallelogram.</p> <p>b) If $PQ = QR$ then what type of parallelogram is PQRS.</p> <p>c) If $SR = 3$ cm, find the length of AC.</p> <p style="text-align: center;">OR</p> <p>If $\angle RSP = 30^\circ$, then find the measure of $\angle RQP$.</p>	<p>2</p> <p>1</p> <p>1</p>
38	<p>Case Study.3:</p> <p>Triangles are used in bridges because they evenly distribute weight without changing their proportions. When force is applied on a shape like a rectangle it would flatten out. Before triangles were used in bridges, they were weak and could not be very big. To solve that problem engineers would put a post in the middle of a square and make it sturdier. Isosceles triangles were used to construct a bridge in which the base (unequal side) of an isosceles triangle is 4 m and its perimeter is 20 m.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p style="text-align: center;">Warren (vertical support) Truss Bridge</p> <p>Based on the above information answer the following questions:</p> <p>a) What is the length of equal sides?</p> <p>b) The length of one of the equal sides of an isosceles right triangle is 18 m. Find its area.</p> <p>c) What is the area of the given triangle?</p> <p style="text-align: center;">OR</p> <p>Find the length of each side of an equilateral triangle having an area $16\sqrt{3}$ cm².</p>	<p>1</p> <p>1</p> <p>2</p>
