

KENDRIYA VIDYALAYA GACHIBOWLI, GPRA CAMPUS, HYD-32
PRACTICE PAPER - CHAPTER 03 and 04 (2023-24)
(ANSWERS)

SUBJECT: MATHEMATICS
CLASS : IX

MAX. MARKS : 40
DURATION : 1½ hrs

General Instructions:

- (i). All questions are compulsory.
- (ii). This question paper contains 20 questions divided into five Sections A, B, C, D and E.
- (iii). **Section A** comprises of 10 MCQs of 1 mark each. **Section B** comprises of 4 questions of 2 marks each. **Section C** comprises of 3 questions of 3 marks each. **Section D** comprises of 1 question of 5 marks each and **Section E** comprises of 2 Case Study Based Questions of 4 marks each.
- (iv). There is no overall choice.
- (v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. Ordinate of all the points on the x-axis is
(a) 0 (b) 1 (c) -1 (d) any number
Ans: (a) 0
2. The points in which abscissa and ordinate have different signs will lie in
(a) I and II quadrants. (b) II and III quadrants.
(c) I and III quadrants. (d) II and IV quadrants.
Ans: (d) II and IV quadrants.
3. The point which lies on y-axis at a distance of 5 units in the negative direction of y-axis is
(a) (0, 5) (b) (5, 0) (c) (0, -5) (d) (-5, 0)
Ans: (c) (0, -5)
4. If points P(5, 1), Q(0, 2), R(3, 0), S(-1, 0) are plotted on a graph paper, then the points on y-axis are
(a) only P (b) only Q (c) Q and R (d) R and S
Ans: (b) only Q
5. If point (3, 0) lies on the graph of the equation $2x + 3y = k$, then the value of k is
(a) 6 (b) 3 (c) 2 (d) 5
Ans: On putting $x = 3$ and $y = 0$ in the equation $2x + 3y = k$, we have
 $2 \times 3 + 3 \times 0 = k$
 $\Rightarrow 6 + 0 = k \Rightarrow k = 6$
Correct option is (a).
6. If we multiply or divide both sides of a linear equation with a non-zero number, then the solution of the linear equation:
(a) changes (b) changes in case of multiplication only
(c) remains the same (d) changes in case of division only.
Ans: If we multiply or divide both sides of a linear equation with a non-zero number, then graph will be same in both cases. Thus, the solution of the linear equation remains the same.
Correct option is (c).
7. The point on the graph of the equation $2x + 5y = 20$, where x-coordinate is $\frac{5}{2}$, is

(a) $\left(3, \frac{5}{2}\right)$ (b) $\left(\frac{5}{2}, \frac{5}{2}\right)$ (c) $\left(\frac{5}{2}, 0\right)$ (d) $\left(\frac{5}{2}, 3\right)$

Ans: (d) $\left(\frac{5}{2}, 3\right)$

8. The graph of the linear equation $y = 2x$ passes through the point

(a) (2, 1) (b) (2, -1) (c) $\left(\frac{3}{2}, -3\right)$ (d) $\left(\frac{3}{2}, 3\right)$

Ans: (d) $\left(\frac{3}{2}, 3\right)$

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

- (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.

9. **Assertion (A):** $x = 3$ and $y = 2$ is a solution of the linear equation $2x + 3y = 12$.

Reason (R): $x = 4$ and $y = 2$ is a solution of the linear equation $x + 3y = 10$.

Ans: For Assertion: The given linear equation is $2x + 3y = 12$

Substituting $x = 3$ and $y = 2$, we get

$$\text{LHS} = 2 \times 3 + 3 \times 2 = 6 + 6 = 12 = \text{RHS}$$

So, Assertion is correct.

For Reason: The given linear equation is $x + 3y = 10$

Substituting $x = 4$ and $y = 2$, we get

$$\text{LHS} = 4 + 3 \times 2 = 4 + 6 = 10 = \text{RHS}$$

So, Reason is also correct.

But reason (R) is not the correct explanation of assertion (A).

Correct option is (b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A).

10. **Assertion (A):** The point $(-2, 0)$ lies on y -axis and $(0, 4)$ on x -axis.

Reason (R): Every point on the x -axis has zero distance from x -axis and every point on the y -axis has zero distance from y -axis.

Ans: We know that Every point on the x -axis has zero distance from x -axis and every point on the y -axis has zero distance from y -axis.

So, Reason is correct.

Now, point $(-2, 0)$ lies on x -axis and $(0, 4)$ on y -axis

So, Assertion is not correct

Correct option is (d) Assertion (A) is false but reason (R) is true.

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Find the distance of the following points from the y -axis: P(3, 0), Q(0, -3), R(22, -5), S(-3, -1).

Ans: Distance of the point from the y -axis is the x -coordinate of the given point. So, the distances of points P, Q, R and S from the y -axis are 3 units, 0 unit, 22 units and -3 units (negative sign indicates that the distance is measured along negative x -axis) respectively.

12. In which quadrant the following points lie?

(3, 2), (2, -3), (-4, 4) and (-2, -3)

Ans: Point (3, 2) lies in Ist quadrant
 Point (2, -3) lies in IVth quadrant
 Point (-4, 4) lies in IInd quadrant
 Point (-2, -3) lies in IIIrd quadrant

13. Find two solutions for the equation $4x + 3y = 24$. How many solutions of this equation are possible?

Ans: $4x + 3y = 24$

On putting $x = 0$, we have $4 \times 0 + 3y = 24 \Rightarrow 0 + 3y = 24 \Rightarrow 3y = 24$

$$\Rightarrow y = \frac{24}{3} \Rightarrow y = 8$$

On putting $y = 0$, we have

$$4x + 3 \times 0 = 24 \Rightarrow 4x + 0 = 24 \Rightarrow 4x = 24$$

$$\Rightarrow x = \frac{24}{4} \Rightarrow x = 6$$

Therefore, two solutions are (0, 8) and (6, 0).

Given equation is a linear equation in two variables. Therefore, it has infinitely many solutions.

14. Find the solution of the linear equation $x + 2y = 8$ which represents a point on the: (i) x -axis
 (ii) y -axis

Ans: (i) For x -axis, $y = 0$

On putting $y = 0$ in $x + 2y = 8$, we have

$$x + 2 \times 0 = 8 \Rightarrow x = 8$$

(ii) For y -axis, $x = 0$

On putting $x = 0$ in $x + 2y = 8$, we have

$$0 + 2y = 8 \Rightarrow y = 4$$

Hence, point (8, 0) is a point on x -axis and point (0, 4) is a point on y -axis.

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. Find the value of a , if the line $3y = ax + 7$, will pass through: (i) (3, 4), (ii) (1, 2), (iii) (2, -3)

Ans: $3y = ax + 7$

(i) Putting $x = 3$ and $y = 4$ in the given equation of line, we have

$$3 \times 4 = a \times 3 + 7 \Rightarrow 12 = 3a + 7 \Rightarrow 3a = 12 - 7$$

$$\Rightarrow 3a = 5 \Rightarrow a = \frac{5}{3}$$

(ii) Putting $x = 1$ and $y = 2$ in the given equation of line, we have

$$3 \times 2 = a \times 1 + 7 \Rightarrow 6 = a + 7 \Rightarrow a = 6 - 7 \Rightarrow a = -1$$

(iii) Putting $x = 2$ and $y = -3$ in the given equation, we have

$$3 \times (-3) = a \times 2 + 7 \Rightarrow -9 = 2a + 7 \Rightarrow 2a = -9 - 7$$

$$\Rightarrow 2a = -16 \Rightarrow a = \frac{-16}{2} \Rightarrow a = -8$$

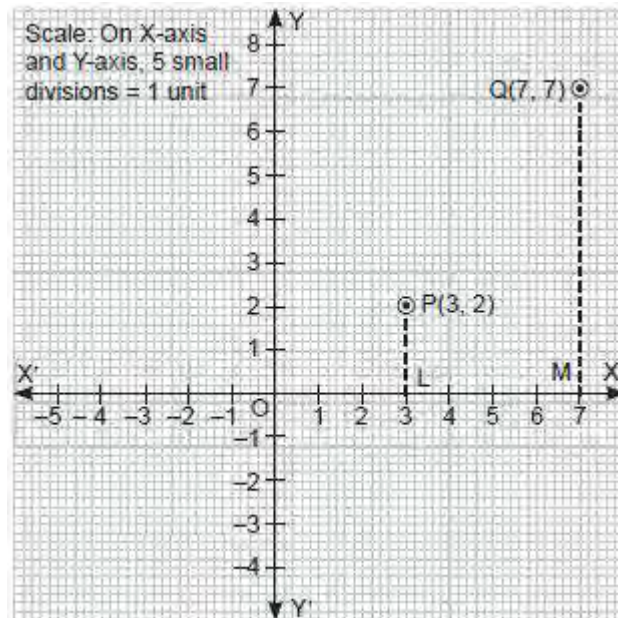
16. P(3, 2) and Q(7, 7) are two points. Perpendiculars are drawn to the x -axis from P and Q meeting the x -axis at L and M respectively.

(i) Find the coordinates of L and M.

(ii) Find the lengths of LM.

Ans: (i) Coordinates of L are (3, 0)

Coordinates of M are (7, 0)



Please note: Graph is not mandatory; student may draw the rough graph to write the answer

(ii) Length of LM = 7 – 3 = 4 units

17. Find the value of a and b , if the line $6bx + ay = 24$ passes through $(2, 0)$ and $(0, 2)$.

Ans: $6bx + ay = 24$... (i)

On putting $x = 2$ and $y = 0$ in (i), we have

$$6b \times 2 + a \times 0 = 24 \Rightarrow 12b + 0 = 24 \Rightarrow 12b = 24$$

$$\Rightarrow b = \frac{24}{12} \Rightarrow b = 2$$

On putting $x = 0$ and $y = 2$ in (i), we have

$$6b \times 0 + a \times 2 = 24 \Rightarrow 0 + 2a = 24 \Rightarrow 2a = 24$$

$$\Rightarrow a = \frac{24}{2} \Rightarrow a = 12$$

Hence, value of a and b are 12 and 2 respectively.

SECTION – D

Questions 18 carry 5 marks each.

18. For what value of p ; $x = 2, y = 3$ is a solution of $(p + 1)x - (2p + 3)y - 1 = 0$?

(i) Write the equation.

(ii) How many solutions of this equation are possible?

(iii) Is this line passes through the point $(-2, 3)$? Give justification.

Ans: Given: $(p + 1)x - (2p + 3)y - 1 = 0$... (i)

Put $x = 2$ and $y = 3$ in (i), we get

$$(p + 1)2 - (2p + 3)3 - 1 = 0$$

$$\Rightarrow 2p + 2 - 6p - 9 - 1 = 0$$

$$\Rightarrow -4p + 2 - 10 = 0$$

$$\Rightarrow -4p = 8$$

$$\Rightarrow p = -2$$

(i) Substitute the value of p in (i), we get

$$(-2 + 1)x - [2(-1) + 3]y - 1 = 0$$

$$\Rightarrow -x - y - 1 = 0$$

$$\Rightarrow x + y + 1 = 0 \quad \dots \text{(ii)}$$

(ii) Since the given equation is a linear equation in two variables. Therefore, it has infinitely many solutions.

(iii) Substitute $x = -2$ and $y = 3$ in L.H.S. of (ii), we have

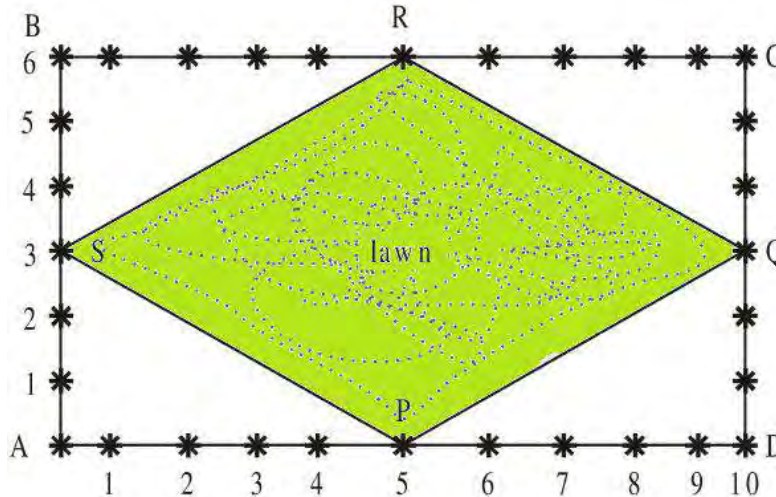
L.H.S. = $-2 + 3 + 1 = 2 \neq$ R.H.S.

Hence, the line $x + y + 1 = 0$ will not pass through the point $(-2, 3)$.

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. The Class IX students of a secondary school in Krishinagar have been allotted a rectangular plot of land for their gardening activity. Sapling of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a lawn PQRS in the ground as shown in below figure.



- (a) What are the coordinates of C, taking A as origin? (1)
 (b) What are the coordinates of R, taking A as origin? (1)
 (c) Find the side of lawn (2)

Ans: (a) C(10, 6)

(b) R(5, 6)

(c) $PS^2 = AS^2 + AP^2 = 5^2 + 3^2$
 $= 25 + 9 = 34$

$\Rightarrow PS = \sqrt{34}$

20. On his birthday, Manoj planned that this time he celebrates his birthday in a small orphanage centre. He bought apples to give to children and adults working there. Manoj donated 2 apples to each children and 3 apples to each adult working there along with Birthday cake. He distributed 60 total apples.



- (a) How to represent the above situation in linear equations in two variables by taking the number of children as 'x' and the number of adults as 'y'? (1)
 (b) If the number of children is 15, then find the number of adults? (1)
 (c) If the number of adults is 12, then find the number of children? (1)
 (d) Find the value of b, if $x = 5, y = 0$ is a solution of the equation $3x + 5y = b$. (1)

Ans: (a) Let the number of children be x and the number of adults be y then the linear equation in two variable for the given situation is $2x + 3y = 60$.

$$(b) 2x + 3y = 60 \Rightarrow 2(15) + 3y = 60$$

$$\Rightarrow 3y = 60 - 30 = 30$$

$$\Rightarrow y = 10$$

$$(c) 2x + 3y = 60 \Rightarrow 2x + 3(12) = 60$$

$$\Rightarrow 2x = 60 - 36 = 24$$

$$\Rightarrow x = 12$$

(d) On putting $x = 5$ and $y = 0$ in the equation $3x + 5y = b$, we have

$$3 \times 5 + 5 \times 0 = b$$

$$\Rightarrow 15 + 0 = b$$

$$\Rightarrow b = 15$$

