Shreyo

CHEATING REPLACES LEARNING

UNIT -1

M.M:40 **BVP/IX/Maths/2026-27**

Time: 1.5 Hrs.

General Instructions:

1. **This question paper contains five sections – A, B, C, D and E. Each part is compulsory.**
2. **Section A has 8 multiple choice type questions of 1 mark each and 2 assertion reasoning questions of 1 mark each.**
3. **Section B has 3 questions of 2 marks each.**
4. **Section C has 2 questions of 3 marks each,**
5. **Section D has 2 questions of 5 marks each**
6. **Section E has 2 case based questions of 4 marks each**

SECTION A

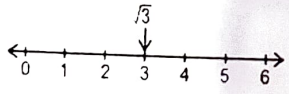
1. The ancient **Ishango Bone** discovered in Africa shows markings that suggest knowledge of
(a) Negative numbers (b) Prime numbers
(c) Complex numbers (d) Zero

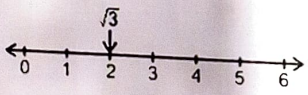
2. Which of these is an **Irrational** number between $\sqrt{2}$ and $\sqrt{11}$?
(a) 1.31803398874989... (c) 2.20200200020000...
(b) 1.78941 (d) $\sqrt{9}$

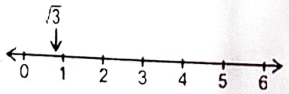
3. In a digital game, a drone moves from point A (-2, 3) to point B (4, 3). What is the total distance travelled by the drone?
(a) 2 units (b) 4 units (c) 6 units (d) 7 units

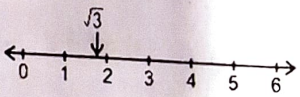
4. A carpenter needs a square board with an area of 5 square meters. The length of one side of this board is:
(a) A rational number (b) An irrational number
(c) A terminating decimal (d) A repeating decimal

5. On which number line is the position of $\sqrt{3}$ shown CORRECTLY?

(a) 

(b) 

(c) 

(d) 

6. The coordinates of a point whose ordinate is -4 and which lies on y-axis is:
(a) (-4, 0) (b) (0, -4) (c) (4, 0) (d) (0, 4)

7. A map of a classroom places the teacher's desk at origin (0, 0). A student's seat is 3 units to the right of the y-axis and 4 units above the x-axis. What are the coordinates of the seat?
(a) (4, 3) (b) (-3, 4) (c) (3, 4) (d) (3, -4)

8. Which of the following statements is **FALSE**?
   a) Every whole number is a natural number.
   b) Every integer is a rational number.
   c) Every irrational number is a real number.
   d) There are infinitely many rational numbers between 1 and 2.

Assertion and Reason Questions

Directions: **In the following questions, a statement of assertion (A) is followed by a statei reason (R). Mark the correct choice as:**
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanati assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

9. Assertion: The points (-3, 5) and (5,-3) are at different positions in the coordinate plane.
   Reason: If $x \neq y$, then $(x, y) \neq (y, x)$.

10. Assertion (A): $\sqrt{9}$ is a rational number.
    Reason (R): Square roots of all positive integers are irrational numbers.

SECTION B

11. Represent $\sqrt{10}$ on the number line.

OR

Represent $\sqrt{8.6}$ on the number line.

12. Write examples of two irrational numbers, whose
    (i) sum is a rational number (ii) product is an irrational number

13. Insert 4 rational numbers between 2.1452 and 2.1453.

OR

Insert 6 rational numbers between $\frac{7}{5}$ and $\frac{17}{35}$.

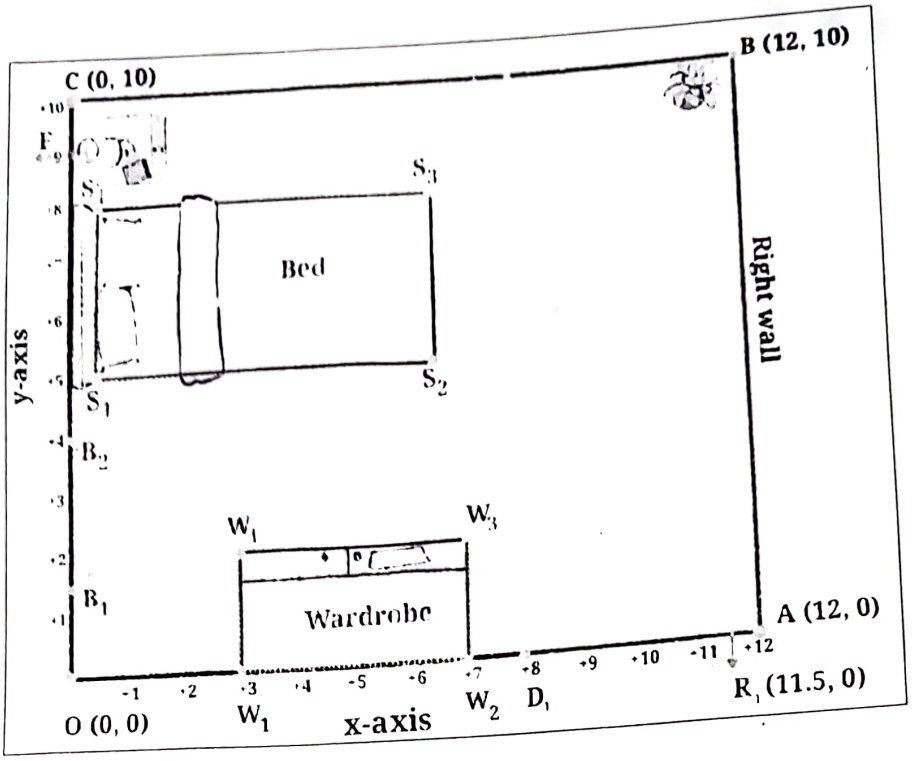
SECTION C

14. A teacher asked the class to express the decimal number $2.35\overline{7}$ in the form p/q. Here p and q are coprime integers. Two students gave the following responses:

- **Student A:** 2357/1000
- **Student B:** 1061/450

Without directly converting the decimal into a fraction, determine which student is correct. Justify your answer using the properties of rational numbers.

15.



Based on the above layout, answer the following questions:

(i) If D_1R_1 represents the door to Rahul's room, how far is the door from the left wall (the y-axis) of the room? How far is the door from the x-axis? (0.5+0.5)

(ii) If R_1 is the point (11.5, 0), how wide is the door? (1)

(iii) If B_1 (0, 1.5) and B_2 (0, 4) represent the ends of the bathroom door, is the bathroom door narrower or wider than the room door? (1)

SECTION D

16. Prove that $\sqrt{7}$ is an irrational number by using contradiction method.

17. Amit was playing on a coordinate grid and plotted the points A (2, 1), B (–1, 2), C (–2, –1), and D (1, –2). He concluded that these points form a square.
Do you agree with Amit's statement? Verify your answer by plotting the points on graph paper. Using appropriate mathematical reasoning, justify whether ABCD is a square or not? Also, find the area enclosed by the figure.

SECTION E

18. **The Seating Chart**

Rajan is helping his teacher arrange the classroom using a coordinate grid. The teacher's desk is at (0, 0).
Aarav sits at (3, 2).
Bina sits at (-3, 2).
Chris sits at (3, -2).
Diya sits at (-3, -2).

(i) Which two pair of students are sitting exactly 6 units apart horizontally? (1)

(ii) If Diya moves to the origin, her new coordinates will be? (1)

(iii) What is the shape formed if you connect the seats of Aarav, Bina, Diya, and Chris in order? (1)

(iv) Who is sitting in the Fourth Quadrant (+, -)? (1)

19. **Brahmagupta's Laws of Fortune & Debt**

In ancient Indian mathematics, numbers were often explained using the concepts of 'Fortune' (Positive) and 'Debt' (Negative).

(i) A trader starts with a debt of ₹850. He earns a fortune of ₹1,200 but then incurs a loss (debt) of ₹450. What is his final financial standing? (2)

(ii) According to Brahmagupta's laws, what is the result of a 'Debt' multiplied by a 'Debt'? (1)

(iii) Using the finger-joint counting method (base-12), how many joints can you count on four fingers of one hand using your thumb? (1)

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