PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

MCQs & A and R WORK SHEET

Test / Exam Name: Pair Of Linear Equations In Two Variables **Standard: 10th** **Subject: Mathematics**

Student Name: ..... **Section:** ..... **Roll No.:** .....

Questions: 45 **Time: 01:30 hh:mm** **Negative Marks: 0** **Marks: 45**

Instructions

1. MULTIPLE CHOICE QUESTIONS.

Q1. For what value of k do the equations kx - 2y = 3 and 3x + y = 5 represent two lines intersecting at a unique point? **1 Mark**

A k = 3 **B** k = -3 **C** k = 6 **D** All real values except -6

Ans: D All real values except -6

Solution:

kx - 2y = 3 and 3x + y = 5

We know that,

the system of linear equations $a_1x + b_1x + c_1 = 0$, $a_2x + b_2y + c_2 = 0$ has a unique solution if $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$.

So, $\frac{k}{3} = \frac{-2}{1}$

$\Rightarrow k \neq -6$.

Thus, k can take any real values except -6.

Q2. A system of two linear equations in two variables has a unique solution if their graphs: **1 Mark**

A Coincide **B** Cut the x-axis **C** Do not intersect at any point **D** Intersect only at a point

Ans: D Intersect only at a point

Solution:

The number of solutions of a system of two linear equations in two variables is equal to the number of common points between the graphs of given linear equations.
If a system has a unique solution then their graphs must intersect in only one point.

Q3. A system of two linear equations in two variables have no solution if their graphs: **1 Mark**

A Cut the x-axis **B** Intersect only at a point **C** Coincide **D** Do not intersect at any point

Ans: D Do not intersect at any point

Solution:

A system of two linear equations in two variables is inconsistent if their graphs do not intersect at any point.
In this case, a pair of lines represented by the system are parallel to each other.
so they do not intersect at any point means they are parallel to each other then there are no solutions that are true for both equations.

Q4. Every linear equation in two variables has: **1 Mark**

A Two solutions **B** One solution **C** An infinite number of solutions **D** No solution

Ans: C An infinite number of solutions

Solution:

A linear equation in two variables is of the form, ax + by + c = 0, where geometrically it does represent a straight line and every point on this graph is a solution for a given linear equation.
As a line consists of an infinite number of points. A linear equation has an infinite number of solutions.

Q5. A system of two linear equations in two variables is dependent consistent, if their graphs: **1 Mark**

A Do not intersect at any point **B** Coincide with each other **C** Cut the x-axis **D** Intersect only at a point

Ans: B Coincide with each other

Solution:

A system of two linear equations in two variables is dependent consistent, if their graphs coincide with each other i.e. they superimpose each other and all points in one line are also a solution for the other line.

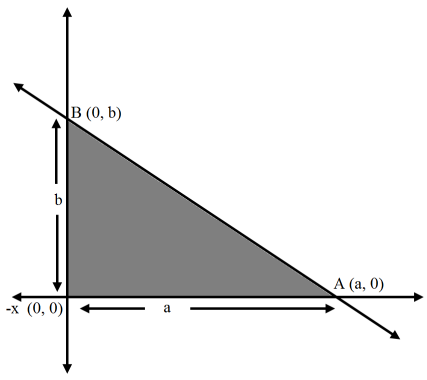
Q6. The area of the triangle formed by the line $\frac{x}{a} + \frac{y}{b} = 1$ with the co-ordinate axis is: **1 Mark**

A 2ab sq. units **B** ab sq. units **C** $\frac{1}{4}$ab sq. units **D** $\frac{1}{2}$ab sq. units

Ans: D $\frac{1}{2}$ab sq. units

Solution:

Area of triangle OAB = $\frac{1}{2} \times OA \times OB = \frac{1}{2}ab$



Q7. For what value of k, do the equations kx - 2y = 3 and 3x + y = 5 represent two lines intersecting at a unique point? **1 Mark**

A k = 3 **B** all real values except -6 **C** k = 6 **D** k = -3

Ans: B all real values except -6

Solution:

For a unique intersecting point we have $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

∴

\text{k}\neq-6

Q8. The graphs of the equations 2x + 3y - 2 = 0 and x - 2y - 8 = 0 are two lines which are: **1 Mark**

A Coincident. **B** Parallel. **C** Intersecting exactly at one point.

D Perpendicular to each other.

Ans: C Intersecting exactly at one point.

Solution:

2x + 3y + 9 = 0 and x - 2y + 8 = 0

\frac{\text{a}_1}{\text{a}_2}=\frac{2}{1}=2

\frac{\text{b}_1}{\text{b}_2}=\frac{3}{-12}

\frac{\text{c}_1}{\text{c}_2}=\frac{9}{-8}

Clearly, \frac{\text{a}_1}{\text{a}_2}\neq\frac{\text{b}_1}{\text{b}_2}.

We know that,

If in a system of linear equations $a_1x + b_1y + c_1 = 0$, $a_2x + b_2y + c_2 = 0$

We have \frac{\text{a}_1}{\text{a}_2}\neq\frac{\text{b}_1}{\text{b}_2} then the system has a unique solution.

So, the pair of lines are intersecting exactly at one point.

Q9. The pair of equations x = a and y = b graphically represents lines which are: **1 Mark**

A Parallel **B** Intersecting at (b, a) **C** Coincident **D** Intersecting at (a, b)

Ans: D Intersecting at (a, b)

Solution:

The pair of equations x = a and y = b graphically represents lines which are intersecting at (a, b).

Q10. If the system 6x - 2y = 3, kx - y = 2 has a unique solution, then: **1 Mark**

A $k \neq 4$ **B** k = 4 **C** $k \neq 3$ **D** k = 3

Ans: C $k \neq 3$

Solution:

If the system has a unique solution, then \frac{\text{a}_{1}}{\text{a}_{2}}\neq\frac{\text{b}_{1}}{\text{b}_{2}}

Here $a_1 = 6$, $a_2 = k$, $b_1 = -2$ and $b_2 = -1$

\therefore\frac{6}{\text{k}}\neq\frac{-2}{-1}\Rightarrow {3}\text{k}\neq{6}

\Rightarrow\text{k}\neq{3}

{2}\text{k}\neq{6}, \text{ k}\neq{3}

Q11. Choose the correct answer from the given four options: **1 Mark**

For what value of k, do the equations 3x - y + 8 = 0 and 6x - ky = -16 represent coincident lines?

A $\frac{1}{2}$ **B** $-\frac{1}{2}$ **C** 2 **D** -2

Ans: C 2

Solution:

Condition for coincident lines is

$\frac{\text{a}_1}{\text{a}_2}=\frac{\text{b}_1}{\text{b}_2}=\frac{\text{c}_1}{\text{c}_2}$

Given lines, 3x - y + 8 = 10

and 6x - 6y + 16 = 0

Here, $a_1 = 3$, $b_1 = -1$, $c_1 = 8$

and $a_2 = 6$, $b_2 = -6$, $c_2 = 16$

From Eq. (i), $\frac{3}{6}=\frac{-1}{-\text{k}}=\frac{8}{16}$

$\Rightarrow \frac{1}{\text{k}}=\frac{1}{2}$

$\therefore \text{k}=2$

Q12. The pair of equations x + 2y + 5 = 0 and -3x - 6y + 1 = 0 have: **1 Mark**

A A unique solution **B** Exactly two solutions **C** Infinitely many solutions **D** No solution

Ans: D No solution

Solution:

Given pair of equations are x + 2y + 5 = 0 and -3x - 6y + 1 = 0.

Comparing with the standard form,

$a_1 = 1$, $b_1 = 2$, $c_1 = 5$

$a_2 = -3$, $b_2 = -6$, $c_2 = 1$

$\frac{\text{a}_1}{\text{a}_2} = \frac{-1}{3}$

$\frac{\text{b}_1}{\text{b}_2} = \frac{2}{-6} = \frac{-1}{3}$

$\frac{\text{c}_1}{\text{c}_2} =\frac{5}{1}$

Thus $\frac{\text{a}_1}{\text{a}_2} = \frac{\text{b}_1}{\text{b}_2}\neq\frac{\text{c}_1}{\text{c}_2}$

The given pair of equations has no solution.

Q13. Choose the correct answer from the given four options: **1 Mark**

The value of c for which the pair of equations cx - y = 2 and 6x - 2y = 3 will have infinitely many solutions is:

A 3. **B** -3. **C** -12. **D** No value.

Ans: C -12.

Solution:

Condition for infinitely many solutions,

$\frac{\text{a}_1}{\text{a}_2}=\frac{\text{b}_1}{\text{b}_2}=\frac{\text{c}_1}{\text{c}_2}$

The given lines are cx - y = 2 and 6x - 2y = 3

Here, $a_1 = c$, $b_1 = -1$, $c_1 = -2$

and $a_2 = 6$, $b_2 = -2$, $c_2 = -3$

From Eq. (i), $\frac{\text{c}}{6}=\frac{-1}{-2}=\frac{-2}{-3}$

Here, $\frac{\text{c}}{6}=\frac{1}{3}$ and $\frac{\text{c}}{6}=\frac{2}{3}$

$\Rightarrow \text{c}=3$ and $\text{c}=4$

Since, c has different values.

Hence, for no value of c the pair of equations will have infinitely many solutions.

Q14. The lines representing the pair of equations 5x - 4y + 8 = 0 and 7x + 6y - 9 = 0: **1 Mark**

A None of these **B** Intersect at a point **C** Are parallel **D** Are coincident

Ans: B Intersect at a point

Solution:

$\mathbf{= \frac{\text{a1}}{\text{a2}} = \frac{5}{7}}$

$= \frac{\text{b1}}{\text{b2}} = -\frac{4}{6}$

$\text{Since},\frac{\text{a1}}{\text{a2}}\neq\frac{\text{b1}}{\text{b2}}$

$\therefore$ lines are intersecting at a point

Q15. If a pair of linear equations in two variables is consistent, then the lines represented by two equations are: **1 Mark**

A Always coincident **B** Intersecting or coincident **C** Intersecting **D** Parallel

Ans: B Intersecting or coincident

Solution:

If a pair of linear equations in two variables is consistent, then its solution exists.

$\therefore$ The lines represented by the equations are either intersecting or coincident.

Q16. One equation of a pair of inconsistent linear equations is 2x - 3y = 4, then the second equation can be: **1 Mark**

A 3x - 2y = 4 **B** 6x - 9y = 12 **C** 4x - 6y = 8 **D** 4x - 6y = 9

Ans: D 4x - 6y = 9

Solution:

If equations of a pair of dependent linear equations, then \frac{\text{a}_{1}}{\text{a}_{2}}=\frac{\text{b}_{1}}{\text{b}_{2}}\neq\frac{\text{c}_{1}}{\text{c}_{2}}

Give: $a_1 = 2$, $b_1 = -3$, and $c_1 = 4$

For satisfying the condition of dependent linear equations, the value of a_2, b_2, and c_2 should be the multiples of the value of a_1, b_1 and c_1

\therefore The value would be $a_2 = 2 \times (2) = 4$, $b_2 = 6 \times 2 = 12$ and $c_1 = 4 \times 2 = 8$

\therefore The second equations can be 4x - 6y = 8

Q17. The sum of two numbers is 35 and their difference is 13. The numbers are: **1 Mark**

A 24 and 11 **B** 25 and 12 **C** 20 and 15 **D** 26 and 13

Ans: A 24 and 11

Solution:

let the numbers be x and y, then as per question

x + y = 35 .... (1)

x - y = 13 .... (2)

Adding equation (1) and (2)

2x = 48

x = 24

Substitute this value in eq. (1) we get

24 + y = 35

y = 11

\therefore the Numbers are 24 and 11

Q18. The lines representing the pair of equations x + 3y = 6 and 2x - 3y = 12 intersect at: **1 Mark**

A (0, 6) **B** (1, 6) **C** (6, 0) **D** (6, 1)

Ans: C (6, 0)

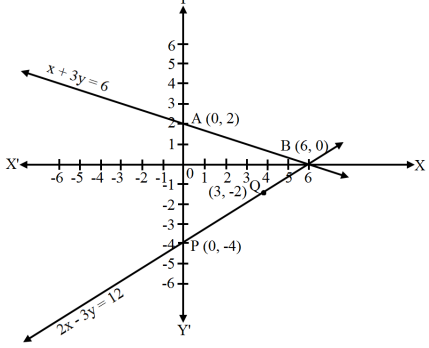
Solution:

Here are the two solutions of each of the given equations. x + 3y = 6

x	0	6
y	2	0

2x - 3y = 12

X	0	3
y	-4	-2



Q19. The pair of linear equations y = 0 and y = -6 has. **1 Mark**

A A unique solution **B** No solution **C** Infinitely many solutions **D** Only solution (0, 0)

Ans: B No solution

Solution:

The pair of equation y = 0 and y = -6 has no solution. We know that the line y = c is a horizontal line. Since, therefore both lines are parallel to each other.

Q20. The pair of equations x = 2 and y = -3 has: **1 Mark**

A Infinitely many solutions **B** Two solutions **C** One solution **D** No solution

Ans: C One solution

Solution:

Here, a unique solution of each variable of a pair of linear equations is given,

\therefore it has one solution to a system of linear equations.

Q21.5 pencils and 7 pens together cost Rs. 50 whereas 7 pencils ands pens together cost Rs. 46. The cost of 1 pen is: **1 Mark**

A Rs. 5 **B** Rs. 6 **C** Rs. 3 **D** Rs. 4

Ans: A Rs. 5

Solution:

Let, cost in (RS) of one pencil = x

and cost in (RS) of one pen = y

5x + 7y = 50 ... (1)

7x + 5y = 46 ... (2)

Multiply equation (1) by 7 and equation (2) by 5 we get

7(5x + 7y) = 7 × 50

35x + 49y = 350 ... (3)

and 5(7x + 5y) = 5 x 46

35x + 25y = 230 ... (4)

Subtract equation (4) from equation 3, we get

35x + 49y - 35x - 25y = 350 - 230

49y - 25y = 120

24y = 120

\text{y} = \frac{120}{24}

y = 5

Substitute y = 5 in equation 1, we get

5x + 7 x 5 = 50

5x + 35 = 50

5x = 50 - 35

5x = 15

\text{x} = \frac{15}{3}

x = 3 Cost of One Pen = y = 5

Q22. The larger of the two supplementary angles exceeds the smaller by 18°. The smaller angle is: **1 Mark**

A 180° **B** 81° **C** 100° **D** 99°

Ans: B 81°

Solution:

Let larger of the two supplementary angles be x and smaller be y

According to question, x + y = 180° ... (i)

And x = y + 18°

? x - y = 18° ... (ii)

Subtracting eq. (ii) from eq. (i),

we get 2y = 162°

? y = 81°

Therefore, the smaller angle is 81°

Putting the value of y in equation 1

x + 81° = 180°

x = 180° - 81°

x = 99°, which is a larger angle.

Q23. The angles of a triangle are x°, y° and 40°. The difference between the two angles x and y is 30°, then: **1 Mark**

A x° = 65° and y° = 95° **B** x° = 75° and y° = 45° **C** None of these **D** x° = 85° and y° = 55°

Ans: D x° = 85° and y° = 55°

Solution:

According to the question,

x° + y° + 40° = 180°

x° + y° = 140° ... (i)

and x° + y° = 30° ... (ii)

and y° = 55°

On solving eq. (i) and eq. (ii),

x + y + x - y = 140 + 30

2x = 170

x = 85°

Putting the value of x in equation (i), we get

$85° + y = 140°$

$y = 140° - 85°$

$y = 55°$

we get $x° = 85°$ and $y° = 55°$

Q24. If $\frac{1}{\text{x}}+\frac{2}{\text{y}}=4$ and $\frac{3}{\text{y}}+\frac{1}{\text{x}}=11$ then: **1 Mark**

A $\text{x}=2,\ \text{y}=3$ **B** $\text{x}=-2,\ \text{y}=3$ **C** $\text{x}=\frac{-1}{2},\ \text{y}=3$

D $\text{x}=\frac{-1}{2},\ \text{y}=\frac{1}{3}$

Ans: A $\text{x}=2,\ \text{y}=3$

Solution:

$\frac{2\text{x}}{3}-\frac{\text{y}}{2}+\frac{1}{6}=0$

Multiply by the LCM, 6.

? $4x - 3y + 1 = 0$

? $4x - 3y = -1$ ....(i)

$\frac{\text{x}}{2}+\frac{2\text{y}}{3}=3$

Multiply by the LCM, 6.

$3x + 4y = 18$ ...(ii)

Multiply equation (i) and (ii) by 4 and 3 respectively.

$16x - 12y = -4$ ...(iii)

$9x + 12y = 54$ ...(iv)

Adding equations (iii) and (iv), we get

$25x = 50$

? $x = 2$

Substituting $x = 2$ in (ii), we get $y = 3$.

Q25. 5 years hence, the age of a man shall be 3 times the age of his son while 5 years earlier the age of the man was 7 times the age of his son. The present age of the man is: **1 Mark**

A 45 years **B** 47 years **C** 40 years **D** 50 years

Ans: C 40 years

Solution:

Let us assume the present age of men be x years

Also, the present age of his son be y years

According to question, after 5 years:

$(x + 5) = 3 (y + 5)$

$x + 5 = 3y + 15$

$x - 3y = 10$ … (i)

Also, five years ago:

$(x - 5) = 7 (y - 5)$

$x - 5 = 7y - 35$

$x - 7y = - 30$ … (ii)

Now, on subtracting (i) from (ii) we get:

$-4y = -40$

$y = 10$

Putting the value of y in (i), we get

$x - 3 \times 10 = 10$

$x - 30 = 10$

$x = 10 + 30$

$x = 40$

$\therefore$ The present age of men is 40 years.

Q26. If $\frac{3}{\text{x+y}}+\frac{2}{\text{x}-\text{y}}=2$ and $\frac{9}{\text{x+y}}-\frac{4}{\text{x}-\text{y}}=1$ then: **1 Mark**

A $\text{x}=\frac{1}{2},\ \text{y}=\frac{3}{2}$ **B** $\text{x}=\frac{5}{2},\ \text{y}=\frac{1}{2}$

C $\text{x}=\frac{3}{2},\ \text{y}=\frac{1}{2}$ **D** $\text{x}=\frac{1}{2},\ \text{y}=\frac{5}{2}$

Ans: B $\text{x}=\frac{5}{2},\ \text{y}=\frac{1}{2}$

Solution:

$\frac{3}{\text{x+y}}+\frac{2}{\text{x}-\text{y}}=2$

$\frac{9}{\text{x+y}}-\frac{4}{\text{x}-\text{y}}=1$

Put $\frac{1}{\text{x+y}}=\text{u}$ and $\frac{1}{\text{x}-\text{y}}=\text{v}$

So, we get

$3u + 2v = 2$ ...(i)

9u - 4v = 1 ...(ii)

Multiply (i) by 2 and add it to (ii).

? 6u + 4v = 4

? 15u = 5

\Rightarrow\text{u}=\frac{1}{3}

Substituting \text{u}=\frac{1}{3} in (i), we get \text{v}=\frac{1}{2}.

\Rightarrow\frac{1}{\text{x+y}}=\frac{1}{3} and \frac{1}{\text{x}-\text{y}}=\frac{1}{2}

? x + y = 3 ...(iii)

? x - y = 2 ...(iv)

Adding (iii) and (iv), we get

2\text{x}=5

\Rightarrow\text{x}=\frac{5}{2}

Substituting \text{x}=\frac{5}{2} in (iii), we get \text{y}=\frac{1}{2}.

Q27. If 2^\text{x+y} = 2^\text{x-y}=\sqrt{8} then the value of y is: **1 Mark**

A \frac{1}{2} **B** 0 **C** \frac{3}{2} **D** None of these

Ans: B 0

Solution:

2^\text{x+y} = 2^\text{x-y}={2}\frac{3}{2}

\Rightarrow \text{x+y}=\frac{3}{2} and

\text{x-y}=\frac{3}{2}

So adding above two equations.

We get and x = y = 0

Q28. The area of the triangle formed by the lines 2x + y = 6, 2x - y + 2 = 0 and the x-axis is: **1 Mark**

A 15sq. units **B** 8sq. units **C** 12sq. units **D** 10sq. units

Ans: B 8sq. units

Solution:

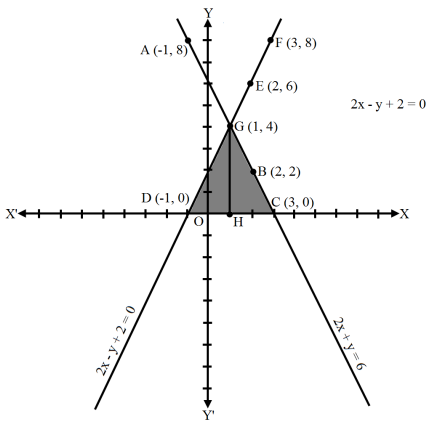
Here are the two solutions of each of the given equations.

2x + y = 6,

x	-1	2	3
y	8	2	0

2x - y + 2 = 0

x	-1	2	3
y	0	6	8



The area bounded by the given lines and x-axis has been shaded in the graph

\therefore Area of shaded region = \frac{1}{2}\times \text{Base}\times\text{Height} = \frac{1}{2}\times\text{Dc}\times\text{Gh} = \frac{1}{2}\times{4}\times{4} = {8}\text{sq.}\text{units}

Q29. In a \triangle\text{ABC},\ **1 Mark**

\angle\text{C}=3\angle\text{B}=2(\angle\text{A}+\angle\text{B}), then \angle\text{B}=?

A 20º **B** 40º **C** 60º **D** 80º

Ans: A 20º

Solution:

Give that in a \triangle\text{ABC},

\angle\text{C}=3\angle\text{B}=2(\angle\text{A}+\angle\text{B})

\Rightarrow\angle\text{C}=3\angle\text{B} and \angle\text{C}=2(\angle\text{A}+\angle\text{B})

Consider, \angle\text{C}=2(\angle\text{A}+\angle\text{B})

\Rightarrow3\angle\text{B}=2(\angle\text{A}+\angle\text{B})

\Rightarrow\angle\text{B}=2\angle\text{A}

By the Angle Sum Property

$\angle\text{A}+\angle\text{B}+\angle\text{C}=180^\circ$
$\Rightarrow\angle\text{A}+2\angle\text{A}+2(\angle\text{A}+2\angle\text{A})=180^\circ$
$\Rightarrow\angle\text{A}+2\angle\text{A}+2\angle\text{A}+4\angle\text{A}=180^\circ$
$\Rightarrow9\angle\text{A}=180^\circ$
$\Rightarrow\angle\text{A}=20^\circ$
So, $\angle\text{B}=2\angle\text{A}$
$\Rightarrow\angle\text{B}=40^\circ$

Q30.92 Aruna has only Rs. 1 and Rs. 2 coins with her. If the total number of coins that she has is 50 and the amount of money with her is Rs. 75, then the number of Rs. 1 and Rs. 2 coins are, respectively: **1 Mark**

A 35 and 15 **B** 35 and 20 **C** 15 and 35 **D** 25 and 25

Ans: D 25 and 25

Solution:

Let number of Rs. 1 coins = x
and number of Rs. 2 coins = y
Now, by given conditions:
Total number of coins = x + y = 50 …(i)
Also, Amount of money with her = (Number of Rs 1 ×1) + (Number of Rs 2 × coin 2)
= x(1) + y(2) = 75
= x + 2y = 75 …(ii)
On subtracting Eq. (i) from Eq. (ii), we get
(x + 2y) - (x + y) = (75 - 50)
So, y = 25
Putting y = 25 we get x = 25.
he has 25 one-rupee coins and 25
2-rupee coins.

Q31. If 4x + 6y = 3xy and 8x + 9y = 5xy then: **1 Mark**

A x = 2, y = 3 **B** x = 1, y = 2 **C** x = 3, y = 4 **D** x = 1, y = -1

Ans: C x = 3, y = 4

Solution:

4x + 6y = 3xy and 8x + 9y = 5xy
Dividing through out by xy, we get
$\frac{4}{\text{y}}+\frac{6}{\text{x}}=3$ and $\frac{8}{\text{y}}+\frac{9}{\text{x}}=5$
That is, $\frac{6}{\text{x}}+\frac{4}{\text{y}}=3$ and $\frac{9}{\text{x}}+\frac{8}{\text{y}}=5$
Put $\frac{1}{\text{x}}=\text{u}$ and $\frac{1}{\text{y}}=\text{v}$
So, we get
6u + 4v = 3 ...(i)
9u + 8v = 5 ...(ii)
Multiply (i) by 2 and subtract (ii) from the resultant.
? 12u + 8v = 6 and 9u + 8v = 5
? 3u = 1
$\Rightarrow\text{u}=\frac{1}{3}$
Substituting $\text{u}=\frac{1}{3}$ in (i), we get $\text{v}=\frac{1}{4}$.
$\Rightarrow\frac{1}{\text{x}}=\frac{1}{3}$ and $\frac{1}{\text{y}}=\frac{1}{4}$
? x = 3 and y = 4.

Q32. Half the perimeter of a rectangular garden, whose length is 4m more than its width is 36m. The area of the garden is: **1 Mark**

A 320m^2 **B** 400m^2 **C** 360m^2 **D** 300m^2

Ans: A 320m^2

Solution:

Let the width be x
then length be x + 4
According to the question,
l + b = 36
x + (x + 4) = 36
2x + 4 = 36
2x = 36 - 4
2x = 32
x = 16.

The length of the garden will be 20m and width will be 16m.

Area = length × breath = 20 × 16 = $320m^2$

Q33. The difference between two numbers is 26 and one number is three times the other. The numbers are: **1 Mark**

A 36 and 10 **B** 36 and 12 **C** 30 and 10 **D** 39 and 13

Ans: D 39 and 13

Solution:

Let the two numbers be x and y

According to question, x - y = 26 and x = 3y

Putting the value of x in x - y = 26, we get,

3y - y = 26

? y = 13 And x = 3 × 13 = 39

\therefore the two numbers are 13 and 39.

ASSERTION AND REASON QUESTIONS

Q34. Directions: In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following: **1 Mark**

Assertion: If a pair of linear equations is consistent, then the lines are intersecting or coincident

Reason: Because the two lines definitely have a solution.

A both assertion and reason are correct and reason is correct explanation for assertion

B both assertion and reason are correct but reason is correct explanation for assertion

C assertion is correct but reason is false **D** both assertion and reason are false

Ans: A both assertion and reason are correct and reason is correct explanation for assertion

1. both assertion and reason are correct and reason is correct explanation for assertion

Q35. Assertion: The slope of the line 2x - y = 0 is 2 **1 Mark**

Reason: The slope of the line which lies in first and third quadrant is positive

A both assertion and reason are correct and reason is correct explanation for assertion

B both assertion and reason are correct but reason is correct explanation for assertion

C assertion is correct but reason is false **D** both assertion and reason are false

Ans: A both assertion and reason are correct and reason is correct explanation for assertion

1. both assertion and reason are correct and reason is correct explanation for assertion

Q36. Assertion: (A) 4x + 3y = 18 is a line which is parallel to X - axis. **1 Mark**

Reason: (R) The graph of linear equation ax = b, where a # 0 is parallel to Y - axis.

A Ais true, Ris true; Ris acorrect explanation forA. **B** Ais true, Ris true; Ris not a correct explanation for A.

C Ais true; Ris False. **D** Ais false; R is true.

Ans: D Ais false; R is true.

4. Ais false; R is true.

Q37. Assertion: (A) x + y - 4 =0 and 2x + ky - 3 = 0 has no solution if k = 2. **1 Mark**

Reason: (R) $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are consistent, \text{if }\frac{\text{a}_1}{\text{a}_2}\neq\frac{\text{k}_1}{\text{k}_2}.

A Ais true, Ris true; Ris acorrect explanation forA. **B** Ais true, Ris true; Ris not a correct explanation for A.

C Ais true; Ris False. **D** Ais false; R is true.

Ans: B Ais true, Ris true; Ris not a correct explanation for A.

2. Ais true, Ris true; Ris not a correct explanation for A.

Q38. Assertion: 3x - 4y = 7 and 6x - 8y = k have infinite number of solution if k = 14. **1 Mark**

Reason: $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ have a unique solution if \frac{\text{a}_1}{\text{}a_2}\neq \frac{\text{b}_1}{\text{b}_2}

A Both assertion (A) and reason (R) are true and reason (R) isthe correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false. **D** Assertion (A) is false but reason (R) is true

Ans: B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

2. Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

Q39. **Assertion:** lines are $x + 2y - 4 = 0$ and $2x + 4y - 12 = 0$ the graphical representation of line is parallel line. **1 Mark**

Reason: if pair of given lines are parallel then $\frac{\text{a}_1}{\text{a}_2}=\frac{\text{b}_1}{\text{b}_2}\neq\frac{\text{c}_1}{\text{c}_2}$

A both assertion and reason are correct and reason is correct explanation for assertion

B both assertion and reason are correct but reason is correct explanation for assertion

C assertion is correct but reason is false

D both assertion and reason are false

Ans: **A** both assertion and reason are correct and reason is correct explanation for assertion

1. both assertion and reason are correct and reason is correct explanation for assertion

Q40. **Assertion:** The value of k for which the system of linear equations $kx - y = 2$ and $6x - 2y = 3$ has a unique solution is 3. **1 Mark**

Reason: The system of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has a unique solution if $\frac{\text{a}_1}{\text{a}_2}\ne\frac{\text{b}_1}{\text{b}_2}$

A Both assertion (A) and reason (R) are true and reason (R) isthe correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true

Ans: **D** Assertion (A) is false but reason (R) is true

Solution:

We know that the system of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has aunique solution if $\frac{\text{a}_1}{\text{a}_2}\ne\frac{\text{b}_1}{\text{b}_2}$

So, Reason is correct For Assertion, we have, $a_1 = k$, $b_1 = -1$, $c_1 = -2$, $a_2 = 6$, $b_2 = -2$ and $c_2 = -3$

$=\text{Now }\frac{\text{a}_1}{\text{a}_2}=\frac{\text{k}}{6},\frac{\text{b}_1}{\text{b}_2}=\frac{-1}{-2}=\frac{1}{2}$

$\Rightarrow\frac{\text{a}_1}{\text{a}_2}\neq\frac{\text{b}_1}{\text{b}_2}\Rightarrow\frac{\text{k}}{6}\neq\frac{1}{2}\Rightarrow\text{k}\neq3$

So, Assettion 1S not correct.

Q41. **Assertion:** The pair of equations $x + 2y + 5 = 0$ and $-3x - 6y + 1 = 0$ have unique solution **1 Mark**

Reason: an equations $\frac{\text{a}_1}{\text{a}_2}=\frac{\text{b}_1}{\text{b}_2}=\frac{\text{c}_1}{\text{c}_2}$ Hence, the given pair of equations have no solution

A both assertion and reason are correct and reason is correct explanation for assertion

B both assertion and reason are correct but reason is correct explanation for assertion

C assertion is correct but reason is false

D both assertion and reason are false

Ans: **D** both assertion and reason are false

4. both assertion and reason are false

Q42. **Assertion:** $3x + 4y + 5 = 0$ and $6x + ky + 9 = 0$ represent parallel lines if $k = 8$. **1 Mark**

Reason: $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ represent parallel lines ines if $\frac{\text{a}_1}{\text{a}_2}=\frac{\text{b}_1}{\text{b}_2}\neq\frac{\text{c}_1}{\text{c}_2}$

A Both assertion (A) and reason (R) are true and reason (R) isthe correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true

Ans: **A** Both assertion (A) and reason (R) are true and reason (R) isthe correct explanation of assertion (A).

Solution:

In Assertion, given lines represent parallel lines if

$=\frac{3}{6}=\frac{4}{\text{k}}\neq\frac{5}{9}$

$=\text{k}=\frac{6\times4}{3}=8$

eason is also true Also, reason is the correct explanation for assertion.

Q43. **Assertion:** Assertion : The graph of the linear equation $x - 5y = 1$ passes through the point (6, 1). **1 Mark**

Reason: Every point lying on graph is not a solution of $x - 5y = 1$.

A

both assertion and reason are correct and reason is correct explanation for assertion

B both assertion and reason are correct but reason is correct explanation for assertion

C assertion is correct but reason is false

D both assertion and reason are false

Ans: C assertion is correct but reason is false

3. assertion is correct but reason is false

Q44. Assertion: If the pair of lines are coincident, then we say that pair of lines is consistent and it has a unique solution. **1 Mark**

Reason: If the pair of lines are parallel, then the pair has no solution and is called inconsistent pair of equations.

A Both assertion (A) and reason (R) are true and reason (R) isthe correct explanation of assertion (A).

B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C Assertion (A) is true but reason (R) is false.

D Assertion (A) is false but reason (R) is true

Ans: D Assertion (A) is false but reason (R) is true

Solution:

[If the lines are coincident, then it has infinite number of solutions] Reason is clearly true.

Q45. Assertion: The slope of the line which lies in the second and fourth quadrant is negative. **1 Mark**

Reason: The slope of the line y= -x + 6 is -1

A both assertion and reason are correct and reason is correct explanation for assertion

B both assertion and reason are correct but reason is correct explanation for assertion

C assertion is correct but reason is false

D both assertion and reason are false

Ans: A both assertion and reason are correct and reason is correct explanation for assertion

1. both assertion and reason are correct and reason is correct explanation for assertion