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INDIAN SCHOOL SALALAH

FIRST TERM EXAMINATION – SEPTEMBER (AY- 2024-25)

Class: IX   **MATHEMATICS (041)**   **Date: 30/09/2024**
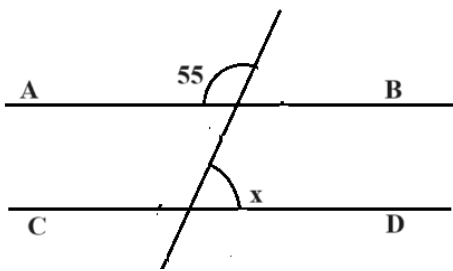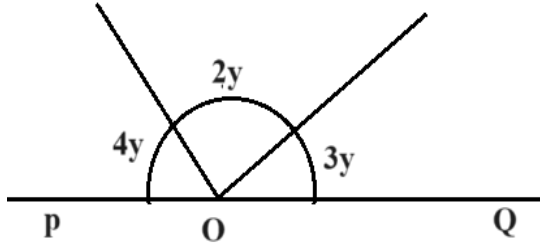
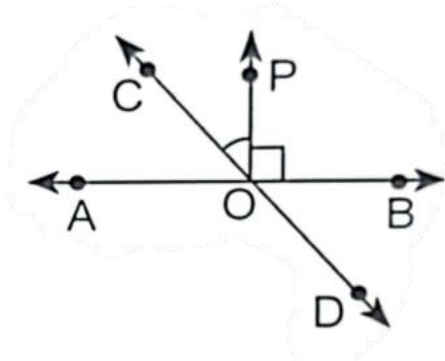**Time: 3 hours**   **Maximum Marks: 80**
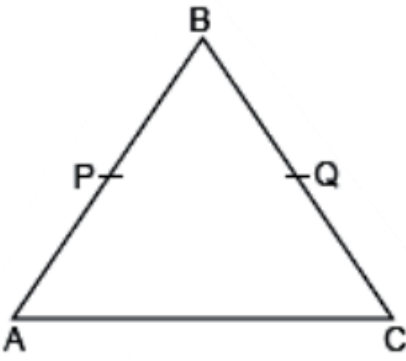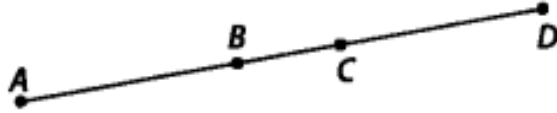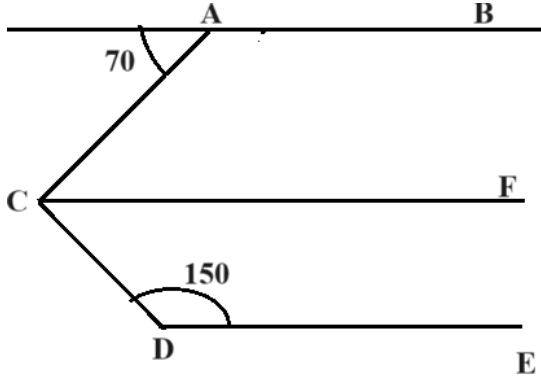
General Instructions:

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 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

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

NO	SECTION A	MARKS
1	The decimal expansion of a rational number is (a) terminating or non – terminating non- repeating (b) terminating c) terminating or non – terminating but repeating (d) none of these	1
2	Through two points (a) No line can be drawn (b) a unique line can be drawn (c) more than one line can be drawn (d) none of these	1

3	Degree of the zero polynomial is (a) 0 (b)1 (c) any rational number (d) not defined	1
4	Abscissa of all the points on the x – axis is (a) 0 (b) 1 (c) 2 (d) any real number	1
5	The linear equation $2x - 5y = 7$ has (a) Unique solution (b) two solutions (c) infinitely many solutions (d) no solutions	1
6	If AB = CD, CD = EF and EF = PQ, then which of the following is not true. (a) AB = PQ (b) CD = PQ (c) AB = EF (d) AB $\neq$ EF	1
7	In the figure if AB // CD, then the value of x is (a) 145 (b) 125 (c) 115 (d) none of these	1
8	The coefficient of x in the expansion $(x+3)^3$ is (a) 1 (b) 9 (c)18 (d) 27	1
9	Any one solution of the equation $x - 2y = 4$ is (a) (0,2) (b) (4,0) (c) (1,1) (d) (2,0)	1
10	The value of $300^2 - 299^2$ is (a) 1 (b) 499 (c) 600 (d) 599	1
11	$(16)^{\frac{3}{4}}$ is equal to (a) 2 (b) 4 (c) 8 (d) 16	1
2	The difference between the ordinate of (5,7) and the abscissa of (8, 15) is (a) 3 (b) 1 (c) 8 (d) 10	1
13	The number $(3 - \sqrt{2})(3 + \sqrt{2})$ is (a) A natural number (b) an irrational number (c) a rational number (d) both (a) and (c)	1

14	$x = 5$, $y = 2$ is a solution of the linear equation	1
	(a) $x + 2y = 7$ (b) $5x + 2y = 7$	
	(c) $x + y = 7$ (d) $5x + y = 7$	
15	The equation $x = 7$, in two variables, can be written as	1
	(a) $1x + 1y = 7$ (b) $1x + 0y = 7$	
	(c) $0x + 1y = 7$ (d) $0x + 0y = 7$	
16	In the figure POQ is a line. The value of y is	1
	(a) 30^0 (b) 40^0 (c) 20^0 (d) none of these	
17	If the ratio between two complementary angles is 2:3, then the angles are	1
	(a) $144^0, 216^0$ (b) $120^0, 240^0$	
	(c) $54^0, 36^0$ (d) $60^0, 30^0$	
18	A point P (x, y) is such that $x<0$, $y>0$. In which quadrant does the point P lie?	1
	(a) First quadrant (b) Second quadrant	
	(c) Third quadrant (d) Fourth quadrant	
	Question number 19 and 20 are Assertion and Reason based questions. Two statements are given, one labelled as Assertion (A) and the other is labelled as Reason (R). Select the correct answer to these questions form the codes (a) , (b), (c) and (d)Choose the correct option.	
19	**Assertion (A):** Two adjacent angles always form a linear pair.	1
	Reason (R): In a linear pair of angles, two non-common arms are opposite rays.	
	(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.	

20	**Assertion (A):** $2 + \sqrt{3}$ is an irrational number. **Reason (R):** Sum of a rational number and an irrational number is always an irrational number (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.	1
	SECTION B	
21	Find the value of k given that $x = -1$ and $y = -1$ is a solution of the linear equation $9kx + 12ky = 63$.	2
22	Find the distance of the points (-3, 2) from the x – axis and y – axis.	2
	Two lines AB and CD intersect at O such that $\angle POB = 90^0$ and $\angle POC = 30^0$, then find the measure of $\angle BOD$ and $\angle AOD$. **OR** An angle is equal to five times its supplement. Find the measure of the angle. 	2
24	If $x + y = 8$ and $xy = 15$, then find the value of $x^2 + y^2$ **OR** Find the value of $(99)^3$ using suitable identity.	2
25	Write any two Euclid's Postulates.	2
	SECTION C	
26	Simplify: $(a + b + c)^2 + (a - b - c)^2$	3

27	In the given figure, if AB = BC and AP = CQ, then prove that BP = BQ. Also state the Euclid's axiom used to prove it.	3

OR

In the figure given below, if AB = CD, then prove that AC = BD. Also write the Euclid's axiom used to prove this.

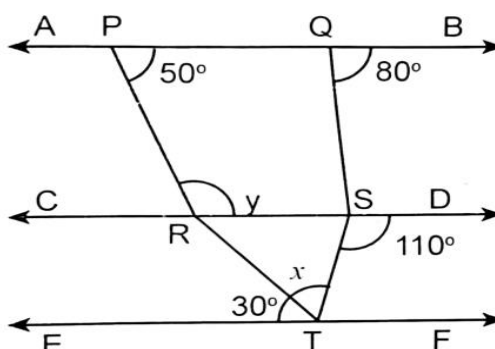| 28	Express $18.4\overline{8}$ in the form $\frac{p}{q}$ where p and q are co – prime numbers.	3
29	Find the values of m and n if $\frac{7+3\sqrt{5}}{3+\sqrt{5}} = m + n\sqrt{5}$	3
30	In the figure given below: if AB // DE and CF // DE, then find the measurement of $\angle ACD$.	3
31	If $a + b = 10$ and $a^2 + b^2 = 58$, find the value of $a^3 + b^3$ **OR** Show that $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$	3

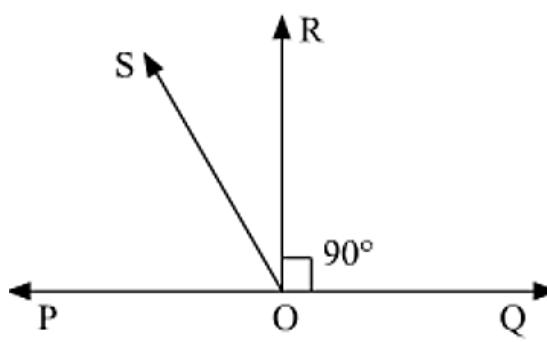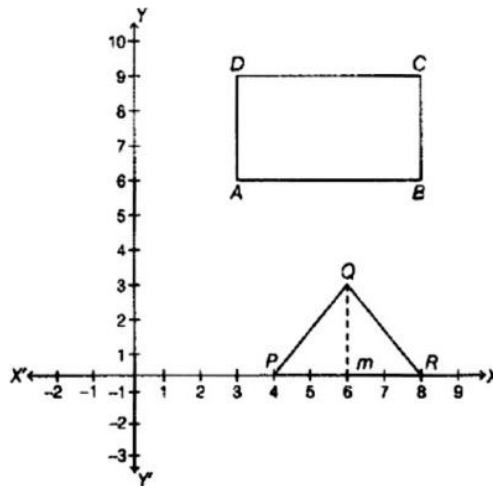|	**SECTION D**	
32	Represent $\sqrt{3}$ on the number line.	5
33	In the given figure, if AB // CD // EF, find the value of (y – x) : (y + x) **OR** In the figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$ 	5
34	Find the factors of the polynomial $p(x) = 2x^3 + 3x^2 - 3x - 2$	5
35	Find the value of $\left(\frac{1}{4}\right)^{-2} - 3(8)^{\frac{2}{3}} + \left(\sqrt[5]{32}\right)^0 + \left(\frac{81}{16}\right)^{\frac{1}{2}}$ <center>**OR**</center> Prove that $\left(\frac{x^a}{x^b}\right)^{\frac{1}{ab}} \cdot \left(\frac{x^b}{x^c}\right)^{\frac{1}{bc}} \cdot \left(\frac{x^c}{x^a}\right)^{\frac{1}{ca}} = 1$	5
	SECTION E	
36	**Case Study.1: -** DPS school provides free education to girl students from weaker sections. The local body of a town want to open a DPS school in the town for which a rectangular plot ABCD as shown in the figure is very	

suitable. But this plot belongs to Sohan Lal. Sohan Lal agreed to exchange it with triangular plot PQR as shown in the same figure.

(a) What are the coordinates of point Q? 1

(b) Identify the point whose coordinate is (4,0). 1
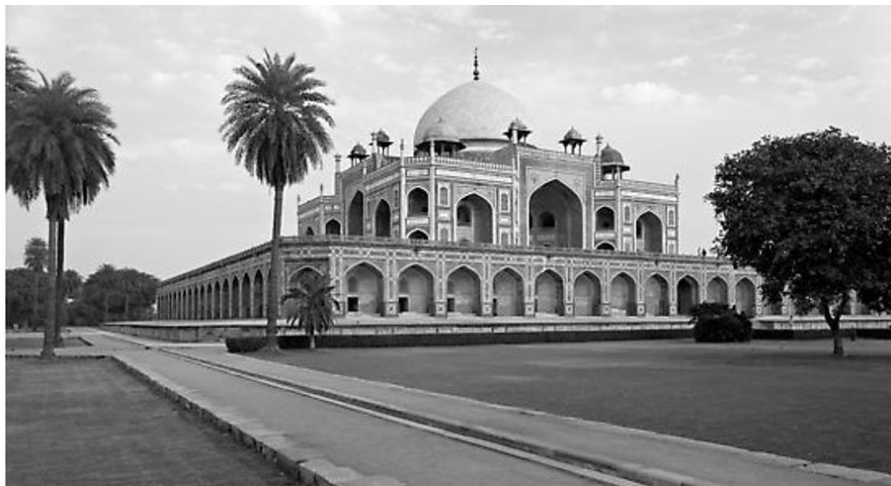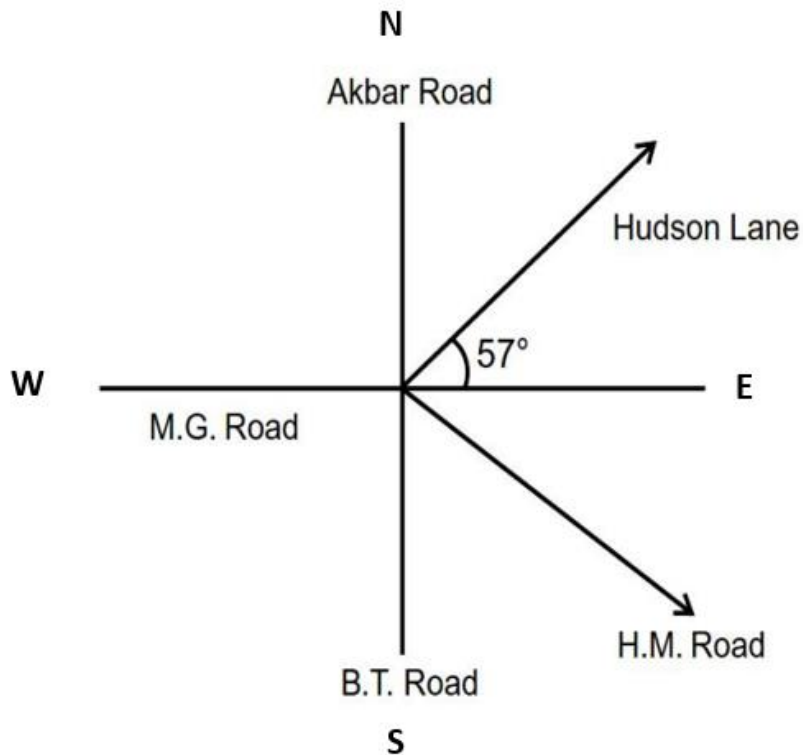
(c) Find the area of triangle PQR. 2

OR

(c) Identify the coordinates of the vertices of the rectangle ABCD

37 **Case Study.2:-** Ritesh and Sheetal are cousins, and both went to visit Mughal Garden. Before going, they searched for the location of their destination on a map. During searching, they found on map that Akbar Road and M.G. road form a right angle at their intersection points and Hudson Lane form 57° angle with M.G. road.

(a) What is the measure of acute angle between Akbar Road and Hudson Lane?

(b) Find the complement of the angle between Akbar Road and Hudson Lane.

(c) The angel between HM road and MG road in east direction is **37**°. If Ritesh is standing on M.G Road in the west direction and Sheetal is on H.M road, what is the shortest angle they can cover in order to meet?

OR

(c) Find the measure of reflex angle formed between M.G Road [in west direction] with Hudson Lane.

38	**Case Study.3: -** On her birthday, Priya planned that this time she celebrates her birthday in a small orphanage centre. She bought apples to give to children and adults working there. Priya donated 2 apples to each child and 3 apples to each adult working there along with Birthday cake. She distributed 60 apples in total.

(a) Taking the number of children as 'x' and the number of adults as 'y'. Represent the above situation in linear equation in two variables.

1

(b) If the number of children is 15, then find the number of adults.

(c) Find the values of a and b if M(a, b) and R (b, 0) are any two solutions of the linear equation y = 8x + 3.

1

OR

(c) For what value of p, (2,3) is a solution of the equation (p + 1)x − (2p + 3)y − 1 = 0?

2

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