

**Class: X**  
**Subject: Maths**  
**Topic: Pair of Linear Equation in two variables**  
**No. of Questions: 20**  
**Duration: 60 Min**  
**Maximum Marks: 60**

Q1. The value of k for which the system of equations \_\_\_\_\_.

$$2x + 3y = 5$$

$$4x + ky = 10$$

has infinite number of solutions, is \_\_\_\_\_.

- A. 1
- B. 3
- C. 6
- D. 0

Sol: c for infinite solutions  $a_1/a_2=b_1/b_2=c_1/c_2$

$$2/4=3/k$$

$$k=6$$

Q2. The value of m for which  $2x + 3y = 11$ ,  $y = mx + 3$  and  $2x - 4y = -24$  has common solution is \_\_\_\_\_.

- A. 1
- B. 0
- C. 2
- D. -1

Sol: d Solve first and third equation. Put the solved values in 2nd equation and corresponding value of m.

Q3. For how many values of k does the following system of equations have at least one solution?

$$x + y = 1; kx + y = 3; x + ky = 5$$

- A. 0
- B. 1
- C. 2
- D. Infinitely many

Right Answer: B

Q4. The sum of a two digit number and the number obtained by interchanging the digits of the number is 121. If the digits of the number differ by 5, then numbers are \_\_\_\_\_.

- A. 61, 16
- B. 38, 83
- C. 38
- D. None of these

Sol: d Let the number be  $ab$  and reversed number be  $ba$  so according to question  
 $10a+b+10b+a=121$   
 $a+b=11$  and  $a-b=5$  solve both to get the answer. As it is not given which digit is bigger so there will be 2 possible numbers.

Q5. Which of the following system of equations has no solution?

- A.  $3x - y = 2, 9x - 3y = 6$
- B.  $4x - 7y + 28 = 0, 5y - 7x + 9 = 0$
- C.  $3x - 5y - 11 = 0, 6x - 10y - 7 = 0$
- D. None of these

Sol: Simple straight rule.

Q6. At the end of the year 2002, Ram was half old as his grandpa. The sum of the years in which they were born is 3854. Age of Ram at the end of year 2003 is \_\_\_\_\_.

- A. 50 years
- B. 35 years
- C. 51 years
- D. 36 years

Sol: c Let grandpa be  $x$  years  
Ram =  $x/2$

It means they were born in the years  $2002-x$  and  $2002-x/2$  respectively.  
Sum is given. Find  $x$  from the sum.

Q7. Value of  $x$  in pair of linear equations  $152x - 378y = -74$  and  $-378x + 152y = -604$  is \_\_\_\_\_.

- A. 1
- B. 2
- C. 4
- D. 3

Sol: b Solve using any of the methods elimination, substitution or cross multiplication.

Q8. If the system of equations  $2x + 3y = 7$  and  $2ax + (a + b)y = 28$  has infinitely many solutions, then \_\_\_\_\_.

- A.  $a = 2b$
- B.  $b = 2a$
- C.  $a + 2b = 0$
- D.  $2a + b = 0$

Sol:  $\frac{2}{2a} = \frac{3}{a+b} = \frac{7}{28}$   
From this  $a=4$   $b=8$   
 $b=2a$

Q9. The value of  $k$  for which the system of equations  $3x + 5y = 0$  and  $kx + 10y = 0$  has a non-zero solution, is \_\_\_\_\_.

- A. 0
- B. 2
- C. 6
- D. 8

Sol: c Make the lines coincidental.

The solution of the system of equations  $\frac{2x + 5y}{xy} = 6$  and  $\frac{4x - 5y}{xy} + 3 = 0$

Q10. (where  $x \neq 0, y \neq 0$ ), is \_\_\_\_\_.

- A.  $x = 1, y = 2$
- B.  $x = 0, y = 0$
- C.  $x = -1, y = 2$
- D.  $x = 1, y = -2$

Ans A

A pair of linear equations in two variables  $x$  and  $y$  is  $a_1x + b_1y + c_1 = 0$  and

$a_2x + b_2y + c_2 = 0$ , such that  $\frac{a_1}{a_2} \neq \frac{c_1}{c_2}$ , then it has \_\_\_\_\_.

Q11.

- A. Unique solution
- B. No solution
- C. Infinitely many solutions
- D. Can't say

Sol: d Depends on whether  $a_1/a_2 = b_1/b_2$  or not. so nothing can be said for sure.

Q12. The denominator of a rational number is greater than its numerator by 3. If 3 is subtracted from the numerator and 2 is added to the denominator r, The new number becomes  $\frac{1}{5}$ .

Then the original number was \_\_\_\_\_

- A.  $\frac{7}{11}$
- B.  $\frac{3}{5}$
- C.  $\frac{5}{8}$
- D.  $\frac{4}{7}$

Right Answer: C

Solve for x and y in the following questions.

Q13.  $\frac{2}{x+2y} + \frac{1}{2x-y} + \frac{5}{9} = 0, \frac{9}{x+2y} + \frac{6}{2x-y} + 4 = 0.$

- A.  $x = 1, y = 2$
- B.  $x = 2, y = 1$
- C.  $x = 2, y = \frac{1}{2}$
- D.  $x = \frac{1}{2}, y = 2$

Right Answer: D

Q14. A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km downstream. If x represents the speed of the boat in still water in km/hr and y represents the speed of the stream in km/hr, then \_\_\_\_\_.

- A.  $x + y = 11, x - y = 5$
- B.  $x + y = 5, x - y = 11$
- C.  $x + y = 6, x - y = 10$
- D.  $x + y = 10, x - y = 6$

Right Answer: A

Speed upstream  $x-y$

Speed downstream  $x+y$

$$30/x-y + 44/x+y = 10$$

$$40/x-y + 55/x+y = 13$$

Let  $1/x-y=a$  and  $1/x+y=b$  solve above equations to get a and b. And then x and y from values of a and b.

Q15. The graph of the equation  $x + y = 10$  is a \_\_\_\_\_.

- A. Parabola
- B. Curved line
- C. Straight line
- D. Straight line passing through origin

Right Answer: C

Q16.  $ax + by + c = 0$  does not represent equation of line when

- A.  $a = c = 0, b \neq 0$
- B.  $b = c = 0, a \neq 0$
- C.  $a = b = 0$
- D.  $a = b \neq 0$

Sol: c For line there should be at least one variable with non-zero coefficient.

Q17. The value of  $k$  for which the system of equations  $kx - y = 2, 6x - 2y = 3$  has a unique solution, is \_\_\_\_\_.

- A.  $= 3$
- B.  $\neq 3$
- C.  $\neq 0$
- D.  $= 0$

Sol: b Apply the condition  $a_1/a_2$  not equal to  $b_1/b_2$

Q18. If  $ax + by = c$  and  $am + bn = l$ , then the system of equations  $+ = + = 1$

- A. Has a unique solution
- B. Has no solution
- C. Has infinitely many solutions
- D. May or may not have a solution

Sol: a Follows from the relation  $a_1/a_2$  not equal to  $b_1/b_2$

Q19. The equations representing the given graph is \_\_\_\_\_.

- A.  $7x + 2y = 11; y - 2x = 3$
- B.  $2x + 7y = 11; 5x + (35y/2) = 25$
- C.  $3x - 7y = 10; 8y - 6x = 4$
- D.  $3x - 4y = 1; 8y - 6x = 4$

Sol: d Since the above lines are parallel only d satisfies the condition.

Q20. Which of the following system of equations has infinitely many solutions?

- A.  $5x - 4y = 20, 7.5x - 6y = 30$
- B.  $2x - 3y = 5, 3x - 4.5y = 7.5$
- C.  $x + 5y - 3 = 0, 3x + 15y - 9 = 0$
- D. All of the above

Sol: d check  $a_1/a_2 = b_1/b_2 = c_1/c_2$