

Class 9 Mathematics Practice Worksheet

New NCERT Syllabus (2026-27) - Ganita Manjari

Chapter 1: Orienting Yourself: The Use of Coordinates

Section A: Conceptual Section (5 Questions)

Q1. Identify the location rules on a Cartesian plane:

- (a) The perpendicular distance of a point from the y-axis is called its _____.
(Abscissa / Ordinate).
- (b) The coordinates of the origin where both axes intersect are always (_____, _____).
- (c) Any point that lies directly on the x-axis will always have a y-coordinate equal to _____.

Q2. State the specific Quadrant (I, II, III, or IV) or the Axis where each of the following coordinate points is located:

- (a) Point A (-4, 5) is in Quadrant: _____
- (b) Point B (3, -2) is in Quadrant: _____
- (c) Point C (0, -7) is on the: _____

Q3. State whether the following statements are True or False:

- (a) The point (2, -2) and the point (-2, 2) refer to the exact same position on a graph. ()
- (b) Points located in Quadrant III have both their x and y coordinates negative. ()**
- (c) If the abscissa of a point is negative and its ordinate is positive, the point lies in Quadrant II. (_____)

Q4. Write down the coordinates for the following descriptions:

- (a) A point whose ordinate is -3 and abscissa is 4: (_____,)
- (b) A point on the y-axis that is 5 units away in the positive direction: (, _____)**

Q5. Look at a standard grid. Calculate the total perpendicular distance between Point P(3, 4) and Point Q(3, -2) using simple number line steps. Show your thought process.

Section B: Logical Section (5 Questions)

Q6. A student is trying to map a path on a coordinate grid.

(a) If they start at (0,0) and walk 4 units to the left, then 3 units straight up, what are their final coordinates? (_____, _____)

(b) In which quadrant is the student standing at the end of their walk? _____

Q7. Three points are plotted on a graph: L(1, 2), M(2, 4), and N(3, 6).

(a) If you connect these points with a ruler, do they form a single straight line (are they collinear)? _____

(b) What is the logical relationship or rule connecting the y-coordinate to the x-coordinate for these points? _____

Q8. A perfect square is drawn on a coordinate plane. Three of its corner vertices are located at the points (0, 0), (4, 0), and (0, 4). Logically deduce the coordinates of the missing fourth corner vertex of the square.

Q9. If a point (p, q) lies strictly in Quadrant IV, logically determine the mathematical sign (Positive or Negative) for the following calculation results:

(a) The value of the product (p multiplied by q): _____

(b) The value of (p minus q): _____

Q10. Reflect a point across the grid lines: If you take the point (5, 3) and flip/reflect it perfectly across the x-axis like a mirror, what will its brand-new coordinate positions be?

Section C: High Thinking Section / HOTS (5 Questions)

Q11. An city emergency control room uses a coordinate grid system to track vehicles. A police car is at (-2, 3) and an ambulance is at (6, 3). A fire truck is positioned exactly halfway between the police car and the ambulance. Calculate the precise coordinates of the fire truck and explain your logic.

Q12. A custom triangle ABC is plotted on a grid. Its vertices are A(-2, 0), B(6, 0), and C(2, 5).

(a) Calculate the total linear length of the base side AB: _____ units.

(b) Find the mathematical area of this triangle using the coordinate coordinates given. [1]

Q13. Determine the truth behind shifting origins: If the main axis intersection (the origin) is shifted 2 units to the right and 1 unit upwards on a map, what will the new coordinate description of an object be if its original coordinate location was (5, 4)?

Q14. Find all possible mathematical values for an unknown variable k if it is given that the total straight-line distance of the point (k, 0) from another point (2, 0) is exactly 5 units on the x-axis.

Q15. Think deeply about geometric boundaries: Can you find a coordinate point (x, y) that satisfies the logical condition where its absolute distance from the x-axis is exactly equal to its absolute distance from the y-axis, while lying strictly in Quadrant III? Give a specific example and prove why it works.

Answer Key (For Teachers and Parents)

Section A:

Q1: (a) Abscissa, (b) (0, 0), (c) 0 (the x-axis equation is $y = 0$).

Q2: (a) Quadrant II, (b) Quadrant IV, (c) Negative y-axis.

Q3: (a) False (they are in completely different quadrants), (b) True, (c) True.

Q4: (a) (4, -3) [Remember, format is always (abscissa, ordinate)], (b) (0, 5).

Q5: Since the x-coordinates are identical (3), the distance is just the gap between $y = 4$ and $y = -2$. Total units = $4 - (-2) = 4 + 2 = 6$ units.

Section B:

Q6: (a) Moving left means x becomes negative (-4) . Moving up means y is positive (3) .

Coordinates are $(-4, 3)$. (b) Quadrant II.

Q7: (a) Yes, they are collinear. (b) The y -coordinate is exactly double the x -coordinate ($y = 2x$).

Q8: The vertex must align with $x=4$ and $y=4$ to close the square. The missing coordinate is $(4, 4)$.

Q9: (a) In Quadrant IV, x (p) is positive $(+)$ and y (q) is negative $(-)$. Positive $\times$ Negative = Negative. (b) Positive minus a negative becomes addition [$p - (-q) = p + q$], which results in a Positive value.

Q10: Reflecting across the x -axis keeps the x value identical but flips the sign of the y value. New coordinates are $(5, -3)$.

Section C:

Q11: Since both vehicles share the same y -coordinate (3) , they lie on a flat horizontal line. The distance between $x = -2$ and $x = 6$ is 8 units. Halfway means 4 units from either side. Midpoint $x = -2 + 4 = 2$. The fire truck is at $(2, 3)$.

Q12: (a) Base length $AB = 6 - (-2) = 8$ units. (b) The height is the y -coordinate of C , which is 5 units. Area = $\frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 8 \times 5 = 20$ square units.

Q13: Shifting the starting reference point 2 units right makes old locations feel 2 units closer to the left (subtract 2 from x). Shifting 1 unit up subtracts 1 from y . New coordinates = $(5 - 2, 4 - 1) = (3, 3)$.

Q14: The point is on the x -axis, 5 units away from $x = 2$. It can be 5 units to the right ($2 + 5 = 7$) or 5 units to the left ($2 - 5 = -3$). So, $k = 7$ or $k = -3$.

Q15: Yes. Any point where $x = y$ in absolute terms works. In Quadrant III, both coordinates must be negative. An example is $(-3, -3)$. The distance from both axes is exactly 3 units.
