Delhi Public School, Howrah

PERIODIC ASSESSMENT – 1 (2024 - 2025)

Class - IX

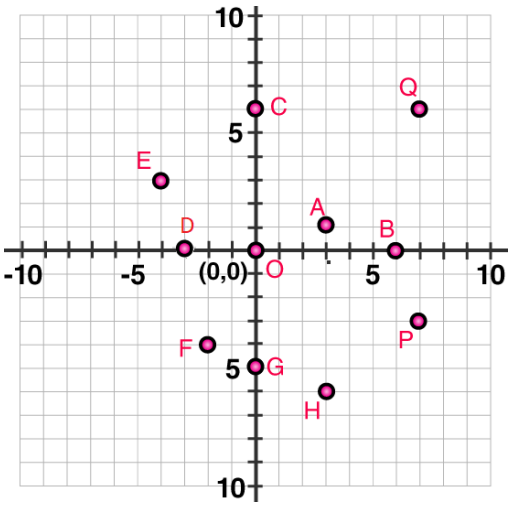
Care must be taken not to write anything on the question paper. All the questions must be attempted in the correct sequence.

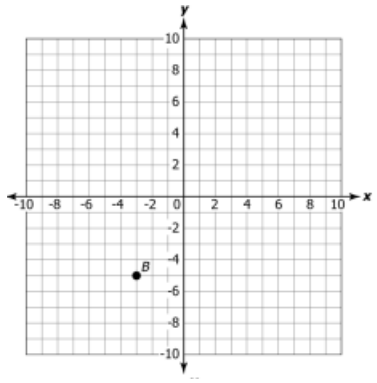
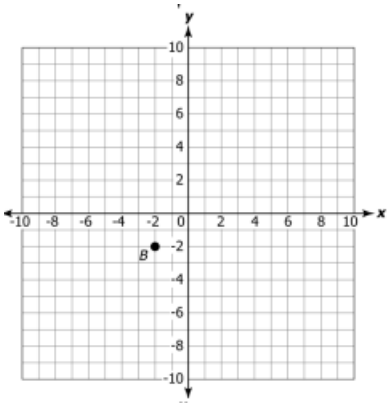
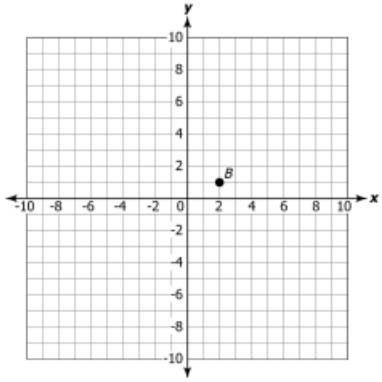
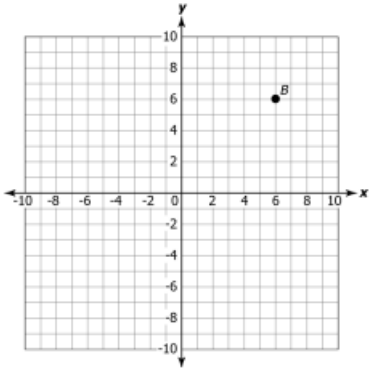
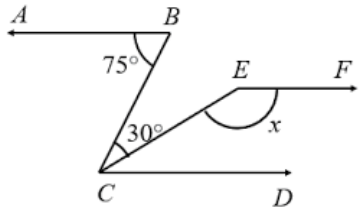
Subject: Mathematics (Code No-041)

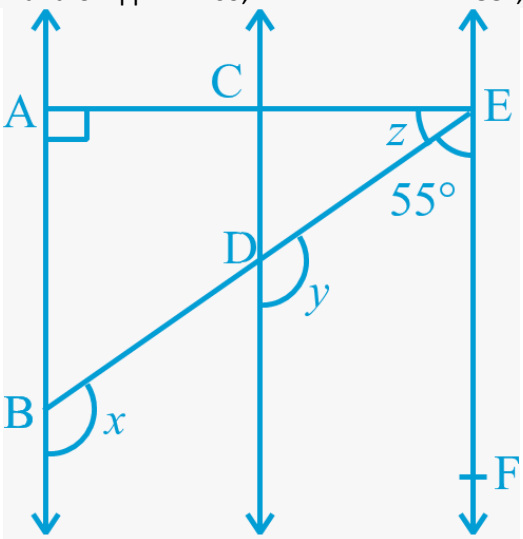
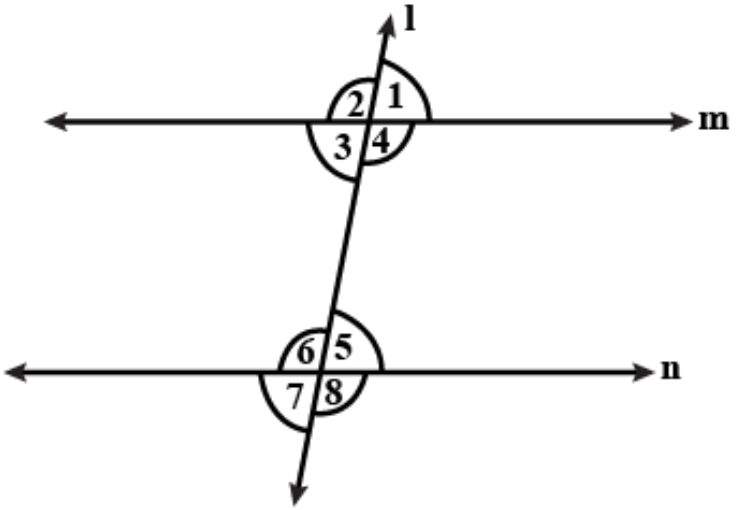
Time: 1 Hour 30 Minutes **F.M. 40**

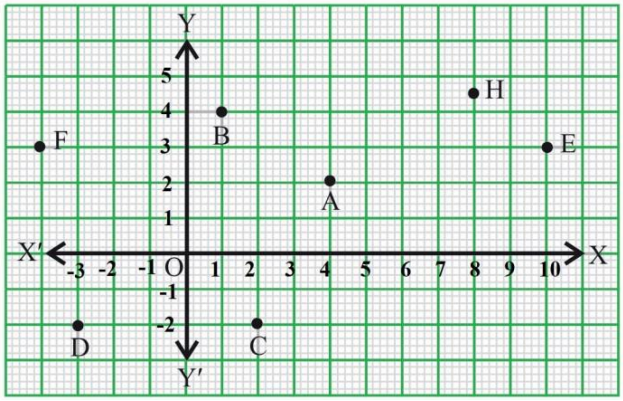
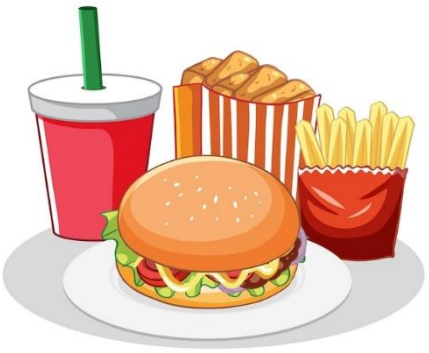
General Instructions:

1. This Question Paper has 5 Sections A, B, C, D and E.
2. Section A has 9 MCQs carrying 1 mark each.
3. Section B has 2 questions carrying 02 marks each.
4. Section C has 3 questions carrying 03 marks each.
5. Section D has 2 questions carrying 05 marks each.
6. Section E has 2 case based integrated units of assessment (04 marks each) with subparts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 1 Q of 5 marks, 1 Q of 3 marks and 1 Q of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
8. Draw neat figures wherever required. Take π =22/7 wherever required if not stated.

	SECTION A	
	Section A consists of 9 questions of 1 mark each.	
1.	Following are some statements related to the degree of polynomial: (i) Degree of a cubic polynomial is greater than degree of a quadratic polynomial. (ii) Degree of a zero polynomial is a whole number. (iii) Degree of zero polynomial and constant polynomial are equal. (iv) Degree of a constant polynomial is 1. Analyse the above statements and choose the correct alternative (a) Only i is true (b) Only i and ii are true (c) Only iv is true (d) None of the above statements are true	1
2.	 In the given figure, the number of points whose distance from y-axis is greater than 3 units is (a) 1 (b) 5 (c) 4 (d) 7	1
3.	Which of the following is an irrational number? (a) 0.14 (b) $0.14\overline{16}$ (c) $0.\overline{1416}$ (d) 0.4014001400014.....	1
4.	The linear equation $2x - 5y = 7$ has (a) a unique solution (b) two solutions (c) infinitely many solutions (d) no solution	1
5.	The number of dimensions, a point has: (a) 0 (b) 1 (c) 2 (d) 3	1
6.	If a, b and c are natural numbers such that $a^2 + b^2 + c^2 = 29$ and $ab + bc + ca = 26$, the value of $a + b + c$ is (a) 9 (b) 6 (c) 7 (d) 10	1

7.	The point B (a, b) lies in the third quadrant, where a ≠ b. Which of the following diagram represents the point B? (a)  (b)  (c)  (d) 	1
8.	In the adjoining figure, AB||CD. The value of x which will make EF||CD is  (a) 150^0 (b) 145^0 (c) 135^0 (d) 115^0	1
9.	**ASSERTION REASONING QUESTIONS** In the following questions, a statement of Assertion is followed by a statement of Reason. Mark the correct choice as: (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion. (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion. (c) Assertion is true but Reason is false. (d) Assertion is false but Reason is true. **Assertion:** The decimal representation of $\frac{3}{8}$ is terminating. **Reason:** The decimal representation of all the rational numbers is either terminating or non-terminating recurring.	1
	SECTION B	
	Section B consists of 2 questions of 2 marks each.	
10(a).	Without actually calculating the cubes, find the value of $48^3 - 30^3 - 18^3$.	2
	OR	
10(b).	Factorise: $x^3 - 3x^2 - 9x - 5$	2
11.	Arvind and Vinod have some erasers. Arvind said to Vinod, if you will give me 10 erasers, I will have twice the erasers left with you. Represent this situation as a linear equation in two variables x and y. Find a solution of this equation.	2

	SECTION C	
	Section C consists of 3 questions of 3 marks each.	
12.	Find the value of k, if $x = -k$ and $y = -\frac{3}{2}$ is a solution of the equation $x + 4y - 5 = 0$. Also find four more solutions of the given equation other than$(-k, -\frac{3}{2})$.	3
13.	If $p(x) = x^2 - 4x + 3$, evaluate: $p(2) - p(-1) + p\left(\frac{1}{2}\right)$.	3
14(a).	Prove that if two lines intersect each other, then the vertically opposite angles are equal.	3
	OR	
14(b).	In the following figure, AB || CD and CD || EF. Also, EA ⊥ AB. If ∠BEF = 55°, find the values of x, y and z.  	3
	SECTION D	
	Section D consists of 2 questions of 5 marks each.	
15(a).	Simplify: $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}} - \frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}}$	5
	OR	
15(b).	If $a = 5 + 2\sqrt{6}$ and $b = \frac{1}{a}$, then find the value of $a^2 + b^2$.	5
16.	 In the above figure, the line m is parallel to the line n. Answer the following questions: (a) If $\angle 1 = (2x + 30)°$ and $\angle 4 = (3x + 50)°$, determine the measure of $\angle 7$. (b) If $\angle 2 = 120°$, find the measures of $\angle 5, \angle 6, \angle 7$ and $\angle 8$. (c) If $\angle 6$ is two times of $\angle 5$, find the measure of $\angle 3$.	5

	SECTION E	
	Section E consists of 2 questions of 4 marks each.	
17.	**Case Study-1**   Students of class IX are on visit of Sansad Bhawan. Teacher assigns them the activity to observe and take some pictures to analyses the seating arrangement between various MP and speaker based on coordinate geometry. The staff tour guide explained various facts related to Math's of Sansad Bhawan to the students, students were surprised when teacher ask them you need to apply coordinate geometry on the seating arrangement of MP's and speaker. Please analyse the data provided in the accompanying image and graph to answer the following questions.	
	(a) In which quadrant, the point 'C' lies?	1
	(b) Find the difference between the ordinates of the points A and D.	1
	(c) If we denote Or(A) as Ordinate of A and Ab(A) as Abscissa of A, then find the value of Or(F) + Ab(B) – Ab(H) – Or(A) + Ab(C)	2
	OR	
	(d) Find the distance of the points H, A, F and D from the y-axis.	2
18.	**Case Study-2** Junk food is a food that contains high levels of salt, sugar and fats but it lacks nutrients such as vitamins, fibre and minerals, consuming them can lead to short and long-term health complications, including weight gain. If a be the number of children who take junk food and b be the number of children who take healthy food such that $a > b$, where a and b are the zeroes of the quadratic polynomial $f(y) = 2y^2 - 18y + 40$ 	
	(a) Find the number of students who take healthy food.	1
	(b) How many students take junk food?	1
	(c) Find the value of k, if $f(0) + f(1) = kf(2)$.	2
	OR	
	(d) If a and b are the zeros of the polynomial $p(x) = x^2 - 14x + 48$ instead of the given polynomial, then find the number of students who take junk food.	2

****