Roll No. | | | | | |

INDIAN SCHOOL SALALAH

FIRST TERM EXAMINATION – SEPTEMBER 2025

Class: IX **MATHEMATICS (041)** **Date: 28/09/2025**

Time: 3 hours **Maximum Marks: 80**

General Instructions:

a) This Question Paper has 5 Sections A, B, C, D and E.

b) Section A has 20 MCQs carrying 1 mark each

c) Section B has 5 questions carrying 02 marks each.

d) Section C has 6 questions carrying 03 marks each.

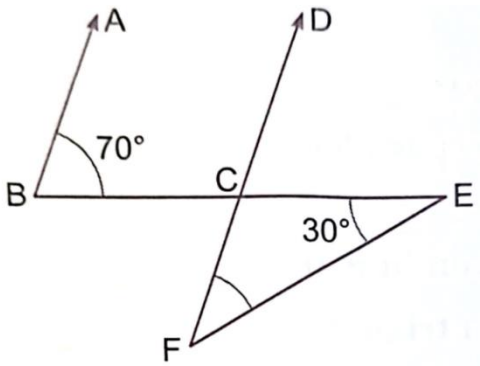
e) Section D has 4 questions carrying 05 marks each.

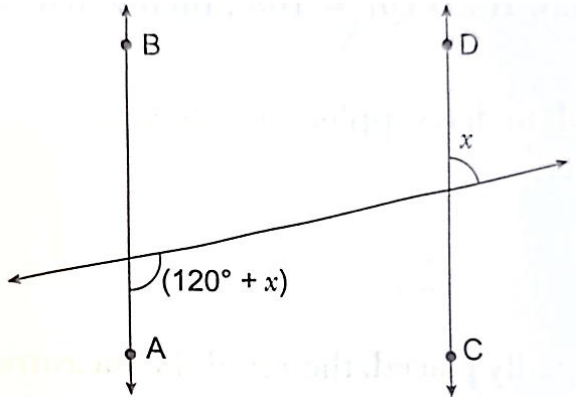
f) Section E has 3 case-based integrated units of assessment (04 marks each) with sub- parts of the values of 1, 1 and 2 marks each respectively.

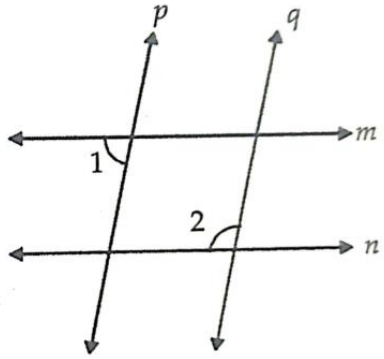
g) All Questions are compulsory. However, an internal choice of 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks have been provided. An internal choice has been provided in the 2marks questions of Section E

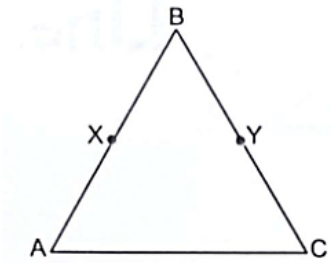
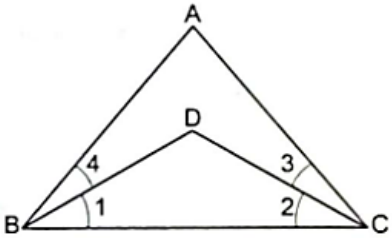
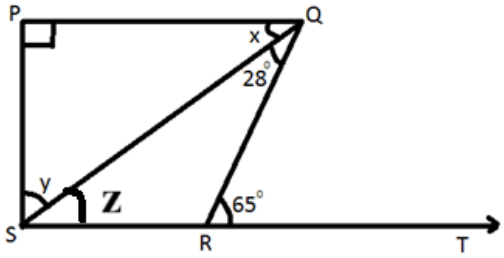
h) Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

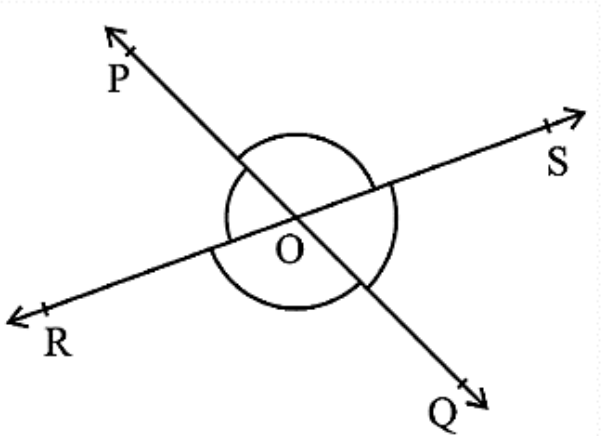
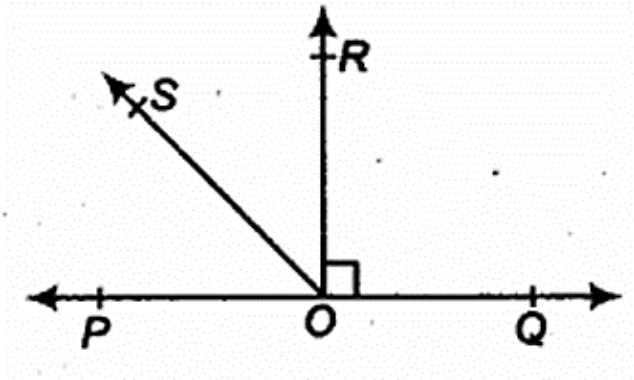
NO	SECTION A	MARKS
1	The product of two irrational numbers (a) is always irrational (b) is always rational (c) is always zero (d) may be rational or irrational	1
2	Which are the zeros of the polynomial $(x – 1)(x + 2)$? (a) $(1, – 2)$ (b) $(– 1 , 2)$ (c) $(– 1, – 2)$ (d) $(1,2)$	1
3	The equation of the line representing x – axis is (a) $x = 0$ (b) $x + y = 0$ (c) $y = 0$ (d) none of these	1
4	Euclid stated that a straight line may be drawn from any one point to any other point in the form of a (a) theorem (b) postulate (c) axiom (d) lemma	1
5	If the ratio between two complimentary angles is 2:3, then the angles are (a) $144^0, 216^0$ (b) $120^0, 240^0$ (c)$36^0, 54^0$ (d) $30^0, 60^0$	1

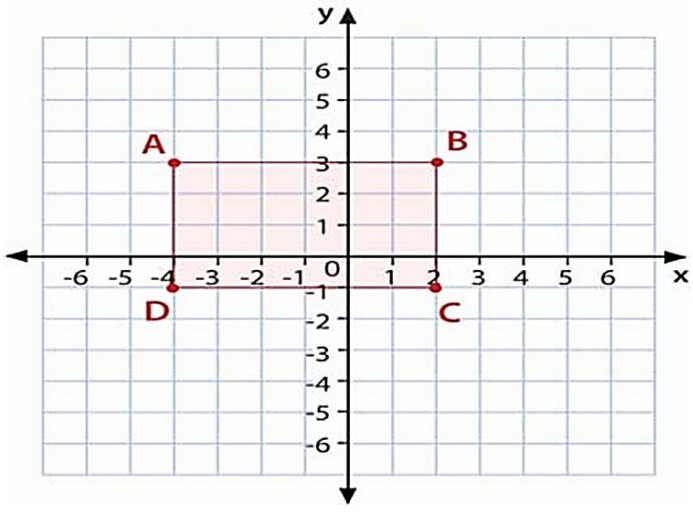
6	A (– 4, 3) be a point on the graph. Draw AL ⊥ x – axis. The coordinates of point L are (a) (0,– 4) (b) (3, 0) (c) (– 4,0) (d) (0, – 3)	1
7	If $y^{\frac{1}{3}} = (343)^{\frac{1}{9}}$ then the value of y is (a) 7 (b) 49 (c) 2 (d) 3	1
8	$x + 1$ is a factor of the polynomial (a) $x^3 + x^2 – x + 1$ (b) $x^3 + x^2 + x + 1$ (c) $x^4 + x^3 + x^2 + 1$ (d) $x^4 + 3x^3 + 3x^2 + x + 1$	1
9	The point at which the two coordinate axes meet is called the (a) abscissa (b) ordinate (c) origin (d) quadrant	1
10	A point C is called the mid point of a line segment AB, if (a) AC + CB = AB (b) AC = BC (c) C is a point on AB such that AC = CB (d) All of these	1
11	Which of the following is not a linear equation in two variables? (a) $2x\,(x - 1) = 2x\,(x + 1) - 3y$ (b) $3x - 5y = 7$ (c) $\sqrt{7}\,x - 3y = 0$ (d) $3x\,(1 + x) = 3x\,(2 - x) + 7y$	1
12	In the figure, if AB // CD, then ∠EFD is equal to  (a) 50^0 (b) 20^0 (c) 30^0 (d) 40^0	1
13	The three undefined terms in Mathematics are (a) Point, Line and Line segment (b) Point, Plane and Angle (c) Point, Line and Plane (d) None of these	1
14	If $\sqrt{2} = 1.4142$, then $\sqrt{\frac{\sqrt{2}-1}{\sqrt{2}+1}}$ is equal to (a) 2.4142 (b) 0.4142 (c) 8282 (d) 0.1718	1

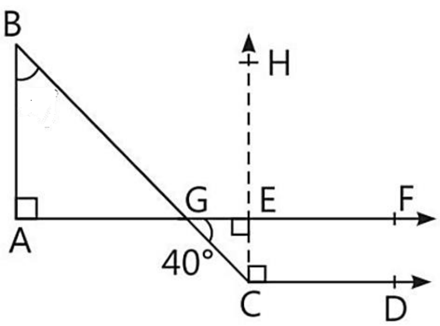
15	The value of $p(x) = x^2 - x + 1$ for $p(-1)$ is (a) 3 (b) – 1 (c) 1 (d) none of these	1
16	If x coordinate of a point is zero, then this point will always lie (a) in IV quadrant (b) on y - axis (c) on x – axis (d) in III quadrant	1
17	The solution of the equation $x - 2y = 4$ is (a) (0,2) (b) (2,0) (c) (0,4) (d) (4,0)	1
18	In the figure, if AB // CD, then value of x is  (a) 45^0 (b) 20^0 (c) 30^0 (d) 60^0	1
	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. (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 the Reason (R) is false. (d) Assertion (A) is false, but Reason (R) are true.	
19	**Assertion:** $3 + \sqrt{2}$ is an irrational number **Reason:** Sum of a rational number and an irrational number is always an irrational number.	1
20	**Assertion:** There are infinite number of lines which passes through (2, 14). **Reason:** A linear equation in two variables has infinitely many solutions.	1

	SECTION B	
21	Express $0.\overline{14}$ in the form of $\frac{a}{b}$, where a and b are any two integers and $a \neq 0$.	2
22	If $a^2 + b^2 + c^2 = 90$ and $ab + bc + ca = 155$, then find the value(s) of $a + b + c$. **OR** If $x + \frac{1}{x} = 7$, then find the value of $x^3 + \frac{1}{x^3}$	2
23	In the figure given below, m // n and p // q.  If $\angle 1 = 75^0$, then prove that $\angle 2 = \angle 1 + \frac{1}{3}$ of a right angle.	2
24	a) Express $2x = 3$ as a linear equation in two variables. b) Check whether $x = -4$, $y = 8$ is a solution of the equation solution of the equation $3x + 2y = 4$ **OR** Write any two solutions of the equation $2x - 3(1 - y) = 7$.	2
25	Write any two Euclid's axioms.	2
	SECTION C	
26	The perpendicular distance of a point from the x-axis is 7 units and the perpendicular distance from the y-axis is 3 units. Write the coordinates of such a point if it lies in a) First quadrant b) Second quadrant c) Fourth quadrant **OR** Write the coordinates of a point a) Whose ordinate is –5 and which lies on y – axis. b) Which lies on x and y axes both. c) Whose abscissa is –3 and which lies on x – axis.	3

27	If (2k – 1, k + 2) is a solution of the equation $3x - 5y - 7 = 0$, then find the value of k.	3
28	Simplify: $(2x - 5y)^3 - (2x + 5y)^3$	3
29	In the figure, X and Y are respectively the mid – points of AB and BC respectively and AX = CY.  Show that AB = BC. Also state the Euclid's axiom used to prove it. **OR** In the figure ∠ABC = ∠ACB, ∠3 = ∠4.  Show that ∠1 = ∠2. Also state the Euclid's axiom used.	3
30	In the figure, PQ ⊥ PS, PQ // SR. ∠SQR = 28^0 and ∠QRT = 65^0, then find the values of x, y and z.  	3
31	Represent $\sqrt{7.7}$ on a number line.	3
	SECTION D	
32	Find the values of a and b if $\frac{\sqrt{7}-1}{\sqrt{7}+1} + \frac{\sqrt{7}+2}{\sqrt{7}-2} = a + b\sqrt{7}$ **OR** If $a = \frac{\sqrt{3}+1}{\sqrt{3}-1}$ and $b = \frac{1}{a}$, then find the value of $a^2 - b^2 + ab$.	5

33	Factorise: $6x^3 + x^2 - 10x + 3$	5
34	Sameer planned to celebrate his birthday in a small centre. He bought candies to give to children and adults. Sameer gave 3 candies to each child and 2 candies to each adult. He distributed 60 candies in total. Represent the above situation as a linear equation in two variables by taking the number of children as 'x' and the number of adults as 'y'. Express the given equation in the form $ax + by + c = 0$ and hence find the values of a, b and c. Also find three more solutions for the equation formed.	5
35	Prove that "If two lines intersect each other, then the vertically opposite angles are equal." Using this theorem, find all the angles if ∠ POR : ∠ ROQ = 5 : 7 in the below figure where lines PQ and RS intersect each other at point O.  **OR** In figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that ∠ROS = $\frac{1}{2}$ (∠QOS - ∠POS).  	5

	SECTION E	
36	**Case Study.1** During revision hours, two students Vimal and Sunil were discussing with each other about the topic of rationalising the denominator, exponential laws and properties of irrational numbers and operations on them.  Based on the above information answer the questions stated below: a) Find the value of $\left(\sqrt{x^3}\right)^{\frac{2}{3}}$ b) Find the value of $\frac{3^0+5^0}{4^0}$ c) (i) If x = $3+\sqrt{2}$ then find the value of $\frac{1}{x}$. **OR** c) (ii) Simplify $3\sqrt{45} - \sqrt{125} + \sqrt{500}$	1 1 2
37	**Case Study.2** Four friends were made to stand on the points A, B, C, D in a playground to play a game, If ABCD forms a rectangle as shown in the figure below. Based on the above information answer the following questions  	

	a) Find the coordinates of point A b) In which quadrant does point C lie? c) (i) Find the area of the rectangle ABCD. **OR** c) (ii) Find the co-ordinates of B and D and then find the value of (ordinate of B) - (abscissa of D).	1 1 2
38	**Case Study.3** Satyam was playing with torch. He put mirrors at different places and threw torch light over them. When he threw light, it got reflected as shown below in geometrical figure.   Based on the above information answer the following questions a) Identify two pairs of line segments which are parallel. b) Identify any two set of points which are collinear. c) (i) Find the measure of ∠ABG. **OR** c) (ii) What is the measure of reflex angle ∠AGB.	1 1 2

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