

Coordinate Geometry and Linear Equations in Two Variables

Mathematics · Class 9 · Topic-wise Practice Worksheet

TIME 45 minutes	QUESTIONS 18	TOTAL MARKS 24	MAX. SCORE ___ / 24
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Name: _____ Class/Sec: _____ Date: _____

INSTRUCTIONS

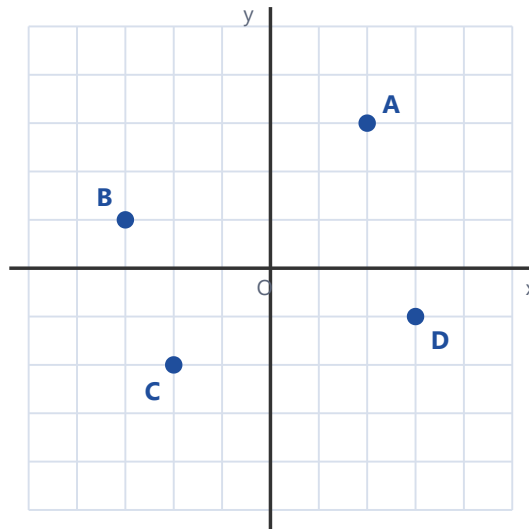
- There are **18 questions** in this worksheet. All questions are compulsory.
- Each question has four options (A), (B), (C) and (D). Exactly **one** option is correct.
- Questions 1–15 carry **1 mark** each. Questions 16–18 (Achievers Section) carry **3 marks** each.
- There is no negative marking. Use of a calculator is **not** allowed.
- Rough work may be done on the blank space at the side of each page.

Section A — Mathematical Reasoning

Q1–Q8 · 1 mark each

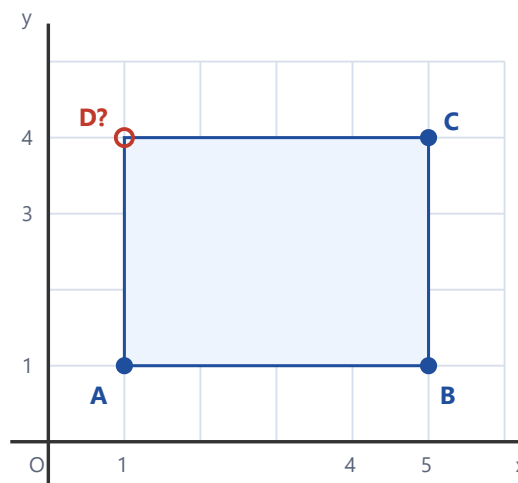
- The point $(-3, 5)$ lies in which quadrant?
 (A) Quadrant I (B) Quadrant IV
 (C) Quadrant III (D) Quadrant II
- The point $(0, -4)$ lies _____.
 (A) On the y-axis (B) On the x-axis
 (C) In Quadrant III (D) In Quadrant IV
- Every point lying on the x-axis has coordinates of the form _____.
 (A) $(0, y)$ (B) $(x, 0)$
 (C) (x, x) (D) $(0, 0)$
- Which of the following ordered pairs is a solution of $2x + 3y = 12$?
 (A) $(4, 2)$ (B) $(2, 3)$
 (C) $(1, 4)$ (D) $(3, 2)$
- The equation of the x-axis is _____.
 (A) $y = 0$ (B) $x = 0$
 (C) $x = y$ (D) $x + y = 0$
- The graph of a linear equation in two variables is always _____.
 (A) A curve (B) A straight line
 (C) A single point (D) A pair of lines
- For the point $(2, -3)$, the abscissa is _____.
 (A) -3 (B) -2
 (C) 2 (D) 3
- The graph of the equation $y = 3x$ always passes through _____.
 (A) $(3, 0)$ (B) $(0, 3)$
 (C) $(1, 0)$ (D) The origin

9. Four points A, B, C and D are plotted below. Which of them lies in the **second** quadrant?



Points A, B, C and D on a grid of unit squares

- (A) A (B) B
(C) C (D) D
10. The cost of a notebook is twice the cost of a pen. Taking the cost of a notebook as ₹ x and that of a pen as ₹ y , this statement as a linear equation is _____.
(A) $2x - y = 0$ (B) $x - 2y = 0$
(C) $x + 2y = 0$ (D) $x + y = 2$
11. If the point $(3, k)$ lies on the graph of $2x + 5y = 21$, then $k =$ _____.
(A) 2 (B) 3
(C) 4 (D) 5
12. Three vertices of rectangle ABCD are plotted below as $A(1, 1)$, $B(5, 1)$ and $C(5, 4)$. The coordinates of the fourth vertex D are _____.
(A) (1, 5) (B) (4, 1)
(C) (1, 4) (D) (4, 4)



Rectangle ABCD with vertex D unmarked

13. If $x = 2$, $y = 1$ is a solution of the equation $2x + 3y = k$, then the value of k is _____.

- (A) 5 (B) 6
(C) 7 (D) 8

14. One row of the table below is **incorrectly** matched. Which row is it?

Row	Point	Position
(A)	(4, -7)	Quadrant IV
(B)	(-5, 0)	Quadrant II
(C)	(-6, -2)	Quadrant III
(D)	(0, 9)	On the y-axis

Table 3.1 — Points and where they lie

- (A) (A) (B) (B)
(C) (C) (D) (D)

15. The graph of $3x + 4y = 12$ cuts the y-axis at the point _____.

- (A) (4, 0) (B) (3, 0)
(C) (0, 4) (D) (0, 3)

Achievers Section

Q16–Q18 · 3 marks each

16. How many solutions of the equation $2x + 5y = 20$ have both x and y as **positive integers**?

- (A) Exactly one (B) Exactly two
(C) Exactly four (D) Infinitely many

17. The point $(2k - 1, k + 3)$ lies on the line $y = x + 4$. The value of k is _____.

- (A) -2 (B) 0
(C) 2 (D) 4

18. Consider the three statements below.

- (i) The graph of $x = 5$ is a line parallel to the y-axis.
(ii) Every point lying on the graph of a linear equation in two variables is a solution of that equation.
(iii) Treated as an equation in two variables, $y = 3$ has a unique solution.

Which of them are **true**?

- (A) (i) and (ii) only (B) (ii) and (iii) only
(C) (i) and (iii) only (D) All three

Answer Key

1	D	2	A	3	B	4	D	5	A
6	B	7	C	8	D	9	B	10	B
11	B	12	C	13	C	14	B	15	D
16	A	17	B	18	A				

Solutions

1. Answer: (D) Quadrant II

A point with a negative abscissa and a positive ordinate lies to the left of the y-axis and above the x-axis, which is **Quadrant II**. The sign pattern for the four quadrants is (+, +), (-, +), (-, -), (+, -).

2. Answer: (A) On the y-axis

The abscissa is 0, so the point is at zero horizontal distance from the y-axis — it lies **on the y-axis**, four units below the origin. Points on an axis belong to no quadrant.

3. Answer: (B) (x, 0)

A point on the x-axis is at zero vertical distance from it, so its ordinate is 0 while its abscissa may be anything: **(x, 0)**. The form (0, y) describes points on the y-axis instead.

4. Answer: (D) (3, 2)

Substitute each pair into the left-hand side. For **(3, 2)**: $2(3) + 3(2) = 6 + 6 = 12$, which matches. The pair (2, 3) gives 13, while (1, 4) and (4, 2) both give 14.

5. Answer: (A) $y = 0$

Every point on the x-axis has ordinate 0 and no other point does, so the axis is described by **$y = 0$** . Similarly the y-axis is $x = 0$.

6. Answer: (B) A straight line

An equation of the form $ax + by + c = 0$ with a and b not both zero has infinitely many solutions, and when plotted they all lie on **a straight line**. This is why two plotted points are enough to draw the whole graph.

7. Answer: (C) 2

In the ordered pair (x, y) the first number is the abscissa (the x-coordinate) and the second is the ordinate. So the abscissa is **2** and the ordinate is -3.

8. Answer: (D) The origin

Putting $x = 0$ gives $y = 0$, so (0, 0) satisfies the equation and the line passes through **the origin**. Every equation of the form $y = mx$ behaves this way, because it has no constant term.

9. Answer: (B) B

Counting unit squares from the origin, A is (2, 3), **B is (-3, 1)**, C is (-2, -2) and D is (3, -1). The second quadrant needs a negative x with a positive y, which only B satisfies. C lies in the third quadrant and D in the fourth.

10. Answer: (B) $x - 2y = 0$

"Notebook = twice the pen" translates directly to $x = 2y$, which rearranges to **$x - 2y = 0$** . The form $2x - y = 0$ would say the pen costs twice the notebook, reversing the sentence.

11. Answer: (B) 3

A point lies on the graph exactly when its coordinates satisfy the equation: $2(3) + 5k = 21$, so $6 + 5k = 21$, $5k = 15$ and $k = 3$.

12. Answer: (C) (1, 4)

In a rectangle the side DA is vertical like CB, and DC is horizontal like AB. So D must share its abscissa with A, that is $x = 1$, and its ordinate with C, that is $y = 4$. Hence D is **(1, 4)**, and the rectangle measures 4 units by 3 units.

13. Answer: (C) 7

Substituting the given solution into the left side: $2(2) + 3(1) = 4 + 3 = 7$. For the equation to hold, k must equal **7**.

14. Answer: (B) (B)

The point (-5, 0) has ordinate 0, so it lies *on the x-axis* and not inside any quadrant — row **(B)** is wrong. A point must have both coordinates non-zero to lie in a quadrant. The other three rows are correct.

15. Answer: (D) (0, 3)

On the y-axis the abscissa is 0. Putting $x = 0$ gives $4y = 12$, so $y = 3$ and the line meets the y-axis at **(0, 3)**. Putting $y = 0$ instead would give the x-intercept (4, 0).

16. Answer: (A) Exactly one

Rearranged, $5y = 20 - 2x$, so $20 - 2x$ must be a positive multiple of 5. Since 20 is a multiple of 5, this needs $2x$ to be a multiple of 5, hence x must be a multiple of 5. Within the range $0 < x < 10$ the only such value is $x = 5$, giving $y = 2$. ($x = 10$ gives $y = 0$, which is not positive.) So there is **exactly one** such solution, namely (5, 2).

17. Answer: (B) 0

Substituting the coordinates into $y = x + 4$ gives $k + 3 = (2k - 1) + 4 = 2k + 3$. Subtracting $k + 3$ from both sides leaves $0 = k$, so $k = \mathbf{0}$ and the point is $(-1, 3)$. Check: $3 = -1 + 4$, which is true.

18. Answer: (A) (i) and (ii) only

Statement (i) is true: every point with abscissa 5 satisfies it, giving a vertical line five units right of the y-axis, parallel to it. Statement (ii) is true — graph and solution set are the same thing for such an equation. Statement (iii) is false: in two variables $y = 3$ means $0 \cdot x + y = 3$, which is satisfied by (0, 3), (1, 3), (2, 3) and infinitely many more. So only **(i) and (ii)** hold.