

BRAINYCHALKS

Institute for CBSE | JEE | NEET | OLYMPIAD

MONTHLY ASSESSMENT - I

Marks- 40

SUBJECT – MATHEMATICS

Time – 1hr 30min

General Instructions

Read the following instructions very carefully and strictly follow them :

- (i) This question paper contains 20 questions. All questions are compulsory.
- (ii) This question paper comprises five Sections A, B, C and D.
- (iii) Section A Questions no. 1 to 10 are MCQs of 1 mark each.
- (iv) Section B Questions no. 11 to 13 are very short answer type questions, carrying 2 marks each. Answer to each question should not exceed 40 words.
- (v) Section C Questions no. 14 to 17 are short answer type questions, carrying 3 marks each. Answer to each question should not exceed 60 words.
- (vi) Section D Questions no. 18 to 20 are Case based questions, carrying 4 marks each. Answer to each question should not exceed 60 words.
- (vi) There is no overall choice in the question paper. However, an internal choice has been provided in few questions. Only one of the choices in such questions has to be attempted.

SECTION A

(Multiple Choice Questions)

(10 × 1 = 10)

1. If the distance between the points (4,p) and (1,0) is 5, then p=
 - a. ± 4
 - (b) 4
 - (c) -4
 - (d) 0
2. **Assertion (A):** The graph of a linear relation is always a straight line.
Reason (R): A linear relation has a constant rate of change.
Choose the correct option.
 - a. Both A and R are true and R is the correct explanation of A.
 - b. Both A and R are true but R is not the correct explanation of A.
 - c. A is true but R is false.
 - d. A is false but R is true.
3. A(1, 5), B(1, 4) and C(8, 5) are the coordinates of the vertices of a triangle. Which of the following types of triangle will ABC be?
 - (a) Equilateral triangle
 - (b) Scalene right-angled triangle
 - (c) Isosceles right-angled triangle
 - (d) Isosceles acute-angled triangle
4. What is the coefficient of x in the polynomial $5x^2 - 3x + 7$?

a. 5

c. 7

b. -3

d. x

5. A(1, 5), B(1, 4) and C(8, 5) are the coordinates of the vertices of a triangle. Which of the following types of triangle will ABC be?

(a) Equilateral triangle

(c) Isosceles right-angled triangle

(b) Scalene right-angled triangle

(d) Isosceles acute-angled triangle

6. The point on the **y-axis** which is equidistant from the points A(6, 5) and B(-4, 3), is

a. (a) (0, 9)

(c) (9, 0)

(b) (0, 5)

(d) (5, 0)

7. **Assertion (A):** Zero is not a natural number but is an integer

Reason (R): Natural numbers begin from 1, while integers include negative numbers, zero and positive numbers

Choose the correct option.

a. Both A and R are true and R is the correct explanation of A.

b. Both A and R are true but R is not the correct explanation of A.

c. A is true but R is false.

d. A is false but R is true.

8. A lift moves from -4 to 3 and then to -2. What is the net movement of the lift?

(a) 2

(c) 5

(b) -1

(d) 7

9. Which of the following statements is correct for the relation $y=x^2+3$?

(a) It is a linear relationship because it contains (x).

(b) It is a linear relationship because the constant term is 3.

(c) It is not a linear relationship because the highest power of (x) is 2.

(d) It is linear because its graph is always a straight line.

10. Which of the following points does not lie in III quadrant

a) (-1, 2)

c) (-1, -2)

b) (-2, -5)

(-6, -3)

SECTION B

(3 × 2 = 6)

11. If (a, b) is the mid point of the segment joining the points A(10, -6) and B(k, 4) and $a-2b=18$, find the value of k and the distance AB.

12.If (a,b) is the mid point of the segment joining the points A(10, -6) and B(k, 4) and $a-2b=18$, find the value of k and the distance AB.

13.Find the values of the following polynomials at the indicated values of the variables.

(a) $3x^2-2x+6$ if $x=1$

(b) $9t^3-3t^2+4$ if $t=-1$

SECTION C

(4 × 3 = 12)

14.The breadth of a rectangle is 9 cm. Find the area if the length is:

(i) 6 cm

(ii) 10 cm

(iii) 14 cm

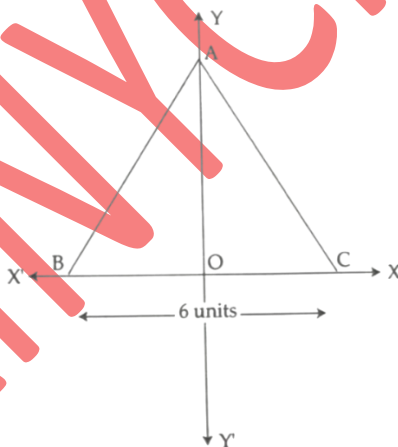
Also, find the linear pattern representing the area of the rectangle.

15.Evaluate: $\frac{4}{5} - \frac{1}{2} + \frac{3}{10}$

Simplify and state the type of result obtained.

16.Point A is chosen on y-axis in such a way that $\triangle ABC$ is an equilateral triangle. The base BC of the $\triangle ABC$ is shown in the figure. Find the coordinates of

- the mid point of BC
- the area of the triangle
- the vertices of the triangle.



17.The three vertices of a rhombus PQRS are P(2, -3), Q(6, 5) and R(-2, 1).

(a) Find the coordinates of the point where both the diagonals PR and QS intersect.

(b) Find the coordinates of the fourth vertex S.

Show your steps and give valid reasons.

SECTION D

(3 × 4 = 12)

Objective Case-Based (4 MCQs = 4 marks)

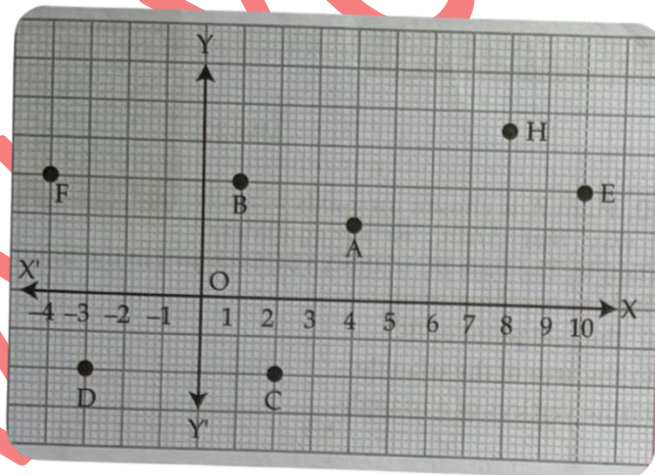
18. Students of class IX are on a visit of Sansad Bhawan. Teacher assigns them the activity to observe and take some pictures to analyse the seating arrangement between various MP and speaker based on coordinate geometry. The staff tour guide explained various facts related to the Maths of Sansad Bhawan to the students. Students were surprised when teacher asked them you need to apply coordinate geometry on the seating arrangement of MP's and speaker.



Calculate the following refer to the below image and graph. Answer the following questions:

Objective Case-Based

Refer to the graph and answer the following questions.



(i) What are the coordinates of position 'F'?

- | | |
|---------------|----------------|
| (a) $(3, -4)$ | (c) $(3, 4)$ |
| (b) $(-4, 3)$ | (d) $(-3, -4)$ |

(ii) What are the coordinates of position 'D'?

- | | |
|----------------|---------------|
| (a) $(2, 3)$ | (c) $(3, 2)$ |
| (b) $(-3, -2)$ | (d) $(-3, 2)$ |

(iii) In which quadrant does the point 'C' lie?

- (a) Quadrant I
- (b) Quadrant II

- (c) Quadrant III
- (d) Quadrant IV

(iv) Find the perpendicular distance of the point **E** from the **y-axis**.

- (a) 10 units
- (b) 11 units
- (c) 3 units
- (d) 4 units

19. A water tank system records levels using numbers on a number line. The water level rises from -4 m to 6 m, then drops to 2 m and finally rises to 7 m.

- (a) Find the total distance travelled by the water level.
- (b) Find the net change in level.
- (c) Represent using integers.
- (d) Explain the difference between distance and displacement.
- (e) Interpret the result.

20. A music app provides a prepaid wallet balance of ₹750. Every day, ₹25 is deducted from the balance for subscription usage. The remaining balance after x days is represented by $b(x)$. Answer the following questions based on the above information.

(i) Which equation represents the remaining balance after x days?

- (a) $b(x) = 750 + 25x$
- (b) $b(x) = 750 - 25x$
- (c) $b(x) = 25x - 750$
- (d) $b(x) = 750x - 25$

(ii) What will be the remaining balance after 8 days?

- (a) ₹500
- (b) ₹550
- (c) ₹600
- (d) ₹650

(iii) After how many days will the balance become ₹250?

- (a) 10 days
- (b) 15 days
- (c) 20 days
- (d) 25 days

(iv) What is the rate of change in the balance?

- (a) +25
- (b) -25
- (c) 750
- (d) -750