

IITJEE Foundation Practice paper

**PAIR OF LINEAR EQUATIONS IN TWO VARIABLES**

class-10th-Mathematics    Number of Questions: 56

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**1**

A linear equation in two variables is given by

- $ax + b = 0, a \neq 0$       $ax + by + c = 0, a^2 + b^2 \neq 0$   
  $ax + by + cz + d = 0, a^2 + b^2 + c^2 \neq 0$      None of the above

**2**

A pair of values of the variables  $x$  and  $y$  is said to be the solution of the given system of two simultaneous linear equations, if

- the pair of values  $x$  and  $y$  satisfies the first equation of the given system  
 the pair of values of  $x$  and  $y$  satisfies the second equation of the system  
 the pair of values  $x$  and  $y$  satisfies each one of the equations in the given system  
 None of the above

**3**

The solution of the given system of linear equations  
 $3x + 2y = 5$  ,  $2x + y = 3$  is

- $x = 0, y = 1$       $x = 2, y = -1$       $x = -1, y = -1$       $x = 1, y = 1$

**4**

A system of simultaneous linear equations is said to be inconsistent if it has

- a unique solution     infinitely many solutions     no solution     none of the above

5

The value of  $k$  for which the system of equations  $x + ky = 2$ ,  $3x + 6y = -5$  has no solution is

- 2    -2    3    -1

6

Aftab tells his daughter that seven years ago I was seven times as old as you were then.

Also three years from now, I shall be three times as old as you will be.

Find out the ages of Aftab and his daughter.

- 40, 9    48, 13    45, 11    42, 12

7

One says to other, "Give me a hundred, friend! I shall then become twice as rich as you." The other replies "If you give me ten, I shall be six times as rich as you".

The amount of their respective capital is

- $x = 100, y = 100$      $x = 50, y = 160$      $x = 40, y = 170$   
  $x = 170, y = 40$

8

The values of  $x$  and  $y$  for the system of simultaneous linear equations  $2x + y = 6$ ,  $2x - y + 2 = 0$  are

- $x = 6, y = 2$      $x = 1, y = 4$      $x = 3, y = 3$      $x = 1, y = 3$

9

The values of  $x$  and  $y$  for the system of simultaneous linear equations  $2x - y - 4 = 0$ ,  $x + y + 1 = 0$  are

- $x = -1, y = -2$      $x = -1, y = 2$      $x = 1, y = 2$      $x = 1, y = -2$

10

The values of  $x$  and  $y$  for the system of simultaneous linear equations  $x - y = 1$ ,  $2x + y = 8$  are

- $x = 3, y = 2$      $x = 2, y = 3$      $x = -2, y = 3$      $x = 2, y = -3$

**11**

The values of  $x$  and  $y$  for the system of simultaneous linear equations  $2x - 3y + 13 = 0$ ,  $3x - 2y + 12 = 0$  are

- $x = 2, y = -3$      $x = 2, y = 3$      $x = -2, y = 3$      $x = -2, y = -3$

**12**

In the graphical representation of pair of linear equations in two variables the lines are said to be parallel if they have

- a unique solution    infinitely many solutions    no solution    none of the above

**13**

The system of simultaneous linear equations are said to be inconsistent if the lines are

- coincident    parallel    has unique solution    can't be determined

**14**

The system of simultaneous linear equations are said to be dependent and consistent if the lines are

- coincident    parallel    has only one solution    none of the above

**15**

If  $am \neq bl$ , then the system of equations  $ax + by = c$ ,  $lx + my = n$

- has a unique solution    has no solution    has infinitely many solutions  
 may or may not have a solution

**16**

The system of simultaneous linear equations  $a_1x + b_1y + c_1 = 0$  and  $a_2x + b_2y + c_2 = 0$  are said to be coincident if

- $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$      $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$      $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$     None of the above

**17**

The pair of linear equations  
 $a_1x + b_1y + c_1 = 0$  ,  $a_2x + b_2y + c_2 = 0$  in two variables  $x$  and  $y$  are said to be inconsistent if

- $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$      $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$      $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$     None of the above

**18**

The value of  $\alpha$ , for which the system of equations  
 $\alpha x + 3y = \alpha - 3$  ,  $12x + \alpha y = \alpha$  have no solution is

- $\alpha = \frac{1}{6}$      $\alpha = 6$      $\alpha = -6$      $\alpha = \frac{-1}{6}$

**19**

In a parallelogram one angle is the  $\frac{2}{3}^{rd}$  of the adjacent angle. Then the angles of the parallelogram are

- $100^\circ, 80^\circ, 100^\circ, 80^\circ$      $108^\circ, 72^\circ, 108^\circ, 72^\circ$      $120^\circ, 60^\circ, 120^\circ, 60^\circ$   
  $110^\circ, 70^\circ, 110^\circ, 70^\circ$

**20**

Two numbers are in the ratio 3:4. If one is added to the first number and 8 is subtracted from the second, the ratio becomes the reciprocal of the original ratio.

Then the numbers are

- 15 & 20    18 & 24    6 & 8    9 & 12

**21**

Three consecutive numbers such that seven times the smallest number may be equal to three times the sum of the other two are

- 8, 9, 10    11, 12, 13    9, 10, 11    7, 8, 9

**22**

A two digit number is 4 times the sum of its digits. If 27 is added to the

number, then the digits are reversed. Then the number is

- 73    36    63    43

**23**

The value of  $k$  for which the linear equations  $(3k + 1)x + 3y - 2 = 0$ ,  $(k^2 + 1)x + (k - 2)y - 5 = 0$  have no solution is

- 2    2    1    -1

**24**

The value of  $k$  for which the linear equations  $2x + 3y = 2$ ,  $(k + 2)x + (2k + 1)y = 2(k - 1)$  have infinitely many solutions is

- 2    -3    4    -4

**25**

Find the values of  $a$  and  $b$ , so that the following system of linear equations have infinitely many solutions:

$$(2a - 1)x + 3y - 5 = 0, \quad 3x + (b - 1)y - 2 = 0$$

- $a = \frac{11}{5}, b = \frac{17}{4}$      $a = \frac{17}{4}, b = \frac{11}{5}$      $a = \frac{4}{17}, b = \frac{11}{5}$   
  $a = \frac{5}{11}, b = \frac{4}{17}$

**26**

Find the values of  $p$  and  $q$  for which the system of linear equations  $2x + 3y = 7$ ,  $(p + q)x + (2p - q)y = 3(p + q + 1)$  has infinitely many solutions

- $p = 5, q = 1$      $p = 1, q = 5$      $p = 2, q = 3$      $p = 4, q = 4$

**27**

The sum of a two digit number and the number formed by

interchanging its digits is 110. If 10 is subtracted from the first number , the new number is 4 more than the 5 times the sum of the digits in the first number . Then the first number is

- 46    55    64    73

**28**

The sum of a two digit number and the number obtained by reversing the order of its digits is 165 . If the digits differ by 3, then the number is

- 63 or 36    47 or 74    52 or 25    69 or 96

**29**

The sum of digits of a two digit number is 15. The number obtained by reversing the digits of the given number exceeds by 9. Then the given number is

- 87    78    96    69

**30**

The value of  $k$  for which the pair of equations  $3x + 2ky = 2$  and  $2x + 5y + 1 = 0$  are parallel is \_\_\_\_\_

- $-\frac{5}{2}$      $\frac{4}{15}$      $\frac{3}{2}$      $\frac{15}{4}$

**31**

Padma has only Re.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 Re.1 and Rs.2 coins are respectively

- 30 and 20    40 and 10    35 and 15    25 and 25

**32**

27 pencils and 31 erasers together costs Rs.85 while 31 pencils and 27

erasers together costs Rs.89. Then the costs of pencil and eraser are

- Pencil Rs.2 , Eraser Re.1    Pencil Re.1 , Eraser Re.1    Pencil Rs.3 , Eraser Rs.2  
 Pencil Rs.2.50 , Eraser Rs.1.50

**33**

At a certain time in a deer park , the number of heads and the number of legs of deer and human visitors were counted and it was found that there were 39 heads and 132 legs. Then the number of deers and human visitors in the park are \_\_\_\_\_

- 29 deers , 10 humans    25 deers , 14 humans    27 deers , 12 humans  
 30 deers , 9 humans

**34**

The values of  $\alpha$  and  $\beta$  for which the system of equations  $2x + 3y = 7$  ,  $2\alpha x + (\alpha + \beta)y = 28$  has infinite number of solutions are

- $\alpha = 8$  ,  $\beta = 4$      $\alpha = 4$  ,  $\beta = 8$      $\alpha = 6$  ,  $\beta = 6$      $\alpha = 7$  ,  $\beta = 5$

**35**

The value of  $k$  for which the system of equations  $x + (k + 1)y = 5$  ,  $(k + 1)x + 9y = 8k - 1$  has infinitely many solutions is

- 2    4    -4    2

**36**

The value of  $k$ , for which the system of equations  $x + 2y = 5$  ,  $3x + ky - 15 = 0$  has no solution is

- $k \neq 6$      $k = 6$     No value of  $k$  for which the given system has no solution  
 None of the above

**37**

The values of  $p$  and  $q$  for which the system of equations

$2x + 3y = 7$  ,  $(p + q)x + (2p - q)y = 21$  has infinite number of solutions are

- $p = 5, q = 1$      $p = 1, q = 5$      $p = 2, q = 4$      $p = 3, q = 3$

**38**

The denominator of a fraction is 4 more than twice the numerator . When both the numerator and the denominator are decreased by 6 , then the denominator becomes 12 times the numerator. The fraction is

- $\frac{18}{7}$      $\frac{9}{14}$      $\frac{7}{18}$      $\frac{7}{16}$

**39**

The sum of the numerator and denominator of a fraction is 12. If the denominator is increased by 3 , the fraction becomes  $\frac{1}{2}$ . The fraction is

- $\frac{4}{5}$      $\frac{6}{12}$      $\frac{7}{5}$      $\frac{5}{7}$

**40**

2 audio dvds and 3 video dvds cost Rs.425. 3 audio dvds and 2 video dvds cost Rs.350.

Then the price of an audio dvd and a video dvd is

- 40 , 115    115 , 40    30 , 150    45 , 140

**41**

Find the fraction, whose sum of the numerator and the denominator is 3 less than twice the denominator .If the numerator and the denominator are decreased by 1 , the numerator becomes half the denominator.

- $\frac{7}{4}$      $\frac{4}{7}$      $\frac{5}{6}$      $\frac{7}{9}$



42

Find the fraction, whose sum of numerator and denominator is 4 more than twice the numerator. If the numerator and denominator are increased by 3, they are in the ratio 2:3.

- $\frac{7}{5}$      $\frac{6}{11}$      $\frac{9}{5}$      $\frac{5}{9}$

43

Father's age is three times the sum of ages of his two children. After 5 years his age will be twice the sum of the ages of two children. Then the age of the father is

- 39 years    40 years    45 years    50 years

44

Two years ago, a father's age was five times as old as his son. Two years later, his age will be 8 more than three times the age of the son. Then the present ages of father and son are

- 42 years, 10 years    44 years, 10 years    46 years, 12 years  
 39 years, 8 years

45

The value of  $k$  for which the system of equations  $kx - y = 2$  and  $6x - 2y = 3$  has a unique solution is

- $k = 3$      $k \neq 3$      $k \neq \frac{1}{3}$      $k = \frac{1}{3}$

46

The value of  $k$  for which the system of equations  $x + 2y + 7 = 0$ ,  $2x + ky + 14 = 0$  represent coincident lines is

- 2    6    4    5

47

The values of  $x$  and  $y$  in the equations  $217x + 131y = 913$ ,  $131x + 217y = 827$  are

- $x = 2, y = 3$      $x = 3, y = 2$      $x = 4, y = 3$      $x = 5, y = 3$

48

37 pens and 53 pencils together cost Rs.320 while 53 pens and 37 pencils together cost Rs.400. Then the costs of pen and pencil respectively are

- Rs.5.50, Rs.2.50    Rs.4, Rs.1    Rs.6, Rs.2    Rs.6.50, Rs.1.50

49

Find the values of  $a$  and  $b$  for which the system of equations  $(2a - 1)x - 3y = 5$ ,  $3x + (b - 2)y = 3$  has infinitely many solutions

- $a = 3, b = \frac{1}{5}$      $a = \frac{1}{3}, b = \frac{1}{5}$      $a = \frac{1}{3}, b = 5$      $a = 3, b = 5$

50

If  $x = 3$  and  $y = 2$  satisfy the given equation  $y = px - 2$ , then the value of  $p$  is

- $\frac{5}{7}$      $\frac{3}{4}$      $\frac{4}{3}$      $\frac{4}{5}$

51

The equations  $4x + 3y = 5$ ,  $32x + 24y = 15$  has \_\_\_\_\_

- unique solution    no solution    infinitely many solutions    two solutions

52

Sum of two numbers is 76 and their difference is 8. Then the numbers are

- 43 & 33    25 & 18    42 & 34    None of the above

53

The value of  $k$  for which the given system of linear equations  $3x + 2y = k$  and  $6x + 4y = 3$  have infinitely many solutions is

- 2     $\frac{4}{3}$      $\frac{2}{3}$      $\frac{3}{2}$

54

Find the solution of the following pair of linear equations

$$\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2 \text{ and } \frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1$$

- $x = 4, y = 9$      $x = 4, y = 25$      $x = 9, y = 25$      $x = 9, y = 16$

55

2 women and 5 men can together finish an embroidery work in 4 days, while 3 women and 6 men can finish it in 3 days. Find the time taken by 1 woman alone to finish the work, and also that taken by 1 man alone.

- 18 days, 24 days    24 days, 36 days    18 days, 36 days    24 days, 30 days

56

Find the solution of the following pair of equations  $ax + by = c$  and  $bx + ay = 1 + c$

- $x = \frac{c(a+b)-b}{a^2-b^2}, y = \frac{c(a-b)+a}{a^2-b^2}$      $x = \frac{c(a-b)-b}{a^2+b^2}, y = \frac{c(a-b)+a}{a^2+b^2}$   
  $x = \frac{c(a+b)-b}{a^2+b^2}, y = \frac{c(a-b)+a}{a^2+b^2}$      $x = \frac{c(a-b)-b}{a^2-b^2}, y = \frac{c(a-b)+a}{a^2-b^2}$

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