Ravi Maths Tuition

Pair of Linear Equation in Two Variables

10th Standard

Maths

Multiple Choice Question 82 x 1 = 82

1) Customers are asked to stand in the lines. If one customer is extra in a line, then there would be two less lines. If one customer is less in line, there would be three more lines. Find the number of students in the class

(a) 40 (b) 50 (c) 60 (d) 70

2) 8 girls and 12 boys can finish work in 10 days while 6 girls and 8 boys can finish it in 14 days. Find the time taken by the one girl alone that by one boy alone to finish the work.

(a) 120, 130 (b) 140,280 (c) 240,280 (d) 100,120

3) The sum of two digits and the number formed by interchanging its digit is 110. If ten is subtracted from the first number, the new number is 4 more than 5 times of the sum of the digits in the first number. Find the first number

(a) 46 (b) 48 (c) 64 (d) 84

4) A fraction becomes when subtracted from the numerator and it becomes . when 8 is added to its denominator. Find the fraction

(a) 4/12 (b) 3/13 (c) 5/12 (d) 11/7

5) Five years ago, A was thrice as old as B and ten years later, A shall be twice as old as B. What is the present age of A.

(a) 20 (b) 50 (c) 60 (d) 40

6) What will be the solution of these equations ax+by=a-b, bx-ay=a+b

(a) x=1, y=2 (b) x=2,y=-1 (c) x=-2, y=-2 (d) x=1, y=-1

7) If x=a, y=b is the solution of the pair of equation x-y=2 and x+y=4 then what will be value of a and b

(a) 2,1 (b) 3,1 (c) 4,6 (d) 1,2

8) Rozly can row downstream 20km in 2 hours, and the upstream 4km in 2 hours. What will be the speed of rowing in still water?

(a) 6km/hr (b) 4km/hr (c) 3km/hr (d) 7km/hr

9) If the pair of equation has no solution, then the pair of equation is

(a) inconsistent (b) none of these (c) coincident (d) consistent

10) Find the solution to the following system of linear equations
$0.2x + 0.3y = 1.2$
$0.1x – 0.1y = 0.1$

(a) (2,1) (b) (2,3) (c) (1,2) (d) (3,2)

11) If two lines are parallel to each other the system of equation is

(a) Consistent dependent (b) Inconsistent (c) Inconsistent dependent (d) consistent

12) The number of solutions of the pair of linear equations $x + 2y – 8 = 0$ and $2x + 4y = 16$ are

(a) Infinitely many (b) 1 (c) 0 (d) None

13) Find the value of ‘a” for which the system of equations $3x + 2y – 4 = 0$ and $ax – y – 3 = 0$, will represent intersecting lines

(a) $a = 3/2$ (b) $a \neq 2/3$ (c) $a = 2/3$ (d) $a \neq 3/2$

14) Find the value of ‘a” for which the system of equations $ax + 2y – 4 = 0$ and $x – y – 3 = 0$ will represent intersecting lines?

(a) $a \neq 2$ (b) $a = -2$ (c) $a = 2$ (d) $a \neq -2$

15) If $6x + 3y= 6xy$; $2x + 4y = 5xy$, then the values of xand y are

(a) Â½ and 1 (b) 2 and 1 (c) 1 and 2 (d) 1 and Â½

16) How many solutions of the equation $15x – 14y + 11 = 0$ are possible?

(a) 2 (b) No solution (c) Infinite (d) 1

17) In an examination, one mark is awarded for every correct answer, while 1/4 mark is deducted for every wrong answer. A student answered 120 questions and got 20 marks. Which of the following pair of equations would give the result for how many questions did he answered correctly?

(a) $x + y = 120; – x + 4y = 80$ (b) $x + y = 60; x + 4y = 80$ (c) $x + y = 120; 4x + 3y = 80$
(d) $x + y = 120; 3x + 4y = 80$

18) The value of x, y in the following pair of Linear equations is

$\frac{a}{x} - \frac{b}{x} = 0$ ... (1)

$\frac{ab^2}{x} + \frac{a^2b}{y} = a^2 + b^2$ ..... (2)

(a) b, a (b) a, b (c) a,-b (d) -a,b

19) Find x and y given

$\frac{2a}{x} + \frac{3b}{y} = -1$

$\frac{3a}{x} - \frac{b}{y} = 4$

(a) a and b (b) a and -b (c) -a and -b (d) -a and b

20) A pharmacist has 30% and 80% sulphuric acid solution, using which he needs to make 8 litres of a 50% sulphuric acid solution. How many litres of the 80% solution will he need?

(a) 4.8 litres (b) 4 litres (c) 3 litres (d) 3.2 litres

21) Find the solution to the following system of linear equations:

2p+3q=9

p-q=2

(a) (4,2) (b) (-4,1) (c) (2,-3) (d) (3,1)

22) In elimination method_____is an important condition

(a) Equating only the x co-efficient (b) Equating only the y coefficient
(c) Equating either of the coefficients (d) Equating both the coefficients

23) The pair of linerar equations 2x+ky-3, 6x+ $\frac{2}{3}$ y+7 =0 have a unique solution for all values of k except

(a) $k \neq \frac{2}{3}$ (b) $k = \frac{2}{3}$ (c) $k \neq \frac{2}{9}$ (d) $k = \frac{2}{9}$

24) The following pairs of linear equations $2x + 5y = 3$ and $6x + 15y = 12$ represent

(a) Intersecting (b) Parallel lines (c) Coincident lines (d) None from a, b, c

25) A system of simultaneous linear equations has infinitely many solutions if two lines:

(a) intersect at one point (b) are parallel (c) intersect at two points (d) are coincident

26) The pair of linear equations $8x – 5y = 7$ and $5x – 8y = -7$ have

(a) One solution (b) Two solutions (c) Many solutions (d) No solution

27) The values of 'a' and 'b' for which (2a – 1)x – 3y = 5, 3x + (b – 2)y = 3, has infinitely many solution are

(a) a=3, b= $\frac{1}{5}$ (b) a=3, b =$\frac{2}{7}$ (c) $a = \frac{7}{2}, b = \frac{1}{5}$ (d) $a = \frac{1}{5}$,b= 3

28) The value of x in the system x – 3y = 7; 3x – 3y = 15 is

(a) x = – 11 (b) x = – 4 (c) x = 11 (d) x = 4

29) The values of x and y that satisfy the pair of equations:
$\frac{5}{x-1} + \frac{1}{y-2} = 2; \frac{6}{x-1} - \frac{3}{y-2} = 1$

(a) 4 and 5 (b) 1/3, 1/5 (c) 5 and 4 (d) 1/5, 1/3

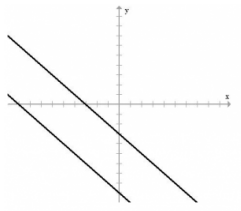
30) What is the solution of the equations $\sqrt{2}x - \sqrt{3}y = 0 \; and \; \sqrt{5}x + \sqrt{2}y = 0$

(a) 0, 2 (b) 2, 0 (c) 0, 0 (d) None

31) Five liters of 31.2% acid solution has to be made out of a 40% and a 18% acid solution. How many litres of each of the 40% and 18% solution need to be mixed?

(a) 2 and 3 (b) 5 and 4 (c) 4 and 5 (d) 3 and 2

32) The number of solutions of equations represented by this graph is



(a) Infinite (b) 1 (c) 2 (d) No solution

33) The value of x, y in the following
$2^{x+2} – 3^{y+1} = 5$ .....(1)
$2^x + 3^y = 17$ .....(2)

(a) 3,2 (b) 2,-3 (c) -2,3 (d) 2,3

34) Adding 1 to the numerator and subtracting 1 from the denominator of a fraction makes it 1. However, if 1 is added only to the denominator of the fraction it becomes ½ . The fraction is_____

(a) 2/3 (b) 3/5 (c) 5/3 (d) 3/2

35) The value of x, y in the following pair of Linear equations is
$\frac{3}{x+y} + \frac{2}{x-y} = 3$
$\frac{2}{x+y} + \frac{3}{x-y} = \frac{11}{3}$
x+y ≠ 0 and x-y ≠0? wheree

(a) 1, -2 (b) 2, 1 (c) 2,-1 (d) -2, 1

36) In a right triangle ABC , right angled at C , the angle A is 4 times angle B. , then the measure of angle B is_____

(a) 15° (b) 19° (c) 14° (d) 12°

37) The sum of ages of A and B is 50 years. A said to B, "I am twice as old as you were when I was as old as you are. Find the present age of B

(a) 20 (b) 12 (c) 24 (d) 28

38) One equation of a pair of dependent linear equations is -5x + 7y = 2, the second equation can be

(a) 10x + 14y + 4 = 0 (b) -10x – 14x + 4 = 0 (c) 10x – 14y = -4 (d) 10x + 14y + 4 =0

39) Which of the following equation is not a linear equation

(a) 2a-b =1 (b) a + b =1 (c) √a+b =1 (d) 2a+b =1

40) The value of x in mx + ny = c; nx – ny = c + 1 is

(a) x = (m + n) / (c + 1) (b) x = m + n (c) x = 2c + 1 (d) x = (2c + 1) / (m + n)

41) The difference between two numbers is 45 and one number is six times the other. Find them

(a) 7,42 (b) 8,48 (c) 6,36 (d) 9,54

42) A boat goes 35 km upstream and 42 km downstream in 11 hours. In 14 hours, it can go 43 km upstream and 59 km down-stream. To determine the speed of the stream and that of the boat in still water , express the information in the form of equations of the type ax + by + c = 0

(a) 35u + 42v -14 = 0, 43u + 59v-11=0 (b) 35u + 42v -14 = 0, 43x + 59y-11=0

(c) 35u + 42v -14 = 0, 43u + 59v-14=0 (d) 35x + 42y -14 = 0, 43x + 59y-14=0

43) 2 apples & 3 bananas cost Rs.15 and 2 apples & 2 bananas cost Rs 12. What is the cost of an apple & a banana?

(a) An apple is for Rs.6 and banana for Rs.1 (b) An apple for Rs.3 & a banana for Rs.3.

(c) An apple for Rs.4 & a banana for Rs.2.50 (d) An apple for Rs.2 & a banana for Rs.2

44) The pair of equations y = 0 and y = -7 has :

(a) one solution (b) infinitely many solutions (c) no solution (d) two solutions

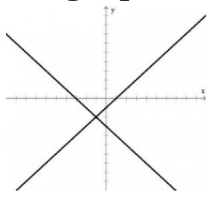
45) Find the solution to the following system of linear equations:

$\sqrt{5}x + \sqrt{3}y = 8$

$\sqrt{5}x - \sqrt{3}y = 2$

(a) $(\sqrt{5}, -\sqrt{3})$ (b) $(\sqrt{3}, -\sqrt{5})$ (c) $(\sqrt{5}, \sqrt{3})$ (d) $(\sqrt{3}, \sqrt{5})$

46) The graph below represents equations that have



(a) unique solution (b) solution as 0 (c) infinite solution (d) no solution

47) Find the point on Cartesian plane where the line 3x – 2y = 6 intersects the y axis

(a) (3, 2) (b) (-1, -2) (c) (0, -3) (d) (1, 2)

48) In elimination method _____ is an important condition

(a) Equating both the coefficients (b) Equating only the y coefficient

(c) Equating either of the coefficients (d) Equating only the x co-efficient

49) The sum of the digits of a two-digit number is 9. Also, twice this number is nine times the number obtained by reversing the order of the digits. Find the number

(a) 71 (b) 81 (c) 17 (d) 18

50) 3 women and 6 men can together finish a tailoring job in 5 days, while 4 women and 7 men can finish it in 4 days. Find the time taken by 1 woman alone to finish the work, and also that taken by 1 man alone. The linear equations(in standard form) to solve this problem algebraically are

(a) 15u + 30v – 1 = 0; 16u + 28v – 1 = 0 (b) 15x – 30y + 1 = 0; 16x + 28y +1 = 0

(c) 16u + 30v – 1 = 0; 16u + 28v – 1 = 0 (d) 16x + 30y – 1 = 0; 16x + 28y – 1 = 0

51) Solution for ax + by = a – b and bx – ay = a + b is

(a) 1, -1 (b) -a, -b (c) a, b (d) -1, 1

52) The values of x and y which satisfy the equations: 47x + 31y = 63 and 31x + 47y=15 are _____

(a) 2 and -1 (b) -2 and 1 (c) -2 and -1 (d) 2 and 1

53) If the given system of equation is 3x + 2y = 2xy; 6x + 2y = 3xy, then the first step to solve such eqs is

(a) To divide the complete equation by xy (b) Add or subtract the two equation

(c) To equate the coefficients of x (d) To equate the coefficients of y

54) If 3 |x| + 5 |y|= 8 and 7|x|- 3 |y| = 48, then the value of x+ y is

(a) 5 (b) -4 (c) 4 (d) The value does not exist

55) A and B together can do a piece of work in 12 days, Band C together in 15 days. If A is twice as good a workman as C, then in how many days will B alone do it?

(a) 10 days, (b) 15 days, (c) 20 days, (d) 25 days,

56) After covering a distance of 30 km with a uniform speed, there is some defect in a train engine and therefore, its speed is reduced to 4/5 of its original speed. Consequently, the train reaches its destination late by 45 min. Had it happened after covering 18 km more, the trains would have seached 9 min earlier. The speed of train and the distance of journey is

(a) 20 km/h and 100 km (b) 18 km/h and 120 km (c) 30 km/h and 120 km (d) None of these

57) When a man travels equal distance at speed x km/h and y km/h. his average speed is 4 km/h. But when he travels at these speed for equal time, his average speed is 4.5 km/h.The difference of the two speed is

(a) 2 km/h (b) 4 km/h (c) 3 km/h (d) 5 km/h

58) A shopkeeper sells a saree at 8% profit and a sweater at 10% discount, thereby, getting a sum of Rs. 1008. If she had sold the saree at 10% profit and the sweater at 8% discount, she would have got Rs 1028, then the cost of the saree and the list price (price before discount) of the sweater is

(a) 300,400 (b) 400,300 (c) 400,600 (d) 600,400

59) Vijay had some bananas and he divided them into two lots A and B. He sold the first lot at the rate of Rs 2 for 3 bananas and the second lot at the rate of Rs 1 per banana and got a total of Rs 400. If he had sold the first lot at the rate of Rs 1per banana and the second lot at the rate of Rs 4 for 5 bananas, his total collection would have been Rs 460. Total number of bananas, he had is

(a) 200 (b) 300 (c) 400 (d) 500

60) Shashi has decided fixed distance to walk on a treadmill. First day, she walks at a certain speed. Next day, she increases the speed of the treadmill by 1 km/h. she takes 6 min less and if she reduces the speed by 1 km/h, then she takes 9 min more. What is the distance that she has decided to walk everyday?

(a) 4km (b) 6km (c) 5km (d) 3km

61) A vessel contains a mixture of 24 L milk and 6 L water and second vessel contains a mixture of 15 L milk and 10 L water, then how much mixture of milk and water should be taken from the first and the second vessel separately and kept in a third vessel so that the third vessel may contain a mixture of 25 L milk and 10 L water.

(a) 15 Land 15 L (b) 20 Land 10 L (c) 20 Land 15 L (d) None of these

62) The pair of equations x + 2y + 5 = 0 and - 3x - 6y + 1= 0 has

(a) a unique solution (b) exactlytwo solutions (c) infinitely many solutions (d) no solution

63) If a pair of linear equations is consistent, then the lines will be

(a) parallel (b) always coincident (c) intersecting or coinciden (d) always intersecting

64) A fraction becomes 4/5 when 1 is added to each of the numerator and denominator. However, if..we subtract 5 from each of them, it becomes 1/2. Then, numerator of the fraction is

(a) 6 (b) 7 (c) 8 (d) 9

65) Which of the following pair of equations are inconsistent?

(a) $3x - y = 9, x - \frac{y}{3} = 3$ (b) 4x.+ 3y = 24, - 2x+ 3y = 6 (c) 5x - y = 10,10x-2y = 20

(d) 2x+ y=3,-4x+2y=10

66) The pair of equations y = 0 and y = - 7 has

(a) one solution (b) two solutions (c) infinitelymany solutions (d) no solution

67) If the lines given by 3x + 2ky = 2 and 2x + 5y = 1 are parallel, then the value of k is

(a) $-\frac{5}{4}$ (b) $\frac{2}{5}$ (c) $\frac{15}{4}$ (d) $\frac{3}{2}$

68) The value of a for which the lines x = 1.y = 2 and a^2 x +2y - 20 = 0 are concurrent, is

(a) 1 (b) 8 (c) -4 (d) -2

69) The pair of equations 3^{x+y} =81. 81^{x-y} = 3 has

(a) no solution (b) unique solution (c) infinitelymany solutions (d) $x = 2\frac{1}{8}, y = 1\frac{7}{8}$

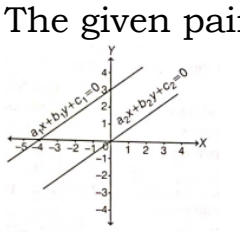
70) The lines represented by linear equations x = a and y= b$(a \neq b)$ are

(a) intersecting at (a,b) (b) intersecting at (b, a) (c) parallel (d) coincident

71) The pair of linear equations x + 2y + 5 = 0 and -3x = 6y - 1 has

(a) unique solution (b) exactly two solutions (c) infinitely many solutions (d) no solution

72) The given pair of linear equations is non-intersecting. Which of the following statement is true?



(a) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (b) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (c) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (d) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

73) The value of thor which the pair of linear equations 3 x+5 y=8 and k x+15 y=24 has infinltely many solutions, is

(a) 3 (b) 9 (c) 5 (d) 15

74) The pair of equations ax + 2y = 9 and 3x - by = 18 represent parallel lines, where a, b are integers, if

(a) a=b (b) 3a = 2b (c) 2a = 3b (d) ab = 6

75) If the lines represented by equations 3x - 2m y = 2 and 2x + 5y + 1= 0 are parallel, then the value of m is

(a) $\frac{2}{5}$ (b) $-\frac{5}{4}$ (c) $\frac{3}{2}$ (d) $\frac{15}{4}$

76) The value of k for which the system of equstions kx + 2y = 5 and 3x + 4y = 1 have no solution is

(a) $k = \frac{3}{2}$ (b) $k \neq \frac{3}{2}$ (c) $k \neq \frac{2}{3}$ (d) k = 15

77) Two lines are given to be parallel. The equation of one of the lines is 3x - 2y = 5. The equation of the second line can be

(a) 9x + 8y = 7 (b) -12x - 8y = 7 (c) -12x + 8y = 7 (d) 12x + 8y = 7

78) The values of x and y satisfying the two equations 32x + 33y = 34 and 33x + 32y = 31 respectively, are

(a) -1 and 2 (b) -1 and 4 (c) 1 and -2 (d) -1 and -4

79) The solution of the pair of equations x+y=a+b and a x-b y=a^2-b^2 is

(a) x=b, y=a (b) x=a, y=b (c) x=-a, y=b (d) x=a, y=-b

80) 3 chairs and 1 table cost ₹ 900; whereas 5 chairs and 3 tables cost ₹ 2100. If the cost of 1 chair is ₹ x x and the cost of 1 table is ₹ y, then the situation can be represented algebraically as

(a) 3x+y=900,3x+5y=2100 (b) x+3y=900,3x+5y=2100 (c) 3x+y=900,5x+3y=2100

(d) x+3y=900,5x+3y=2100

81) The ratio of a two-digit number and the sum of its digits is 7:1. How many such two-digit numbers are possible?com

(a) 1 (b) 4 (c) 9 (d) infinitely many

82) If a pair of linear equations in two variables is consistent, then the lines represented by the two equations are

(a) always intersecting (b) parallel (c) always coincident (d) intersecting or coincident

Fill up / 1 Marks 5 x 1 = 5

83) If the lines are parallel, then the pair of equations has no solution. In this case, the pair of equation is.....

84) The value of k is_____for which the system of linear equation kx + 4y = k - 4; 16x + ky = k has infinitely many solutions.

85) The pair of linear equation x + 2y = 5 and 3x + 12y = 10 has_____solutions.

86) Two linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2 y + c_2 = 0$ are_____ if $\frac{a_1}{a_2}$ $\frac{b_1}{b_2}$ $\frac{c_1}{c_2}$

87) Dependent pair of linear equations is always_____

True or False 5 x 1 = 5

88) The pair of equations 3x + 4y= k and 9x + 12y = 6 has infinitely many solution if k =3.

(a) True (b) False

89) If am =#= bl, then the system of equations ax + by = c and lx + my = n has a unique solution.

(a) True (b) False

90) If the lines intersect at a point, then that point gives the unique solution of the two equations. In this case, the pair of equation is consistent.

(a) True (b) False

91) Every solution of the equation is a point on the line representing it.

(a) True (b) False

92) $\sqrt{2}$ x + $\sqrt{3}$ y = 0, $\sqrt{3}$ x - .$\sqrt{8}$ y = 0 has no solution

(a) True (b) False

Match the following 4 x 1 = 4

93) If the system of equation x+ (k+ 1)y= 4and (k+ 1)x+ 9y= Sk+2 has infinitely many solutions, then k is (1) 6

94) The area of the region bounded by two lines 2x-3y+6=0, 2x+ 3y-18 = Oand y-axis is (2) 2

95) If the system of equations r. 3x+ v= 1 and (2k -1)x + (k + 1)y = 2k + 1 is consistent, then k is (3) -4

96) The values of a for which the lines x = 1, y = 2 and ax + 2y - 8 = 0 are concurrent. (4) 4

2 Marks 99 x 2 = 198

97) On comparing the ratios $\frac{a_1}{a_2}$, $\frac{b_1}{b_2}$$and$$\frac{c_1}{c_2}$, find out whether the following pairs of linear equations are consistent or inconsistent:

3x + 2y = 5; 2x - 3y = 7

98) Graphically, find whether the following pair of equations has no solution, unique solution or infinitely many solutions:

5x - 8y + 1 = 0; (1)

3x - $\frac{24}{5}$ y+$\frac{3}{5}$ =0 (2)

99) On comparing the ratios $\frac{a_1}{a_2}$, $\frac{b_1}{b_2}$$and$$\frac{c_1}{c_2}$ find out whether the following pairs of linear equations are consistent, or inconsistent.

2x – 3y = 8 ; 4x – 6y = 9

100) On comparing the ratios $\frac{a_1}{a_2}$, $\frac{b_1}{b_2}$$and$$\frac{c_1}{c_2}$ find out whether the following pair of linear equations are consistent, or inconsistent.

$\frac{3}{2}x + \frac{5}{3}y = 7; 9x - 10y = 14$

101) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2} and \frac{c_1}{c_2}$ find out whether the following pairs of linear equations are consistent, or inconsistent.
5x – 3y = 11 ; – 10x + 6y = –22

102) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2} and \frac{c_1}{c_2}$ find out whether the following pair of linear equations are consistent, or inconsistent.
$\frac{4}{3}x + 2y = 8; 2x + 3y = 12$

103) Two numbers are in the ratio 5:6. If 8 is subtracted from each of the numbers, the ratio becomes 4:5. Find the numbers.

104) Solve 2x-3y=13 and 7x-2y=20 and hence find the value of m for which y=mx+7.

105) A man has Rs. 100 in Rs.1 coins and 50 paise coins. All the 50 paise coins are worth as much as all the Rs.1 coins. How many coins of each he has?

106) The perimeter of rectangular lawn is 54m. It is reduced in size, so that length is $\frac{3}{5}$ th and breadth is $\frac{3}{4}$ th of the original dimensions. The perimeter of the reduced rectangle is 36 m. what were the original dimensions of the lawn?

107) The area of a rectangle gets reduced by 80 sq units, if its length is reduced by 5 units and the breadth is increased by 2 units. If we increase the length by 10 units and decrease the breadth by 5 units, then the area is increased by 50 q units. Find the length and the breadth of the rectangle.

108) Sheena went to a bank to withdraw Rs.1000 and asked the cashier to give her Rs.100 and Rs.50 notes only. She got 14 notes in all. Find how many notes of Rs.100 and Rs. 50 she received?

109) Find the value of k, for which system of equations kx+3y=3 and 12x+ky=6 represent parallel lines.

110) For what value of k, the pair of linear equations x+2y=3, 5x+ky+7=0 represents
(i) Intersecting lines
(ii) Parallel lines
Is there any value of k for which the given equations represents coincident lines?

111) Solve the following pair of linear equation by cross-multiplication method.
2(ax-by)+a+4b=0
2(bx+ay)+b-ra=0

112) A man travels 600km partly by train and partly by car. It takes 8h and 40 min if he travels 320 km by train and the rest by car. It would take 30 min more if he travels 200 km by train and the rest by car. Find the speed of the train and the car separately.

113) If a motorboat can travel 30 km upstream and 28km down stream in 7 h, it can travel 21 km upstream and return in 5 h. Find the speed of the boat in still water and the speed of the stream.

114) 8 men and 12 boys can finish a piece of work in 10 days while 6 men and 8 boys can finish it in 14 days. Find the time taken to finish the work by one man alone.

115) It can take 12 h to fill a swimming pool using two pipes. If the pipe of larger diameter is used for 4 h and the pipe of smaller diameter for 9 h, only half the pool can be filled. How long would it take for each pipe to fill the pool separately?

116) Find the solution of pair of equations y=0 and y=-6.

117) If x=a, y=b is the solution of the equations x-y=2 and x+y=4, then find the values of a and b.

118) Do the equations x+3y-1=3 and 2x+6y=6 represent a pair of coincident lines? Justify your answer.

119) For which values of c, the pair of equations 2x+2y=8 and 8x+10y=c have a unique solution?

120) Obtain the condition for the following pair of linear equations to have a unique solution.
ax+by=c and lx+my=n

121) What should be the value of λ , for the given equations to have infinitely many solutions?
5x+λy=4 and 15x+3y=12

122) For which value of p, the pair of equations 6x+5y=4 and 12x+py=-8 has no solution?

123) Find the value of K, so that the following system of equations has no solutions.
3x-y-5=0, 6x-2y-k=0

124) Find the value of x+y, if 3x-2y=5 and 3y-2x=3.

125) Determine the values of a and b, for which the following pairs of linear equations has infinitely many solutions
3x-(a+1)y=2b-1 and 5x+(1-2a)y=3b

126) Two straight paths are represented by the lines 7x-5y=3 and 14x-10y=5. Check whether the paths cross each other.

127) Father's age is 3 times the sum of ages of his two children. After 5 yr, his age will be twice the sum of ages of the two children. Find the age of father.

128) Find a, if the line 3x+ay=8 passes through the intersection of lines represented by equations 3x-2y=10 and 5x+y=8.

129) There are some students in the two examination halls A and B. To make the number of students equal in each hall, 10 students are sent from A to B. But if 20 students are sent from B to A, the number of students in A becomes double the number of students in B. Find the number of students in the two halls.

130) If the angles of a triangle are x, y and 40^0 and the difference between the two angles x and y is 30^0 . Then, find the values of x and y.

131) Find nature of the lines representing the linear equations 2x-y=3 and 4x-y=5.

132) Without drawing them, find out whether the lines representing the following pairs of linear equations intersect at a point or parallel or coincide.
4x-4y+8=0; 7x+6y-9=0

133) Without drawing them, find out whether the lines representing the following pairs of linear equations intersect at a point or parallel or coincide.
6x-3y+10=0; 2x-y+9=0

134) Without drawing them, find out whether the lines representing the following pairs of linear equations intersect at a point or parallel or coincide.
9x+3y+12=0; 18x+6y+24=0

135) Without drawing them, find out whether the lines representing the following pairs of linear equations intersect at a point or parallel or coincide.
2x-y=2; 2y-4x=2

136) Find the number of solutions of the pair of equations
x+2y+5=0, -3x-6y+1=0

137) For what value of k, the pair of equations kx+2y=5, 3x-4y=10 has no solution?

138) Solve the following pair of equations by substitution method.
$\frac{3}{2}x - y = \frac{1}{4}; \quad x + \frac{1}{2}y = 1$

139) Solve the following pair of equations by substitution method.
3x+y=4; 2(y-5)=-5x

140) Solve the following pair of equations by substitution method.
1.4x+3.9y=6.4; 0.2x-1.3y=1.2

141) Solve the following pair of equations by substitution method.
0.1x-0.2y=2; x+y=17

142) Solve the following pair of equations by elimination method.
3x-4y=11; 7x-5y=4

143) Solve the following pair of equations by elimination method.
2x+3y-5=0; 3x-2y-14=0

144) Solve the following pair of equations by elimination method.
3x+2y=7; 2x-5y+8=0

145) Solve the following pair of equations by elimination method.
11x+15y+23=0; 7x-2y-20=0

146) Solve the following pair of equations by elimination method.
0.4x+0.3y=1.7; 0.7x-0.2y=0.8x=2, y=3

147) Solve the following pair of equations by elimination method.
$\frac{x}{7}+\frac{y}{3}=5; \frac{x}{7}-\frac{y}{9}=1$

148) Solve the pair of linear equations by cross-multiplication method.
2x-21=5y; 3+4y-3x

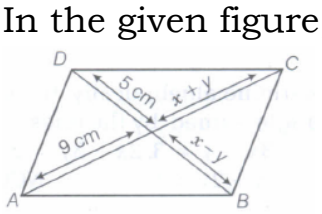
149) Solve the pair of linear equations by cross-multiplication method.
4x+y=-1; 7x+y=-4

150) The sum of two numbers is 120 and one of the numbers is 3 times the other. Find the value of the numbers.

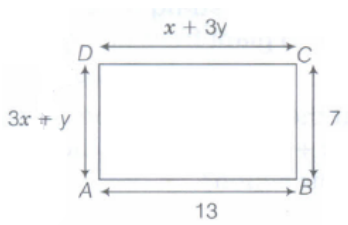
151) The combined ages of two people is 34. If one person is 6 yr younger than the other, then find their ages.

152) Equation 2x=5y+4 is given. Write another linear equation, so that the lines represented by the pair are
(i) intersecting
(ii) coincident
(iii) parallel

153) In the given figure, ABCD is a parallelogram. Find the values of x and y.



154) Find the values of x and y in the given rectangle.



155) Find whether the pair of linear equations y = 0 and y = -5 has no solution, unique solution or infinitely many solutions.

156) If am=bl, then find whether the pair of linear equations ax + by = c and lx + my = n has no solutions, unique solution or infinitely many solutions.

157) If ad $\neq$ bc, then find whether the pairs of linear equations ax + by = p and cx + dy = q has no solution, unique solution or infinitely many solutions.

158) Two lines are given to be parallel. The equation of one of the lines is 4x + 3y = 14, then find the equation of the second line.

159) Find whether the lines represented by 2x + y = 3 and 4x + 2y = 6 are parallel, coincident or intersecting.

160) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2} and \frac{c_1}{c_2}$, whether the following pairs of linear equations are consistent or inconsistent:
2x- 3y = 7

161) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2} and \frac{c_1}{c_2}$, whether the following pairs of linear equations are consistent or inconsistent:
$\frac{3}{2}x+\frac{5}{3}y=7$

162) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2} and \frac{c_1}{c_2}$, whether the following pairs of linear equations are consistent or inconsistent:
5x-3y = 11,-10x + 6y = -22

163) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2} and \frac{c_1}{c_2}$, whether the following pairs of linear equations are consistent or inconsistent:
$\frac{4}{3}x + 2y = 8$,2x + 3y = 12

164) Find whether the following pair of linear equations is consistent or inconsistent:
3x + 2y = 8
6x-4y = 9

165) Is the system of linear equations 2x + 3y - 9 = 0 and 4x + 6y - 18 = 0 consistent? Justify your answer.

166) Given the linear equation 3x + 4y = 9. Write another linear equation in these two variables such that the geometrical representation of the pair so formed is :
(i) intersecting lines
(ii) coincident lines

167) For what value of p does the pair of linear equations given below has unique solution?
4x + py + 8 = 0 and 2x + 2y + 2 = 0.

168) For what value of k, the pair of linear equations kx - 4y = 3, 6x - 12y = 9 has an infinite number of solutions?

169) For what value of k, 2x + 3y = 4 and (k + 2)x + 6y = 3k + 2 will have infinitely many solutions?

170) For what the value of 'k', the system of equations kx + 3y = 1, 12x + ky = 2 has no solution.

171) Solve the following pair of linear equations by cross multiplication method:
x + 2y = 2
x - 3y = 7

172) Solve the following pair of linear equations by substitution method:
3x + 2y-7 = 0
4x+y - 6 = 0

173) Solve: 99x + 101y = 499; 101x + 99y = 501

174) Solve the following system of linear equations by substitution method:
2x - y = 2
x + 3y = 15

175) Determine the value of k for which the following system of equations has no solution:
kx + 2y - 1 = 0, 5x - 3y + 2 = 0

176) For what value of k the following pair of linear equation has no solution?
2x + ky = 1
6x + 4y = 3

177) For what value of a the following pair of linear equation has infinitely many solution?
ax - 3y = 1
-12x + ay = 2

178) For what value of a the following pair of linear equation has infinitely many solutions?
2x + ay = 8
ax + 8y = a

179) For what value of k the following pair of linear equations has unique solution?
7x + 8y = k
9x - 4y = 12

180) For what value of k the following pair of linear equation has unique solution?
kx + 3y = 3
12x + ky = 6

181) Solve the system of equations:
$\frac{bx}{a} - \frac{ay}{b} + a + b = 0 \; and \; bx = ax + 2ab = 0$

182) Solve the system of equations for x: $\frac{b^2x}{a} - \frac{a^2y}{b} = ab(a+b)$ and $b^2x - a^2y = 2a^2b^2$

183) Solve the following equations for x and y:
mx - ny = $m^2 + n^2$
x + y = 2m

184) For what value of k will the following pair of linear equations have no solution?
2x + 3y = 9; 6x + (k-2)y = (3k - 2)

185) Solve for x and y $\frac{x}{2} + y = 0.8$ and $\frac{7}{x+\frac{y}{2}} = 10$

186) For what value of k, the following system of equations 2x + ky = 1, 3x - 5y = 7 has
(i) a unique solution (ii) no solution

187) Find whether the following pair of linear equations is consistent or inconsistent :
x + 3y = 5; 2x + 6y = 8

188) If x = a , y = b is the solution of the equations x - y = 2 and x + y = 4, then find the values of Q and b.

189) Find the value of 'a' so that the point (3, a)lies on the line represented by 2x - 3y = 5.

190) Draw the graph of the equation y-x = 2.

191) If 2x + y = 13 and 4x - y = 17, then find the value of (x - y).

192) Sum of two numbers is 105 and their difference is 45. Find the numbers.

193) For what values of p does the pair of equations 4x + py + 8 = 0 and 2x + 2y +2 = 0 has unique solutions?

194) If 2x + y = 13 and 4x - y = 17, then find the value of (x - y).

195) If x = a,y = b is the solution of the equations x - y = 2 and x + y = 4, then find the values of a and b.

3 Marks 165 x 3 = 495

196) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$, find out whether the lines representing the following pair of linear equations intersect at a point are parallel or coincident.
5x-4y+8=0; 7x+6y-9=0

197) Solve the following pair of linear equations by the substitution method
s - t = 3
$\frac{s}{3} + \frac{t}{2} = 6$

198) Solve the following pair of linear equations by the substitution method
3x - y = 3
9x - 3y = 9

199) Form the pair of linear equations for the following problems and find their solution by substitution method.
The difference between two numbers is 26 and one number is three times the other. Find the numbers.

200) Form the pair of linear equations for the following problems and find their solution by substitution method:
The larger of two supplementary angles exceeds the smaller by 18 degree. Find the angles.

201) Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method :
A lending library has fixed charge for the first three days and an additional charge for each day thereafter. Saritha paid Rs 27 for a book kept for seven days, while Susy paid Rs 21 for the book she kept for five days. Find the fixed charge and the charge for each extra day.

202) Which of the following pairs of linear equations are consistent/inconsistent? If consistent, obtain the solution graphically:
$x - y = 8$, $3x - 3y = 16$

203) Which of the following pairs of linear equations are consistent/inconsistent? If consistent, obtain the solution graphically:
$2x - 2y - 2 = 0$, $4x - 4y - 5 = 0$

204) Solve the following pair of equations by substitution method:
$7x - 15y = 2$,
$x + 2y = 3$.

205) Solve the following question - Aftab tells his daughter, “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.” (Isn’t this interesting?) Represent this situation algebraically and graphically by the method of substitution.

206) Two rails are represented by the equations $x + 2y - 4 = 0$ and $2x + 4y - 12 = 0$. Will the rails cross each other?

207) Verify that $x=2$ is a solution of the linear equation $2x+7=13-x$.

208) Show that $x=2$ and $y=-2$ is a solution of the linear equation $5x+3y=4$. Also, show that $x=7$, $y=2$ is not a solution of the equation $3x+2y=17$.

209) Solve the following system of linear equations
$ax+by-a+b=0$
and $bx-ay-a-b=0$.

210) Solve the following pair of linear equations.
$41x+53y=135$ and $53x+41y=147$

211) If the lines given by $2x+Ky=1$ and $3x-5y=7$ has unique solution, then find the value of K.

212) Find the value of 'k' for which the system of equations $kx-5y=2$; $6x+2y=7$ has no solution.

213) For what value of k, will the following pair of linear equations have infinitely many solutions?
$2x+3y=4$ and $(k+2)x+6y=3k+2$

214) For what value of p, will the following system of linear equations represent parallel lines?
$-x+py=1$ and $px-y=1$

215) Solve for x and y
$\frac{5}{x+1} - \frac{2}{y-1} = \frac{1}{2}$; $\frac{10}{x+1} + \frac{2}{y-1} = \frac{5}{2}$, where $x \neq 1$ and $y \neq 1$.

216) solve for x and y
$x+4y=27xy$, $x+2y=21xy$

217) Find the values of a and b for which the following system of linear equation has infinite number of solutions.$(a+b)x-2by=5a+2b+1$ and $3x-y=14$

218) A and B each have a certain number of mangoes. A says to B, if you give 30 of your mangoes. I will have twice as many as left with you. B replies, if you give me 10, I will have thrice as many as left with you. How many mangoes does each have?

219) The sum of a two-digit number and number obtained by reversing the order of digits 99. If the digits of the number differ by 3, then find the numbers.

220) Find the point of intersection of lines $2ax-by=2a^2-b^2$ and $ax+2by=a^2+2b^2$ by eliminating the variables. Show that the system of equations is concurrent with the line represented by equation $(a-b)x+(a+b)y=a^2+b^2$.

221) Solve the system of following equations.
$\frac{1}{2(2x+3y)}+\frac{12}{7(3x-2y)}=\frac{1}{2}$ and $\frac{7}{2x+3y}+\frac{12}{3x-2y}=2$

222) Draw the graph of the pair of linear equation x-y+2=0 and 4x-y-4. Calculate the area of the triangle formed by the lines so drawn and the X-axis.

223) Solve the following pair of linear equations.
$\frac{x}{7}+\frac{y}{3}=a+b; \frac{x}{a^2}+\frac{y}{b^2}=2, \quad a,b\neq 0$

224) Solve the following pair of linear equations.
ax+by=1; bx+ay=$\frac{2ab}{a^2+b^2}$

225) If 4 times the area of a smaller square is subtracted from the area of a larger square, the result is $144m^2$.The sum of the area of the two squares is 464 m^2.Determine the side of the two squares.

226) Show that the following system of equations has a unique solution. 3x+5y=12, 5x+3y=4 Also, find the solution of the given system of equations.

227) Solve the following system of equations.
$\frac{27}{x+y}-\frac{15}{x-y}=-2$ and $\frac{30}{x+y}-\frac{1}{x-y}=3$

228) Draw the graph of lines x=-2 and y=3. Write the vertices of the figure formed by these lines, X-axis and Y-axis. Also, find the area of the figure.

229) Determine algebraically, the vertices of the triangle formed by the lines 5x-y=5, 6x+y=17 and x+2y=1.

230) Two chairs and three tables cost Rs.5650 whereas three chairs and two tables cost Rs.7100. Find the cost of a chair and a table separately.

231) The angles of a cyclic quadrilateral ABCD are
$\angle A=(6x+10)^0, \angle B=(5x)^0, \angle C=(x+y)^0$ and $\angle D=(3y-10)^0$ Find x and y and then the values of the four angles.

232) A fraction becomes $\frac{4}{5}$ if 2 is added to both numerator and denominator, if however 4 is subtracted from both numerator and denominator, then the fraction becomes $\frac{1}{2}$. Represent this situation2 algebraically and graphically.

233) Represent the following pair of linear equations graphically. Find the points, where the lines intersect the Y-axis.
3x+y-5=0; 2x-y-5=0

234) Aditya is walking along the line joining points (1, 4) and (0, 6). Aditi is walking along the line joining points (3, 4) and (1,0). Represent on graph and find the point where both of them cross each other.

235) Form a pair of linear equations in two variables using the following information and solve it graphically. Five years ago, Sagar was twice as old as Tim. Ten years later; Sagar's age will be ten years more than Tiru's age. Find their present ages.

236) Write an equation of a line passing through the point representing solution of the pair of linear equations x + y = 2 and 2x - y = 1. How many such lines can we find?

237) Show graphically, that the following pair of equations is inconsistent (i.e. has no solution).
3x-4y-1=0 and 2x-y$\frac{8}{3}$ +5=0

238) Show graphically that system of equations x + 2y = 5, 3x + 6y = 15 has infinitely many solutions.

239) Solve the following pair of equations by cross-multiplication method.
3x+ y-30 = 0; 2x+5y-33 = 0

240) Solve the following system of equations by cross-multiplication.
x+y=a+b and ax-by=a^2 -b^2

241) Determine algebraically, the vertices of the triangle formed by the lines
3x-y=3, 2x-3y=2 and x+2y=8.

242) Which of the following pairs of linear equations are consistent/inconsistent? If consistent, obtain the solution graphically.x + y = 5, 2x + 2y = 10

243) Which of the following pairs of linear equations are consistent/inconsistent? If consistent, obtain the solution graphically x - y = 8, 3x - 3y = 16

244) Which of the following pairs of linear equations are consistent/inconsistent? If consistent, obtain the solution graphically. 2x - 2y - 2 = 0, 4x - 4y - 5 = 0

245) Determine the values of m and n so that the following system of linear equations have infinite number of solutions:
(2m - 1)x + 3y - 5 = 0
3x + (n - 1)y - 2 = 0

246) Find the values of α and β for which the following pair of linear equations has infinite number of solutions: 2x + 3y = 7; 2α x + (α + β)y = 28.

247) For what value of p will the following system of equations have no solution?
(2p-1)x + (p-1)y= 2p + 1; y + 3x-1 = 0.

248) Find the value of k for which the following pair of equations has no solution:
x + 2y = 3, (k-1)x + (k +1)y = (k + 2).

249) Sum of the ages of a father and the son is 40 years. If father's age is three times that of his son, then find their respective ages.

250) Solve using cross multiplication method:
5x + 4y - 4 = 0
x - 12y - 20 = 0

251) A put of monthly hostel charge is fixed and the remaining depends on the number of days one has taken food in the mess. When Swati takes food for 20 days, she has to pay Rs 3,000 as hostel charges whereas Mansi who takes food for 25 days Rs 3,500 as hostel charges. Find the fixed charges and the cost of food per day.

252) Solve for x and y:
$\frac{x}{2} + \frac{2y}{3} = -1$
$x - \frac{y}{3} = 3$

253) 2 men and 7 boys can do a piece of work in 4 days. It is done by 4 men and 4 boys in 3 days. How long would it take for one man or one boy to do it?

254) Solve for x and y: $\frac{x+1}{2} + \frac{y-1}{3} = 9; \frac{x-1}{3} + \frac{y+1}{2} = 8$

255) Solve for x and y: $\frac{6}{x-1} - \frac{3}{y-2} = 1$ $, \frac{5}{x-1} + \frac{1}{y-2} = 2, where\ x \neq 1, y \neq 2$

256) Solve the following pair of equations for x and y: $\frac{a^2}{x} - \frac{b^2}{y} = 0, \frac{a^2 b}{x} + \frac{b^2 a}{y} = a + b,$ $x \neq 0; y \neq 0.$

257) Solve for x and y: $ax + by = \frac{a+b}{2}$, 3x + 5y = 4.

258) Solve the following pair of equations for x and y: $4x + \frac{6}{y} = 15, 6x - \frac{8}{y} = 14$ and also find the value of p such that y = px - 2.

259) Find whether the following pair of linear equations has a unique solution. If yes, find the solution: 7x - 4y = 49, 5x - 6y = 57.

260) 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 & 132 legs.Find the number of deer and human visitors in the park.

261) Solve for x, y:
(a) $\frac{x+y-8}{2} = \frac{x+2y-14}{3} = \frac{3x+y-12}{11}$
(b) 7(y+3) - 2(x+2) = 14, 4(y-2) + 3(x-3) = 2

262) Find the value of p and q for which the system of equations represent coincident lines 2x + 3y = 7, (p + q + l)x + (p + 2q + 2)y = 4(P + q) + 1

263) A chemist has one solution which is 50% acid and a second which is 25% acid. How much of each should be mixed to make 10 litre of 40% acid solution.

264) The length of the sides of a triangle are $2x + \frac{y}{2}, \frac{5x}{2} + y + \frac{1}{2} and \frac{2}{3}x + 2y + \frac{5}{2}$. If the triangle is equilateral, find its perimeter.

265) In an election contested between A and B, A obtained votes equal to twice the no. of persons on the electoral roll who did not cast their votes & this later number was equal to twice his majority over B. If there were 1,8000 persons on the electoral roll. How many voted for B.

266) When 6 boys were admitted & 6 girls left, the percentage of boys increased from 60% to 75%. Find the original no. of boys and girls in the class.

267) A cyclist, after riding a certain distance, stopped for half an hour to repair his bicycle, after which he completes the whole journey of 30 km at half speed in 5 hours. If the breakdown had occurred 10 km farther off, he would have done the whole journey in 4 hours. Find where the breakdown occurred and his original speed.

268) The population of a village is 5000. If in a year, the number of males were to increase by 5% and that of a female by 3% annually, the population would grow to 5202 at the end of the year. Find the number of males and females in the village.

269) Solve for x andy:
254x+309y=-55
309x+254y=55

270) Solve for x and y: 3x+2y=2x+y+3= 4x+3y

271) Solve for x and y: 6x +3y = 8x + 9y -5 = 10x + 12y-8

272) Solve for x and y: bx + ay = a + b;
$ax\left(\frac{1}{a-b} - \frac{1}{a+b}\right) + by\left(\frac{1}{b-a} - \frac{1}{b+a}\right) = \frac{2a}{a+b}$

273) Draw the graphs of the equations:
4x - 3y - 6 = 0; x + 3y - 9 = 0
Determine the co-ordinates of the vertices of the triangle formed by the lines and the y-axis.

274) Use a single graph paper and draw the graph of the following equations
2y - x = 8; 5y - x = 14; y - 2x = 1
Obtain the vertices of the triangle obtained.

275) In a $\triangle$ ABC, = $\angle$ A=x°, B=3x° and C = y° if 3y° - 5x° prove that the triangle is right-angled.

276) Find the four angles of a cyclic quadrilateral ABCD in which $\angle$ A = (2x-1)°, $\angle$ B=(y+5)°, $\angle$ C=(2y+15)° and $\angle$ D = (4x+7)°

277) Solve for x and y:
$\frac{1}{x+1} + \frac{1}{y+1} = 10; \frac{1}{x+1} + \frac{1}{y+1} = 4$

278) If 2x+y=23 and 4x-y=19, find the values of 5y-2x and $\frac{y}{x}$ -2

279) Solve the following systems of linear equation:
$a(x+y) + b(x-y) = a^2 - ab + b^2$
$a(x+y) - b(x-y) = a^2 + ab + b^2$

280) Solve for x and y
$3x-\frac{y+7}{11} +2 = 10, 2y+\frac{x+11}{7} =10$

281) Solve for x and y:
631x + 279y = 910
279x + 631y = 910

282) For which value(s) of λ do the pair of linear equations $\lambda x+y=\lambda^2$ and $x+\lambda y=1$ have
(i) no solution?
(ii) infinitely many solutions?
(iii) a unique solution

283) Forwhich value(s) of A,does the pair of linear equations $\lambda x + y = \lambda^2$and $x + \lambda y= 1$ have no solution?

284) Ten students of class X took part in Value Based Quiz. If the number of boys is 4 less than the number of girls. Represent the situation algebraically and graphically. Education is neither a privilege nor favour but a basic human right to which all children (boys and girls) in the 6-14 years age group are entitled with free and compulsory education. Comment.

285) Solve graphically, the pair of equations 2x + y = 6 and 2x - y + 2 = 0.Find the ratio of the areas of the two triangles formed by the lines representing these equations with X-axis and the lines with Y-axis.

286) Determine algebraically, the vertices of the triangle formed by the line.
3x - y = 3,2x - 3y = 2 and x + 2y = 8.

287) Solve the following equations forx and y.
$7^x +5^Y =74$, $7^{X+1} -5^{y+1} =218$

288) Solve graphically the pair of linear equations 3x - 4y + 3 = 0 and 3x + 4y - 21 = 0.Find the coordinate of the vertices of triangular region formed by these lines and X-axis. Also calculate the area of this triangle.

289) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ and c_1 / c_2 and without drawing them, find out whether the lines representing the following pairs of linear equations intersect at a point or are parallel or coincide.
3x - 5y + 8 = 0,7 x + 6y - 9 = 0

290) If the lines given by 2x + ky = 1and 3x-5y = 7 has unique solution, then find the value of k.

291) Find out which pair of linear equations are consistent/inconsistent.
4x - 5y -12 =0, 10y + 20 =8x

292) Solve the following system of equations. x + 8y = 19 and 2x +11y = 28, by substitution method and verify it

293) A fraction becomes $\frac{1}{3}$ when 2 is subtracted from the numerator and it becomes $\frac{1}{2}$ when 1 is subtracted from the denominator. Find the fraction

294) From a bus stand in Delhi, if we buy 2 tickets to Pitampura and 3 tickets to Dilshad Garden, the total cost is Rs 46 but if we buy 3 tickets to Pitampura and 5 tickets to Dilshad Garden, the total cost is Rs 74. Find the fares from the bus stand to 1 Pitampura and to Dilshad Garden. Form a pair of linear equations from above data and solve it by cross-multiplication method. Also, verify the solution.

295) A part of monthly hostel charges in a college hostel are fixed and the remaining depends on the number of days one has taken food in the mess. When a student A takes food for 25 days, he has to pay Rs 4500, whereas a student B who takes food for 30 days, has to pay Rs 5200. Find the fixed charges per month and the cost of food per day.

296) If is added to the numerator of a fraction, it reduces to $\frac{1}{2}$ and if 1is subtracted from the denominator, it reduces to $\frac{1}{3}$ Find the fraction.

297) Points A and Bare 70 km, a part on a highway. A car starts from A and another car starts from B simultaneously, if they travel in same direction, they meet in 7 hr, but if they travel towards each other, they meet in 1 hr. Find the speed to two cars.

298) Solve the following pairs of equations by reducing them to a pair of linear equation:
$\frac{7x-2y}{xy} = 5$
$\frac{8x+7y}{xy} = 15$

299) Solve the following pair of linear equations:
px + qy = p – q
qx – py = p + q

300) Solve the following pair of linear equations:
ax + by = c
bx + ay = 1 + c

301) Solve the following pair of linear equation:
$\frac{x}{a} - \frac{y}{b} = 0$
ax + by = $a^2 + b^2$.

302) Solve the following pair of linear equations:
(a – b)x + (a + b) y = a2 – 2ab – b^2
(a + b)(x + y) = $a^2 + b^2$

303) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ and c_1/c_2 and without drawing them, find out whether the lines representing the following pairs of linear equations intersect at a point or are parallel or coincide.
$4x + 3y - 7 = 0, 12x + 9y = 21$

304) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ and c_1/c_2 and without drawing them, find out whether the lines representing the following pairs of linear equations intersect at a point or are parallel or coincide.
x - 2y + 5 = 0, 8y - 4x + 20 = 0

305) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ find out whether the following pairs of linear equations are consistent or inconsistent?
4x - y= 4 and 3x +2y = 14

306) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ find out whether the following pairs of linear equations are consistent or inconsistent?
3x -5y = 11 and 6x -10y = 7

307) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ find out whether the following pairs of linear equations are consistent or inconsistent?
6x-3y=12 and 2x-y=4

308) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$,find out whether the following pairs of linear equations are consistent or inconsistent?
6x+5y=11 and $9x + \frac{15}{2}y = 21$

309) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ find out whether the lines represent the following pairs of linear equations intersect at a point or are parallel or coincide?
2x + 3y = 3 and x - 2y = 2

310) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ find out whether the lines represent the following pairs of linear equations intersect at a point or are parallel or coincide?
4x-2y=10 and 6x-3y=1

311) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ find out whether the lines represent the following pairs of linear equations intersect at a point or are parallel or coincide?
3x - 4y -1 = 0 and $2x - \frac{8}{3}y + 5 = 0$

312) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ find out whether the lines represent the following pairs of linear equations intersect at a point or are parallel or coincide?
x-3y-7=0 and 3x-9y=21

313) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ find out whether the lines represent the following pairs of linear equations intersect at a point or are parallel or coincide?
-3x+4y=5 and $\frac{9}{2}x - 6y + \frac{15}{2} = 0$

314) Find the value of k for which the following system of equations has a unique solution.
kx+2y=5,3x+y=1

315) Find the value of k for which the following system of equations has a unique solution.
x-3y=5,5x+ky=10

316) Find the value of k for which the following system of equations has a unique solution.
kx + 2y = 4, 8x + ky = 11

317) Find the value of k for which the following system of equations has a unique solution
4x-5y=k,2x-3y=1

318) Find the value of k for which the following system of equations has a unique solution
2x-3y=k,3x-2y=6

319) Find the solution of the following system of equation by substitution method.
x+ y=8,2x-3y=1

320) Find the solution of the following system of equation by substitution method.
3x + 2y =10, 12x + 8y = 30

321) Find the solution of the following system of equation by substitution method
2x-7y=11,6x-21y=3

322) Find the solution of the following system of equation by substitution method.
$\sqrt{2}x + \sqrt{5}y = 0, \sqrt{6}x + \sqrt{15}y = 0$

323) Find the solution of the following system of equations by substitution method.
3x-y=3,9x-3y=9

324) Solve the following pair of linear equations by substitution method.
x - y = 2, 3x + 2y = 16

325) Solve the following pair of linear equation by substitution method.
7x-4y=3,x+2y=3

326) Solve the following pair of linear equation by substitution method.
3x+7y=37,5x+6y=39

327) Solve the following pair of linear equations by substitution method.
$\frac{3x-4y}{2} = 10, \frac{3x+2y}{4} = 2$

328) Solve the following pair of linear equations by substitution method.
$y = \frac{2}{3}x + 6, 2y - 4x = 20$

329) Solve for x and y by substitution method
x + y = a - b, ax - by = $a^2 + b^2$

330) Solve for x and y by substitution method
$\frac{x}{a} + \frac{y}{b} = 2, ax - by = a^2 - b^2$

331) Solve for x and y by substitution method
$\frac{bx}{a} - \frac{ay}{b} + a + b = 0, bx - ay + 2ab = 0$

332) Solve for x and y by substitution method
$\frac{bx}{a} - \frac{ay}{b} + a + b = 0, bx - ay + 2ab = 0$

333) Solve for x and y by substitution method
$2\left(\frac{x}{a}\right) + \frac{y}{b} = 2, \frac{x}{a} - \frac{y}{b} = 4$

334) Solve the following pair of linear equation by cross-multiplication method.
ax + by = a^2, bx - ay = ab

335) Solve the following pair of linear equation by cross-multiplication method.
(a -b)x + (a + b)y = $2a^2$- $2b^2$, ax -by = $a^2 + b^2$

336) Solve the following pair of linear equations by cross-multiplication method.
ax-by = a^2 +b^2, x+ y =2a

337) Solve the following pair of linear equations by cross-multiplication method.
ax-ay=2,(a-1)x+(a+1)y=2(a^2+1)

338) Solve the following pair of linear equations by cross-multiplication method.
$\frac{X}{a} + \frac{y}{b} = a + b, \frac{X}{a^2} + \frac{y}{b^2} = 2$

339) Solve the following pair of equations of reducing them into a pair of linear equation.
$\frac{2}{x} + \frac{3}{y} = 22, \frac{5}{x} - \frac{4}{y} = 9, x, y \neq 0$

340) Solve the following pair of equations of reducing them into a pair of linear equation.
$\frac{a^2}{x} - \frac{b^2}{y} = 0, \frac{a^2 b}{x} + \frac{b^2 a}{y} = a + b, x, y \neq 0$

341) Solve the following pair of equations of reducing them into a pair of linear equation.
$\frac{5}{x} + 6y = 13, \frac{3}{x} + 4y = 7, x \neq 0$

342) Solve the following pair of equations of reducing them into a pair of linear equation.
$x + \frac{6}{y} = 6, 3x - \frac{8}{y} = 5, y \neq 0$

343) Solve the following pair of equations of reducing them into a pair of linear equation.
$\frac{2}{x} + \frac{3}{y} = \frac{9}{xy}, \frac{4}{x} + \frac{9}{y} = \frac{21}{xy}, x \neq 0, y \neq 0$

344) Solve the following pair of equations of reducing them into a pair of linear equation.
$\frac{5}{x+1} - \frac{2}{y-1} = \frac{1}{2}, \frac{10}{x+1} + \frac{2}{y-1} = \frac{5}{2}, x \neq -1, y \neq 1$

345) Solve the following pair of equations of reducing them into a pair of linear equation.
$\frac{5}{x+1} - \frac{2}{y-1} = \frac{1}{2}, \frac{10}{x+1} + \frac{2}{y-1} = \frac{5}{2}, x \neq -1, y \neq 1$

346) Solve the following pair of equations of reducing them into a pair of linear equation.
$\frac{6}{x+y} = \frac{7}{x-y} + 3, \frac{1}{2(x+y)} = \frac{1}{3(x-y)}$

347) Solve the following pair of equations of reducing them into a pair of linear equation.
$\frac{57}{x+y} + \frac{6}{x-y} = 5, \frac{38}{x+y} + \frac{21}{x-y} = 9$

348) Reduce the following pair of equations into a pair of linear equations and solve them
$\frac{1}{2(2x+3y)} + \frac{12}{7(3x-2y)} = \frac{1}{2}$ $\frac{7}{2x+3y} + \frac{4}{3x-2y} = 2$,where $2x + 3y \neq 0$ and $3x - 2y \neq 0$.

349) For which value(s) of A,does the pair of linear equations λx + y = λ ^{2} and x + λy= 1 have infinitely many solutions?

350) For which value(s) of A,does the pair of linear equations λx + y = λ ^{2} and x + λy= 1 have a unique solution?

351) Determine algebraically, the vertices of the triangle formed by the line.
5x - y = 5,6x + y = 17 and x + 2y = 1

352) Solve the following system of linear equations graphically
x - y + 1 = 0
x + y = 5

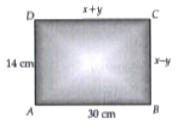
353) Find the ratio in which the line segment joining the points (5, 3) and (-1, 6) is divided by Y-axis.

354) Draw thegraph of lines x =-2 and y =3. Write the vertices of the figure formed by these lines, Xaxis and Y-axis. Also, find the area of the figure.

355) Draw the graph of the pair of linear equations x - y + 2 = 0 and 4x - y - 4 = 0. Calculate the area of the triangle formed by the lines so drawn and the X axis.

356) Equation 2x = 5y +4 is given. Write another linear equation, so that the lines represented by the pair are
(i) intersecting
(ii) coincident
(ii) parallel

357) In figure, ABCDis a rectangle. Find the value of x and y



358) Given below are two lines such that l_1 || l_2

$I_1 : 2x + 2y + 2 = 0$

$I_2 : 3x – 3y + 3 = 0$

(i) Using comparison of ratios of coefficients, write the equation of a line I_3 in two variables, such that it intersects I_1 at exactly one point.

(ii) Find the point of intersection of l_2 and I_3 Show your steps.

359) A company has a locker in which valuable documents are kept. The passcode is a four-digit number of the form xyyx. The Chief Executive Officer (CEO) and the Vice President (VP) of the company have each been given one clue. On solving both clues, the passcode that opens the locker can be found.

CEO's clue: When twice the ones digit is subtracted from the tens digit, the result is 1.

VP's clue: Three more than the tens digit is thrice the ones digit.

Find the passcode that opens the locker. Show your work.

360) Ananya had red, blue and yellow marbles in the ratio 4 : 5 : 3. She gave all her red marbles and some blue marbles to Neha. The ratio of the number of blue marbles and yellow marbles left with Ananya was 7 : 9. If Ananya gave 20 marbles to Neha, then how many of them are red marbles? Show your work.

Case Study Questions 17 x 4 = 68

361) A part of monthly hostel charges in a college is fixed and the remaining depends on the number of days one has taken food in the mess. When a student Anu takes food for 25 days, she has to pay Rs 4500 as hostel charges, whereas another student Bindu who takes food for 30 days, has to pay Rs 5200 as hostel charges.

Considering the fixed charges per month by Rs x and the cost of food per day by Rs y, then answer the following questions.

(i) Represent algebraically the situation faced by both Anu and Bindu.

(a) x + 25y = 4500, x + 30y = 5200

(b) 25x + y = 4500, 30x + Y = 5200

(c) x - 25y = 4500, x - 30y = 5200

(d) 25x - y = 4500, 30x - Y = 5200

(ii) The system of linear equations, represented by above situations has

(a) No solution

(b) Unique solution

(c) Infinitely many solutions

(d) None of these

(iii) The cost of food per day is

(a) Rs 120 **(b) Rs 130** **(c) Rs 140** **(d) Rs 1300**

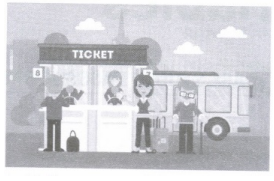
(iv) The fixed charges per month for the hostel is

(a) Rs 1500 **(b) Rs 1200** **(c) Rs 1000** **(d) Rs 1300**

(v) If Bindu takes food for 20 days, then what amount she has to pay?

(a) Rs 4000 **(b) Rs 3500** **(c) Rs 3600** **(d) Rs 3800**

362) From Bengaluru bus stand, if Riddhima buys 2 tickets to Malleswaram and 3 tickets to Yeswanthpur, then total cost is Rs 46; but if she buys 3 tickets to Malleswaram and 5 tickets to Yeswanthpur, then total cost is Rs 74.



Consider the fares from Bengaluru to Malleswaram and that to Yeswanthpur as Rs x and Rs y respectively and answer the following questions.

(i) 1st situation can be represented algebraically as

(a) 3x-5y=74 **(b) 2x+5y=74** **(c) 2x-3y=46** **(d) 2x+3y=46**

(ii) 2nd situation can be represented algebraically as

(a) 5x + 3y = 74 **(b) 5x- 3y= 74** **(c) 3x + 5y = 74** **(d) 3x-5y=74**

(iii), Fare from Ben~aluru to Malleswaram is

(a) Rs 6 **(b) Rs 8** **(c) Rs 10** **(d) Rs 2**

(iv) Fare from Bengaluru to Yeswanthpur is

(a) Rs 10 **(b) Rs 12** **(c) Rs 14** **(d) Rs 16**

(v) The system oflinear equations represented by both situations has

(a) infinitely many solutions **(b) no solution**

(c) unique solution **(d) none of these**

363) Points A and B representing Chandigarh and Kurukshetra respectively are almost 90 km apart from each other on the highway. A car starts from Chandigarh and another from Kurukshetra at the same time. If these cars go in the same direction, they meet in 9 hours and if these cars go in opposite direction they meet in 9/7 hours. Let X and Ybe two cars starting from points A and B respectively and their speed be x km/hr and y km/hr respectively.

Then, answer the following questions.

(i) When both cars move in the same direction, then the situation can be represented algebraically as

(a) x - y = 10 **(b) x + y = 10** **(c) x + y = 9** **(d) x - y = 9**

(ii) When both cars move in opposite direction, then the situation can be represented algebraically as

(a) x - y=70 **(b) x + y=90** **(c) x + y=70** **(d) x + y=10**

(iii) Speed of car X is

(a) 30 km/hr **(b) 40 km/hr** **(c) 50 km/hr** **(d) 60 km/hr**

(iv) Speed of car Y is

(a) 50km//hr **(b) 40 km/hr** **(c) 30 km/hr** **(d) 60 km/hr**

(v) If speed of car X and car Y, each is increased by 10 km/hr, and cars are moving in opposite direction, then after how much time they will meet?

(a) 5 hrs **(b) 4 hrs** **(c) 2 hrs** **(d) 1 hr**

364) Mr Manoj Jindal arranged a lunch party for some of his friends. The expense of the lunch are partly constant and partly proportional to the number of guests. The expenses amount to Rs 650 for 7 guests and Rs 970 for 11 guests .

Denote the constant expense by Rs x and proportional expense per person by Rs y and answer the following questions.

(i) Represent both the situations algebraically.

(a) x + 7y = 650, x + 11y = 970

(b) x - 7y = 650, x - 11y = 970

(c) x+ 11y=650,x+7y=970

(d) 11x + 7y = 650, 11x - 7y = 970

(ii) Proportional expense for each person is

(a) Rs 50 **(b) Rs 80** **(c) Rs 90** **(d) Rs 100**

(iii) The fixed (or constant) expense for the party is

(a) Rs 50 **(b) Rs 80** **(c) Rs 90** **(d) Rs 100**

(iv) If there would be 15 guests at the lunch party, then what amount Mr Jindal has to pay?

(a) Rs 1500 **(b) Rs 1300** **(c) Rs 1200** **(d) Rs 1290**

(v) The system of linear equations representing both the situations will have

(a) unique solution **(b) no solution**

(c) infinitely many solutions **(d) none of these**

365) In a office, 8 men and 12 women together can finish a piece of work in 10 days, while 6 men and 8 women together can finish it in 14 days. Let one day's work of a man be 1/x and one day's work of a woman be 1/y.

Based on the above information, answer the following questions.

(i) 1st situation can be represented algebraically as

$(a)\frac{80}{x}-\frac{120}{y}=1$ $(b)\frac{120}{x}-\frac{80}{y}=1$ $(c)\frac{120}{x}+\frac{80}{y}=1$ $(d)\frac{80}{x}+\frac{120}{y}=1$

(ii) 2nd situation can be represented algebraically as

$(a)\frac{112}{x}-\frac{84}{y}=1$ $(b)\frac{84}{x}-\frac{112}{y}=1$ $(c)\frac{84}{x}+\frac{112}{y}=1$ $(d)\frac{112}{x}+\frac{84}{y}=1$

(iii) One woman alone can finish the work in

(a) 220 days **(b) 140 days** **(c) 280 days** **(d) 160 days**

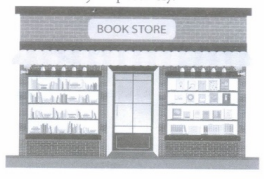
(iv) One man alone can finish the work in

(a) 140 days **(b) 220 days** **(c) 160 days** **(d) 280 days**

(v) If 14 men and 28 women work together, then in what time, the work will be completed?

(a) 2 days **(b) 3 days** **(c) 4 days** **(d) 5 days**

366) From a shop, Sudhir bought 2 books of Mathematics and 3 books of Physics of class X for Rs 850 and Suman bought 3 books of Mathematics and 2 books of Physics of class X for Rs 900. Consider the price of one Mathematics book and that of one Physics book be Rs x and Rs y respectively.



Based on the above information, answer the following questions.

(i) Represent the situation faced by Sudhir, algebraically,

(a) 2x + 3y = 850 **(b) 3x+2y=850** **(c) 2x - 3y = 850** **(d) 3x - 2y = 850**

(ii) Represent the situation faced by Suman, algebraically

(a) 2x + 3y = 90 **(b) 3x + 2y = 900** **(c) 2x - 3y = 900** **(d) 3x - 2y = 900**

(iii) The price of one Physics book is

(a) Rs 80 **(b) Rs 100** **(c) Rs 150** **(d) Rs 200**

(iv) The price of one Mathematics book is

(a) Rs 80 **(b) Rs 100** **(c) Rs 150** **(d) Rs 200**

(v) The system of linear equations represented by above situation, has

(a) unique solution **(b) no solution**

(c) infinitely many solutions **(d) none of these**

367) A boat in the river Ganga near Rishikesh covers 24 km upstream and 36 km downstream in 6 hours while it covers 36 km upstream and 24 km downstream in $6\frac{1}{2}$ hours. Consider speed of the boat in still water be x km/hr and speed of the stream be y km/hr and answer the following questions.

(i) Represent the 1^{st} situation algebraically.

$(a)\frac{24}{x-y}+\frac{36}{x+y}=6$ $(b)\frac{24}{x+y}+\frac{36}{x-y}=6$ $(c)24x+36y=6$ $(d)24x-36y=6$

(ii) Represent the 2^{nd} situation algebraically.

$(a)\frac{36}{x+y}+\frac{24}{x-y}=\frac{13}{2}$ $(b)\frac{36}{x-y}+\frac{24}{x+y}=\frac{13}{2}$ $(c)36x-24y=\frac{13}{2}$ $(d)36x+24y=\frac{13}{2}$

(iii) If $u=\frac{1}{x-y}$ and $v=\frac{1}{x+y}$, then $u=$

$(a)\frac{1}{4}$ $(b)\frac{1}{12}$ $(c)\frac{1}{8}$ $(d)\frac{1}{6}$

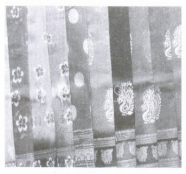
(iv) Speed of boat in still water is

(a) 4 km/hr **(b) 6 km/hr** **(c) 8 km/hr** **(d) 10 krn/hr**

(v) Speed of stream is

(a) 3 km/hr **(b) 4 km/hr** **(c) 2 km/hr** **(d) 5 km/hr**

368) Piyush sells? saree at 8% profit and a sweater at 10% discount, thereby, getting a sum of Rs 1008. If he had sold the saree at 10% profit and the sweater at 8% discount, he would have got Rs 1028.




Denote the cost price of the saree and the list price (price before discount) of the sweater by Rs x and Rs y respectively
and answer the following questions.

(i) The 1st situation can be represented algebraically as

(a) 2.08x + 1.9y = 2008 **(b) 1.08x + 0.9y = 1008** **(c) lOx + 8y = 1008** **(d) 8x + 10y = 1008**

(ii) The 2nd situation can be represented algebraically as

(a) 10x + 8y = 1028 **(b) 2.1x + 1.92y = 1028** **(c) 1.1x + 0.92y = 1028** **(d) 8x + 10y = 1028**

(iii) Linear equation represented by 1st situation intersect the x-axis at

$(a)(2800, 0)$ $(b)(2500, 0)$ $(c)\left(\frac{2500}{3}, 0\right)$ $(d)\left(\frac{2800}{3}, 0\right)$

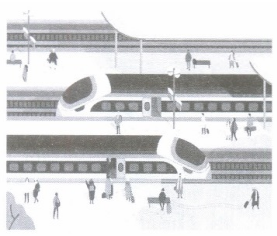
(iv) Linear equation represented by 2nd situation intersect the y-axis at

$(a)\left(0, \frac{25700}{23}\right)$ $(b)(0, 25700)$ $(c)\left(0, \frac{25800}{23}\right)$ $(d)(0, 26800)$

(v) Both linear equations represented by situation 1st and 2nd intersect each other at

(a) (400,600) **(b) (600,400)** **(c) (200,200)** **(d) (800,600)**

369) Puneet went for shopping in the evening by metro with his father who is an expert in mathematics. He told Puneet that path of metro A is given by the equation 2x + 4y = 8 and path of metro B is given by the equation 3x + 6y = 18. His father put some questions to Puneet. Help Puneet to solve the questions.




(i) Equation 2x + 4y = 8 intersects the x-axis and y-axis respectively at

(a) (4,0), (0, 2) **(b) (0,4), (2,0)** **(c) (4,0), (2,0)** **(d) (0,4), (0, 2)**

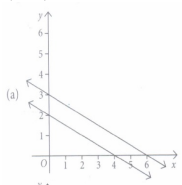
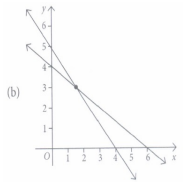
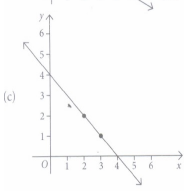
(ii) Equation 3x + 6y = 18 intersects the x-axis and y-axis respectively at

(a) (6,0), (0, 8) **(b) (0,6), (0, 8)** **(c) (6,0), (0, 3)** **(d) (0,6), (0, 3)**

(iii) Coordinates of point of intersection of two given equations are

(a) (1,2) **(b) (2,4)** **(c) (3,7)** **(d) does not exist**

(iv) Represent the equations, 2x + 4y = 8 and 3x + 6y = 18 graphically.

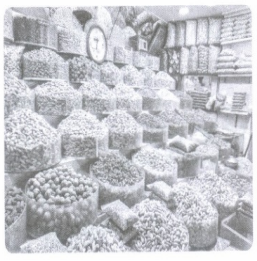




(d) None of these

(v) System oflinear equations represented by two given lines is

(a) inconsistent **(b) having infinitely many solutions**
(c) consistent **(d) overlapping each other**

370) Raman usually go to a dry fruit shop with his mother. He observes the following two situations.
On 1st day: The cost of 2 kg of almonds and 1 kg of cashew was Rs 1600.
On 2nd day: The cost of 4 kg of almonds and 2 kg of cashew was Rs 3000.
Denoting the cost of 1 kg almonds by Rs x and cost of 1 kg cashew by Rs y, answer the following questions.



(i) Represent algebraically the situation of day-I.

(a) x + 2y = 1000 **(b) 2x + y = 1600** **(c) x - 2y = 1000** **(d) 2x - y = 1000**

(ii) Represent algebraically the situation of day- II.

(a) 2x + y= 1500 **(b) 2x- y= 1500** **(c) x + 2y=1500** **(d) 2x + y = 750**

(iii) The linear equation represented by day-I, intersect the x axis at

(a) (0,800) **(b) (0,-800)** **(c) (800,0)** **(d) (-800,0)**

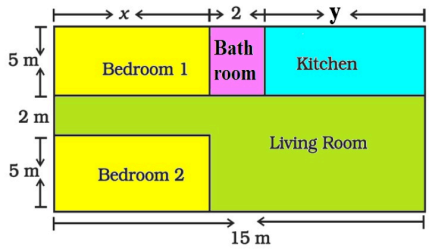
(iv) The linear equation represented by day-II, intersect the y-axis at

(a) (1500,0) **(b) (0, -1500)** **(c) (-1500,0)** **(d) (0,1500)**

(v) Linear equations represented by day-I and day -II situations, are

(a) non parallel **(b) parallel**
(c) intersect at one point **(d) overlapping each other.**

371) In the below given layout, the design and measurements has been made such that area of two bedrooms and Kitchen together is 95 sq. m.



(i) The area of two bedrooms and kitchen are respectively equal to

(a) 5x, 5y **(b) 10x, 5y** **(c) 5x, 10y** **(d) x, y**

(ii) Find the length of the outer boundary of the layout.

(a) 27 m **(b) 15 m** **(c) 50 m** **(d) 54 m**

(iii) Find the area of each bedroom.

(a) 30 sq. m **(b) 35 sq. m** **(c) 65 sq. m** **(d) 42 sq. m**

(iv) Find the area of living room in the layout.

(a) 30 sq. m **(b) 35 sq. m** **(c) 75 sq. m** **(d) 65 sq. m**

(v) Find the cost of laying tiles in Kitchen at the rate of Rs. 50 per sq. m

(a) Rs. 1500 **(b) Rs. 2000** **(c) Rs. 1750** **(d) Rs. 3000**

372) On a bright Sunday morning three friends A, B and C decided to go on river for fishing and boating. They decided to leave for the place together in the evening. The journey was smooth, it just went as scheduled then they reached to the river, and started to set the boat on sail. They were enjoying their ride with full speed. They started boating from a place to another place which is at a distance of 42 km and then again returns to the starting place. They took 20 hours in all. The time taken by them riding downstream in going 14 km is equal to the time taken by them riding upstream in going 6 km.

For calculating they took speed of the boat as x km/hr and the speed of the river as y km/hr. Based on the above situation, answer the following questions:

(i) The speed of the boat in downstream is

(a) x + y km/hr **(b) x – y km/hr** **(c) x y km/hr** **(d) x/y km/hr**

(ii) The speed of the boat in upstream is

(a) x + y km/hr **(b) x – y km/hr** **(c) x y km/hr** **(d) x/y km/hr**

(iii) The speed of the boat in still water is

(a) 5 km/hr **(b) 2 km/hr** **(c) 7 km/hr** **(d) none of these**

(iv) The speed of the river is

(a) 5 km/hr **(b) 2 km/hr** **(c) 7 km/hr** **(d) none of these**

(v) The speed of boat in upstream is

(a) 5 km/hr (b) 2 km/hr (c) 3 km/hr (d) 6 km/hr

373) Deepak bought 3 notebooks and 2 pens for Rs. 80. His friend Ram said that price of each notebook could be Rs. 25. Then three notebooks would cost Rs.75, the two pens would cost Rs.5 and each pen could be for Rs. 2.50. Another friend Ajay felt that Rs. 2.50 for one pen was too little. It should be at least Rs. 16. Then the price of each notebook would also be Rs.16.

Lohith also bought the same types of notebooks and pens as Aditya. He paid 110 for 4 notebooks and 3 pens. Later, Deepak guess the cost of one pen is Rs. 10 and Lohith guess the cost of one notebook is Rs. 30.

(i) Form the pair of linear equations in two variables from this situation by taking cost of one notebook as Rs. x and cost of one pen as Rs. y.

(a) 3x + 2y = 80 and 4x + 3y = 110 **(b) 2x + 3y = 80 and 3x + 4y = 110** **(c) x + y = 80 and x + y = 110** **(d) 3x + 2y = 110 and 4x + 3y = 80**

(ii) Find the cost of one pen?

(a) Rs. 20 (b) Rs. 10 (c) Rs. 5 (d) Rs. 15

(iii) Find the total cost if they will purchase the same type of 15 notebooks and 12 pens.

(a) Rs. 400 **(b) Rs. 350** **(c) Rs. 450** **(d) Rs. 420**

(iv) Find whose estimation is correct in the given statement.

(a) Deepak (b) Lohith (c) Ram (d) Ajay

374) A coaching institute conducts at Mathematics classes in two batches I and Il and fee for rich and poor children are different. In batch I there are 20 poor and 5 rich children, whereas in batch II, there are 5 poor and 25 rich children. The total monthly collection of fees from batch I is Rs 9000 and from batch Il is Rs 26000.

Assume that each poor child pays Rs x per month and each rich child pays Rs y per month.

Based on the above information, answer the following questions.

(i) Represents the information given above in terms of x and y.

(ii) Find the monthly fee paid by a poor child.

Or

Find the difference in the monthly fee paid by a poor child and a rich child.

(iii) If there are 10 poor and 20 rich children in batch II, what is the total monthly collection of fees from batch II?

375)

Lokesh is a production manager in Mumbai, hires a taxi everyday to go to his office. The taxi charges in Mumbai consists of a fixed charges together with the charges or the distance covered. His office is at a distance of 10 km from his home. For a distance of 10 km to his office. Lokesh paid Rs 105. While coming back home. he took another route. He covered a distance of 15 km and the charges paid by him were Rs 155.

Based on the above information, answer the following questions.

(i) What are the fixed charges?

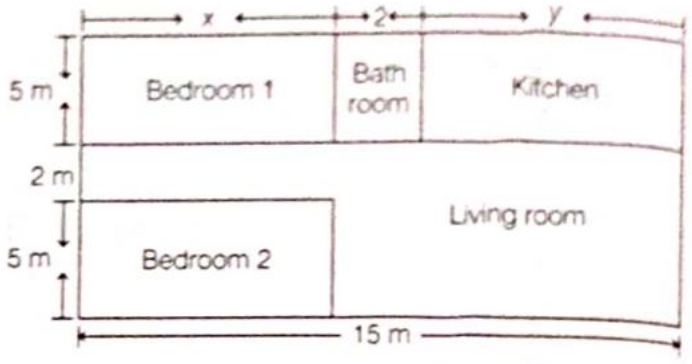
(ii) What are the charges per km?

(iii) If fixed charges are Rs 20 and charges per km are Rs 10, then how much Lokesh have to pay for travelling a distance of 10 km?

Or

Find the total amount paid by Lokesh for travelling 10 km from home to office and 25 km from office to home. (Fixed charges and charges per km are same as in parts (i) and (ii).

376) Amit is planning to buy a house and the layout is given below. The design and the measurement has been made such that areas of two bedrooms and kitchen together is 95 m^2.



Based on the above information, answer the following questions:

(i) Form the pair of linear equations in two variables from this situation.

(ii) Find the length of the outer boundary of the layout.

(iii) Find the area of each bedroom and kitchen in the layout.

(iv) Find the area of living room in the layout.

(v) Find the cost of laying tiles in kitchen at the rate of Rs 50 per m^2.

377) A book store shopkeeper gives books on rent for reading. He has variety of books in his store related to fiction, stories and quizzes etc. He takes a fixed charge for the first two days and an additional charge for subsequent day. Amruta paid 22 for a book and kept for 6 days; while Radhika paid 16 for keeping the book for 4 days.

Assume that the fixed charge be x and additional charge (per day) be y. Based on the above information, answer any four of the following questions

(i) The situation of amount paid by Radhika, is algebraically represented by

(a) x-4y=16

(b) x+4y=16

(c) x-2y=16

(d) x+2y=16

(ii) The situation of amount paid by Amruta, is a algebraically represented by

(a) x-2y=11

(b) x-2y=22

(c) x+4y=22

(d) x-4y=11

(iii) What are the fixed charges for a book?

(a) 9

(b) 10

(c) 13

(d) 15

(iv) What are the additional charges for each subsequent day for a book?

(a) ₹6

(b) ₹5

(c) ₹4

(d) ₹3

(v) What is the total amount paid by both, if both of them have kept the book for 2 more days?

(a) ₹35

(b) ₹52

(c) ₹50

(d) ₹58

5 Marks 204 x 5 = 1020

378) In a shop the cost of 2 pencils and 3 erasers is Rs. 9 and the cost of 4 pencils and 6 erasers is Rs. 18. Find the cost of each pencil and each eraser.

379) Use elimination method to find all possible solutions of the following pair of linear equation

$2x+3y=8$ (1)

$4x+6y=7$ (2)

380) Half the perimeter of a rectangular garden, whose length is 4 m more than its width, is 36 m. Find the dimensions of the garden.

381) Draw the graphs of the equations $x - y +1= 0$ and $3x + 2y - 12 = 0$. Determine the coordinates of the vertices of the triangle formed by these lines and the X-axis and shade the triangular region.

382) Given the linear equation $2x + 3y - 8 = 0$, write another linear equation in two variables such that the geometrical representation of the pair so formed is:

(i) intersecting lines

(ii) parallel lines

(iii) coincident lines.

383) Solve the following pair of linear equations by the substitution method

$x + y = 14$

$x - y = 4$

384) Solve the following pair of linear equations by the substitution method
0.2x+ 0.3y = 1.3
0.4x + 0.5y = 2.3

385) Solve the following pair of linear equations by the substitution method
$\sqrt{2}x + \sqrt{3}y = 0$
$\sqrt{3}x - \sqrt{8}y = 0$

386) Solve the following pair of linear equations by the substitution method
$\frac{3x}{2} - \frac{5y}{3} = -2$
$\frac{x}{3} + \frac{y}{2} = \frac{13}{6}$

387) Solve 2x + 3y = 11 and 2x - 4y = - 24 and hence find the value of m for which y = mx + 3.

388) Form the pair of linear equations for the following problems and find their solution by substitution method.
The coach of cricket team buys 7 bats and 6 balls for Rs 3,800. Later, she buys 3 bats and 5 balls for Rs 1750. Find the cost of each bat and each ball.

389) Form the pair of linear equations for the following problems and find their solution by substitution method.
The taxi charges in a city consist of a fixed charge together with the charge for the distance covered. For a distance of 10 km, the charge paid is Rs 105 and for a journey of 15 km the charge paid is Rs 155. What are the fixed charges and the charge per km? How much does a person have to pay for travelling a distance of 25 km?

390) Form the pair of linear equations for the following problems and find their solution by substitution method.
A fraction becomes $\frac{9}{11}$, if 2 is added to both the numerator and the denominator. If 3 is added to both the numerator and the denominator it becomes $\frac{5}{6}$. Find the fraction.

391) Form the pair of linear equations for the following problems and find their solution by substitution method.
Five year hence, the age of Jacob will be three times that of his son. Five years ago, Jacob's age was seven times that of his son. What are their present ages?

392) Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method :
If we add 1 to the numerator and subtract 1 from the denominator, a fraction reduces to 1. It becomes if we $\frac{1}{2}$ only add 1 to the denominator. What is the fraction?

393) Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method :
Five years ago, Nuri was thrice as old as Sonu. Ten years later, Nuri will be twice as old as Sonu. How old are Nuri and Sonu?

394) Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method :
The sum of the digits of a two-digit number is 9.Also, nine times this number is twice the number obtained by reversing the order of the digits. Find the number.

395) Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method :
Meena went to a bank to withdraw Rs 2,000. She asked the cashier to give her Rs 50 and Rs 100 notes only. Meena got 25 notes in all. Find how many notes of Rs 50 and Rs 100 she received.

396) Solve the following pair of linear equations by the elimination method and the substitution method :
x + y = 5 and 2x - 3y = 4

397) Solve the following pair of linear equations by the elimination method and the substitution method :
3x + 4y = 10 and 2x - 2y = 2

398) Solve the following pair of linear equations by the elimination method and the substitution method :
3x - 5y - 4 = 0 and 9x = 2y + 7

399) Champa went to a 'Sale' to purchase some pants and skirts. When her friends asked her, how many of each she had bought, she answered, "The number of skirts is two less than twice the number of pants purchased. Also, the number of skirts is four less than four times the number of pants purchased'. Help her friends to find out how many pants and skirts Champa bought.

400) The ratio of incomes of two persons is 9 : 7 and the ratio of their expenditures is 4 : 3. If each of them manages to save Rs 2000 per month, then find their monthly incomes.

401) Check graphically whether the pair of equations x + 3y = 6 and 2x – 3y = 12 is consistent. If so, solve them graphically

402) Form the pair of linear equations in the following problems, and find their solutions graphically
10 students of Class X took part in a Mathematics quiz. If the number of girls is 4 more than the number of boys, find the number of boys and girls who took part in the quiz.

403) Form the pair of linear equations in the following problems, and find their solutions graphically.
5 pencils and 7 pens together cost Rs.50, whereas 7 pencils and 5 pens together cost 46. Find the cost of one pencil and that of one pen.

404) Which of the following pairs of linear equations are consistent/inconsistent? If consistent, obtain the solution graphically:
x + y = 5, 2x + 2y = 10

405) Which of the following pairs of linear equations are consistent/inconsistent? If consistent, obtain the solution graphically:
2x + y – 6 = 0, 4x – 2y – 4 = 0

406) The sum of a two-digit number and the number obtained by reversing the digits is 66. If the digits of the number differ by 2, find the number. How many such numbers are there?

407) Solve the following pair of linear equations by the elimination method and the substitution method :
$\frac{x}{2} + \frac{2y}{3} = -1$ and $x - \frac{y}{3} = 3$

408) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$, find out whether the lines representing the following pair of linear equations intersect at a point are parallel or coincident.
9x + 3y + 12 = 0
18x + 6y + 24 = 0

409) On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$, find out whether the lines representing the following pair of linear equations intersect at a point are parallel or coincident.
6x – 3y + 10 = 0
2x – y + 9 = 0

410) Five years ago, Jacob's age was seven times that of his son. After five years, the age of Jacob will be three times that of his son. Represent this situation algebraically and graphically.

411) Aruna has only Rs.1 and Rs.5 coins with her. If the total number of coins that she has is Rs.55 and the amount of money with her is Rs.75, then represent this situation algebraically and graphically.

412) Solve graphically the following pair of equations.
2x-y+3=0 and 3x-5y+1=0

413) Graphically, find whether the following pair of equation has no solution, unique solution or infinitely many solutions.
15x-30y+1=0, 3x-$\frac{24}{4}y + \frac{1}{5}$ =0

414) Check graphically, whether the following pair of linear equations is consistent. If yes, solve it graphically.
2x-y=0, x+y=0

415) Solve graphically, the pair of linear equations x-y=-1 and 2x+y-10=0. Also, find the vertices of the triangle formed by these lines and X-axis.

416) Solve graphically, the pair of linear equations 3x+y-11=0,x-y-1=0. Also, find the vertices of the triangle formed by these lines and Y-axis.

417) Two straight paths are represented by the lines 7x-5y=3 and 21x-15y=5. Check whether the paths cross each other.

418) Write a pair of linear equations which has the unique solution x=-1 and y=3. How many such pairs can you write?

419) 4 chairs and 3 tables cost Rs.210 and 5 chairs and 2 tables cost Rs. 175. Find the cost of one chair and one table separately.

420) In $\triangle ABC, \quad \angle C = 5\angle B = 3(\angle A + \angle B)$, find all angles of $\triangle ABC$.

421) Find the solution of the pair of equations $\frac{x}{10} + \frac{y}{5} - 1 = 0$ and $\frac{x}{8} + \frac{y}{6} = 15$ and find λ, if $y = \lambda x + 5$.

422) The sum of the digits of a two-digit number is 8 and the difference between the number and that formed by reversing the digits is 18. Find the number.

423) Reduce the following pair of equations into a pair of linear equations and solve them
$\frac{2xy}{x+y} = \frac{3}{2}, \quad \frac{xy}{2x-y} = \frac{-3}{10}; \quad x + y \neq 0, \quad 2x - y \neq 0$

424) Students were standing in rows for a mass drill. if one student is extra in a row, there would be 2 rows less. If one students is less in a row, there would be 3 rows more. Find the number of students.

425) Given the linear equation 2x+3y-8=0, write another linear equation in two variables such that the geometrical representation of the pair so formed is
(i) intersecting lines.
(ii) Parallel llines.
(ii) coincident lines.

426) Solve 2x+3y=11 and 2x-4y=-24 and then find the value of m for which y=mx+3.

427) Solve the following pair of linear equations by the substitution and cross-multiplication methods.
8x+5y=9, 3x+2y=4

428) The ages of two friends Ani and Biju differ by 3 yr. Ani's father Dharma is twice as old as Ani and Biju is twice as old as his sister Cathy. The ages of Cathy and Dharam differ by 30 yr. Find the ages of Ani and Biju.

429) One says, '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'. Tell me what is the amount of their (respective) capital? [From the Bijaganita of Bhaskara II)

430) A train covered a certain distance at a uniform speed. If the train would have been 10 km/h faster, it would have taken 2 h less than the scheduled time and if the train was slower by 10 km/h, it would have taken 3 h more than the scheduled time. Find the distance covered by the train.

431) The students of a class are made to stand in rows. If 3 students are extra in row, there would be 1 row less. If 3 students are less in a row, there would be 2 rows more. Find the number of students in the class.

432) In $\triangle ABC, \quad \angle C = 3\angle B = 2(\angle A + \angle B)$. Find the three angles.

433) The Resident Welfare Association of a colony decided to build two straight paths in their neighbourhood park such that they do not cross each other, to plant trees along the boundary lines of each path. One of the members of association, Sarika suggested that the paths should be constructed represented by the two linear equations x-3y=2 and -2x+6y=5. Check whether the two paths will cross each other or not. What value is depicted from this action?

434) While teaching about the Indian national flag, teacher asked the students that how many lines are there in blue colour wheel? One student replies that it is 8 times the number of colours in the flag. While other says that the sum of the number of colours in the flag and number of lines in the wheel of the flag is 27. Convert the statements given by the students into linear equation of two variables. Find the number of lines in the wheel. What does the wheel signifies in the flag?

435) Determine graphically, the vertices of the triangle formed by the lines y=x, 3y=x, x+y=8.

436) 7 canes of a fizzy drink and 5 packets of apple juice cost Rs.6.80 while 5 canes of the fizzy drink and 11 packets of apple juice cost Rs.8.20. Calculate the cost of one cane of fizzy drink and one packet of apple juice.

437) A and B are two points 150 km apart on a highway. Two cars start with different speeds from A and B at the same time. If they move in the same direction, they meet in 15 h but if they move in the opposite directions, they meet in 1 h. Find their speed.

438) A part of monthly charges in a college is fixed and the remaining depend on the number of days one has taken food in the mess. When a student X takes food for 25 days, he has to pay Rs.1750 as hostel charges, whereas a student Y, who takes food for 28 days, pays Rs.1900 as hostel charges. Find the fixed charge and the cost of food per day.

439) Ankita travels 14 km to her home partly by rickshaw and partly by bus. She takes half an hour, if she travels 2 km by rickshaw and the remaining distance by bus.
On the other hand, if she travels 4 km by rickshaw and the remaining distance by bus, she takes 9 min longer. Find the speed of rickshaw and of the bus.

440) A man, when asked how many hens and buffaloes he has, told that his animals have 120 eyes and 180 legs. How many hens and buffaloes has he?

441) Susan invested certain amount of money in two schemes A and B, which offer interest at the rate of 8% per annum and 9% per annum, respectively. She received Rs.1860 as annual interest. However, had she interchanged the amount of investments in the two schemes, she would received Rs.20 more as annual interest. How much money did she invest in each scheme?

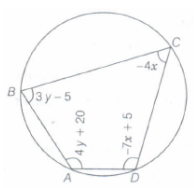
442) For which values of p and q, will the following pair of linear equations have infinitely many solutions?
$4x+5y=2$, $(2p+71)x+(p+8q)y=2q-p+1$

443) A bird flying in the same direction as that of the wind, covers a distance of 45 km in 2h 30 min. but it takes 4 h 30 min to cover the same distance when it flies against the direction of the wind. Ignoring conditions other than the wind conditions, find
(i) the speed of the bird in still air.
(ii) the speed of the wind.

444) The coach of a cricket team buys 3 bats and 6 balls for Rs.3900 later. He buys another bat and 3 more balls of the same kind for Rs.1300. Represent this situation algebraically and geometrically.

445) Draw the graphs of the equations 5x - y = 5 and 3x - y = 3. Determine the coordinates of the vertices of the triangle formed by these lines and Y-axis.

446) ABCD is a cyclic quadrilateral. Find the angles of the cyclic quadrilateral.



447) Determine graphically whether the following pair of linear equations has:
3x-y = 7
2x + 5y + 1 = 0 has:
(i) a unique solution
(ii) infinitely many solutions or
(iii) no solution.

448) The coach of a cricket team buys 3 bats and 6 balls for Rs 3,900. Later, she buys another bat and 2 more balls of the same kind for Rs 1,300. Represent this situation algebraically and geometrically,

449) Solve the following pair of linear equations graphically:
$2x + 3y = 12$ and $x - y = 1$.
Find the area of the region bounded by the two lines representing the above equations and Y-axis.

450) Draw the graphs of the following equations:
$2x - y = 1, x + 2y = 13$
Find the solution of the equations from the graph and shade the triangular region formed by the lines and the Y-axis.

451) Shyam went to a stationary shop and purchased 2 pens and 3 pencils for Rs 9. His friend Rahim saw the new variety of pens and pencils with Shyam and he also bought 4 pens and 6 pencils of the same kind for Rs 18.
(i) Form the equations in variables x and y.
(ii) Represent this situation graphically.
(iii) Which person have been more beneficial?

452) Which of the following pairs of linear equations has unique solution, no solution or infinitely many solutions? In case there is a unique solution, find it by using cross-multiplication method. $x - 39 - 3 = 0$, $3x - 9y - 2 = 0$

453) Which of the following pairs of linear equations has unique solution, no solution or infinitely many solutions? In case there is a unique solution, find it by using cross-multiplication method.$2x + y = 5$, $3x + 2y = 8$

454) Which of the following pairs of linear equations has unique solution, no solution or infinitely many solutions? In case there is a unique solution, find it by using cross-multiplication method.$3x - 5y = 20$, $6x - 10y = 40$

455) Which of the following pairs of linear equations has unique solution, no solution or infinitely many solutions? In case there is a unique solution, find it by using cross-multiplication method.$x - 3y - 7 = 0$,$3x - 3y - 15 = 0$

456) Solve the following pair of linear equations by the substitution and cross-multiplication method: $8x + 5y = 9$, $3x + 2y = 4$

457) Form the pair of linear equations in the following problems and find their solutions (if they exist) by any algebraic method:
A part of monthly hostel charges is fixed and the remaining depends on the number of days one has taken food in the mess. When a student A takes food for 20 days she has to pay Rs 1,000 as hostel charges whereas a student B, who takes food for 26 days, pays Rs 1,180 as hostel charges. Find the fixed charges and the cost of food per day.

458) Form the pair of linear equations in the following problems and find their solutions (if they exist) by any algebraic method: A fraction becomes, $\frac{1}{3}$ when 1 is subtracted from the numerator and it becomes 1/4, when 8 is added to its denominator. Find the fraction.

459) Form the pair of linear equations in the following problems and find their solutions (if they exist) by any algebraic method:
Yash scored 40 marks in a test, getting 3 marks for each right answer and losing 1 mark for each wrong answer. Had 4 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer, then Yash would have scored 50 marks. How many questions were there in the test?

460) A lending library has a fixed charge for the first three days and an additional charge for each day thereafter. Shristi paid Rs 27 for a book kept for seven days, while Rekha paid Rs 21 for the book she kept for five days. Find the fixed charge and the additional charge paid by them. What is the importance of library?

461) Raghav scored 70 marks in a test, getting 4 marks for each right answer and losing 1 mark for each wrong answer. Had 5 marks been awarded for each correct answer and 2 marks been deducted for each wrong answer, then Raghav would have scored 80 marks. How many questions were there in the test? Which values would have Raghav violated if he resorted to unfair means?

462) Three lines x + 3y = 6, 2x - 3y = 12 and x 50 are enclosing a beautiful triangular park. Find the points of intersection of the lines graphically and the area of the park, if all measurements are in km. What type of behaviour should be expected by public in these type of parks?

463) In a painting competition of a school a child made Indian national flag whose perimeter was 50 cm. Its area will be decreased by 6 square cm, if length is decreased by 3 cm and breadth is increased by 2 cm then find the dimension of flag.What does the Saffron colour in flag signify?

464) The incomes of two persons A and B are in the ratio 8: 7 and the ratio of their expenditures is 19: 16 If their savings are Rs 2550 per month, find their monthly income. What is the importance of saving in life?

465) Form the pair of linear equation in the following problem and find their solutions graphically.
4 chairs and 3 tables cost Rs 2100 and 5 chairs and 2 tables cost Rs 1750. Find the cost of one chair and one table separately.

466) Solve the following pair of equations: $\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2 and \frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1$

467) Solve for x and y: 2x - y + 3 = 0, 3x - 5y +1 = 0

468) A train covered a certain distance at a uniform speed. If the train would have been 10 km/hr faster, it would have taken 2 hr less than the scheduled time. And, if the train were slower by 10 km/hr, it would have taken 3 hr more than the scheduled time. Find the distance covered by the train.

469) The ratio of incomes of two persons is 11: 7 and the ratio of their expenditures is 9: 5. If each of them manages to save Rs 400 per month, find their monthly incomes.

470) A and B are two points 150 km apart on a highway. Two cars start from A and B at the same time. If they move in the same direction they meet in 15 hours. But if they move in the opposite direction, they meet in 1 hour. Find their speeds.

471) If 2 is subtracted from the numerator and 1 is added to the denominator, a fraction becomes $\frac{1}{2}$ but when 4 is added to the numerator and 3 is subtracted from the denominator, it becomes $\frac{3}{2}$. Find the fraction.

472) If a bag containing red and white balls, half the number of white balls is equal to one-third the number of red balls. Thrice the total number of balls exceeds seven times the number of white balls by 6. How many balls of each colour does the bag contain?

473) A two digit number is obtained by either multiplying the sum of digits by 8 and then subtracting 5 or by multiplying the difference of digits by 16 and adding 3. Find the number.

474) The area of a rectangle gets reduced by 9 square units, if its length is reduced by 5 units and the breadth is increased by 3 units. The area is increased by 67 square units if length is increased by 3 units and breadth is increased by 2 units. Find the perimeter of the rectangle.

475) Solve for x and y: 2(3x - y) = 5xy, 2(x + 3y) = 5xy.

476) The age of the father is twice the sum of the ages of his 2 children. After 20 years, his age will be equal to the sum of the ages of his children. Find the age of the father

477) A fraction becomes $\frac{9}{11}$ if 2 is added to both numerator and denominator. If 3 is added to both numerator and denominator it becomes $\frac{5}{6}$. Find the fraction.

478) A motor boat can travel 30 km upstream and 28 km downstream in 7 hours. It can travel 21 km upstream and return in 5 hours. Find the speed of the boat in still water and the speed of the stream.

479) A boat covers 32 km upstream and 36 km downs earn in 7 hours. Also, it covers 40 km upstream and 48 km downstream in 9 hours. Find the speed of the boat in still water and that of the stream.

480) For what values of a and b does the following pair of linear equations have infinite number of solution?
2x + 3y = 7, a(x + y) - b(x - y) = 3a + b - 2

481) Atul is sitting on a boat which goes 30 km upstream and 44 km downstream in 10 hr. In 13 hr, he can go 40 km upstream and 55 km downstream.
(i) Form the linear equation.
(ii) Determine the speed of the stream and that of the boat in still water.
(iii) Which mathematical concept is used in the above problem?

482) If three times the larger of tire two numbers is divided by the smaller one, we get 4 as quotient and 3 as remainder. Also, if seven times the smaller number is divided by the larger one we get 5 as quotient and 1 as remainder Find the numbers.

483) 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. Find the number of deer and human visitors in the Park.

484) A and B each has a certain number of mangoes. A says to B, "if you give 30 of your mangoes, I will have twice as many as left with you." B replies "if you give me 10, I will have thrice as many as left with you". How many mangoes does each have?

485) A two-digit number is obtained by either multiplying the sum of the digits by 8 and then subtracting 5 or by multiplying the difference of the digits by 16 and then adding 3. Find the number

486) A boat goes 24 km upstream and 28 km downstream in 6 hrs. It goes 30 km upstream and 21 km downstream in $6\frac{1}{2}$ hrs. Find the speed of the boat in still water and also speed of stream.

487) The sum total of the ages of father and son is 55 years. If the father was to live till his son's age equals his present age. the total of their ages would be 93 years. Find their present ages.

488) After covering a distance of 30 km with uniform speed, there occurs some defect in a train engine and thereafter, its speed is reduced to 45 of its original speed. Consequently, the train reaches it-
c destination late by 45 minutes. Had it happened after covering 18 km more, the train would have reached 35 minutes late. Find the speed of the train and distance c.f the journey.

489) If from twice the greater of two positive numbers 16 is subtracted, the result is half the other number. If from half the greater number 1 is subtracted, the result is still half the other number. What are the numbers?

490) A lab assistant has a solution of 50% acid and other which has 25% acid. How much of each should be mixed to make 10 litres of a 40% acid solution?

491) A man travels 600 km partly by train and partly by car. It takes 8 hand 40 min, if he travels 320 km by train and the rest by car. It would take 30 min more, if he travels 200 km by train and the rest by car. Find the speed of the train and the car separately

492) 4 men and 6 boys can finish a piece of work in 5 days, while 3 men and 4 boys can finish it in 7 days. Find the time taken by 1 man alone or that by 1 boy alone.

493) Solve the following pair ot equations and verity the solution

494) Akhila goes to a fair with Rs.20 and wants to have rides on the Giant Wheel and play Hoopla. Represent this situation algebraically and graphically (geometrically).

495) Two rails are represented by the equations $x + 2y – 4 = 0$ and $2x + 4y – 12 = 0$. Will the rails cross each other?

496) Aftab tells his daughter, “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.” (Isn’t this interesting?) Represent this situation algebraically and graphically.

497) The cost of 2 kg of apples and 1kg of grapes on a day was found to be Rs.160. After a month, the cost of 4 kg of apples and 2 kg of grapes is Rs.300. Represent the situation algebraically and geometrically.

498) The cost of 2 pencils and 3 erasers is Rs.9 and the cost of 4 pencils and 6 erasers is 18. Find the cost of each pencil and each eraser.

499) Use elimination method to find all possible solutions of the following pair of linear equation
ax+by-a+b=0 and bx-ay-a-b=0

500) From a bus stand in Bangalore , if we buy 2 tickets to Malleswaram and 3 tickets to Yeshwanthpur, the total cost is Rs. 46; but if we buy 3 tickets to Malleswaram and 5 tickets to Yeshwanthpur the total cost is Rs.74. Find the fares from the bus stand to Malleswaram, and to Yeshwanthpur.

501) For which values of p does the pair of equations given below has unique solution?

502) For what values of k will the following pair of linear equations have infinitely many solutions?
$kx + 3y – (k – 3) = 0$
$12x + ky – k = 0$

503) For which values of a and b does the following pair of linear equations have an infinite number of solutions?
$2x + 3y = 7$
$(a – b) x + (a + b) y = 3a + b – 2$

504) For which value of k will the following pair of linear equations have no solution?
$3x + y = 1$
$(2k – 1) x + (k – 1) y = 2k + 1$

505) Form the pair of linear equations in the following problems and find their solutions (if they exist) by any algebraic method :
Places A and B are 100 km apart on a highway. One car starts from A and another from B at the same time. If the cars travel in the same direction at different speeds, they meet in 5 hours. If they travel towards each other, they meet in 1 hour. What are the speeds of the two cars?

506) Solve the pair of equations :
$\frac{2}{x} + \frac{3}{y} = 13$
$\frac{5}{x} - \frac{4}{y} = -2$

507) Solve the following pair of equations by reducing them to a pair of linear equations :
$\frac{5}{x-1} + \frac{1}{y-2} = 2$
$\frac{6}{x-1} - \frac{3}{y-2} = 1$

508) 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 down-stream. Determine the speed of the stream and that of the boat in still water.

509) Solve the following pairs of equations by reducing them to a pair of linear equation
$\frac{1}{2x} + \frac{1}{3y} = 2 \quad , \frac{1}{3x} + \frac{1}{2y} = \frac{13}{6}$

510) Solve the following pairs of equations by reducing them to a pair of linear equation:
$\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2$
$\frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1$

511) Solve the following pairs of equations by reducing them to a pair of linear equation:
$\frac{4}{x} + 3y = 14$
$\frac{3}{x} - 4y = 23$

512) Solve the following pairs of equations by reducing them to a pair of linear equations:
$\frac{5}{x-1} + \frac{1}{y-2} = 2$
$\frac{6}{x-1} - \frac{3}{y-2} = 1$

513) Solve the following pairs of equations by reducing them to a pair of linear equation:
$6x + 3y = 6xy$
$2x + 4y = 5xy$

514) Solve the following pairs of equations by reducing them to a pair of linear equation:
$\frac{10}{x+y} + \frac{2}{x-y} = 4$
$\frac{15}{x+y} - \frac{5}{x-y} = -2$

515) Solve the following pairs of equations by reducing them to a pair of linear equation:
$\frac{1}{3x+y}+\frac{1}{3x-y}=\frac{3}{4}$
$\frac{1}{2(3x+y)}-\frac{1}{2(3x-y)}=\frac{-1}{8}$

516) Formulate the following problems as a pair of equations, and hence find their solutions:
Ritu can row downstream 20 km in 2 hours, and upstream 4 km in 2 hours. Find her speed of rowing in still water and the speed of the current.

517) Formulate the following problems as a pair of equations, and hence find their solutions:
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.

518) Formulate the following problems as a pair of equations, and hence find their solutions:
Roohi travels 300 km to her home partly by train and partly by bus. She takes 4 hours if she travels 60 km by train and the remaining by bus. If she travels 100 km by train and the remaining by bus, she takes 10 minutes longer. Find the speed of the train and the bus separately.

519) Solve the following pair of linear equations
152x – 378y = – 74
–378x + 152y = – 604

520) Find out which pair of linear equations are consistent/inconsistent.
x + 2y = 4 and 3x + 6y = 12

521) Find the value of k for which the following system of equations has no solution
4x+5y=17,kx+15y=33

522) Find the value of k for which the following system of equations has no solution
kx + 2y = 5, 8x + ky = 20

523) Find the value of k for which the following system of equations has no solution
kx + 2y = 5, 8x + ky = 20

524) Find the value of k for which the following system of equations has no solution.
3x + y= 1, (2k - l)x + (k -1)y = (2k + 1)

525) Find the value of k for which the following system of equations has no solution
3x - y- 5 = 0, 6x - 2y + k = 0

526) Find the value of k for which the following system of equations has infinitely many solution.
4x + 7y = 10; (k + 2)x+ 21y =3k

527) Find the value of k for which the following system of equations has infinitely many solution.
x+2y+7=0,2x+ky+14=0

528) Find the value of k for which the following system of equations has infinitely many solutions
2x + (k - 2)y = k; 6x + (2k - 1)y = 2k + 5

529) Find the value of k for which the following system of equations has infinitely many solutions
2x + 3y = 2; (k + 2)x + (2k + 1)y = 2 (k -1)

530) Find the value of k for which the following system of equations has infinitely many solutions
x + (k + l)y = 5, (k + 1)x + 9y = (8k -1)

531) Find the values of p and q for which the following system of equations has infinitely many solutions.
(2p-1)x+3y=5; 3x+(q-1)y=2

532) Find the values of p and q for which the following system of equations has infinitely many solutions
2x+ 3y = 7; (p + q + l)x + (p + 2q + 2)y = 4(p + q) + 1

533) Find the values of p and q for which the following system of equations has infinitely many solutions
2x+3y =7, (p+q)x+(2p-q)y =21

534) Form the pair of linear equation in the following problems and find their solutions graphically.
The cost of 4 pens and 4 pencil boxes is Rs.100. Threetimes the cost of a pen is Rs.15 more than the cost of a pencil box. Find the cost of a pen and a pencil box.

535) Form the pair of linear equation in the following problems and find their solutions graphically.
Two years ago, Salim was thrice as old as his daughter and six years later, he will be four years older than twice her age. Howald are they now

536) Solve the following pair of linear equation by substitution method.
$3x - \frac{y+7}{11} = 8, 2y + \frac{x+11}{7} = 10$

537) Solve the following pair of linear equations by substitution method.
1.1x + 1.5y + 2.3= 0, 0.7x - 02y = 2

538) Solve the following pair of linear equations by substitution method
02 x + 0.3y = 1.3,0.4x + 0.5y = 2.3

539) Solve the following pair of linear equations by substitution method.
$\sqrt{7}x + \sqrt{11}y = 0, \sqrt{3}x - \sqrt{5}y = 0$

540) Solve the following pair of linear equations by substitution method.
7(y+ 3) -2(x+ 2) = 14, 4(y-2)+ 3(x-3) = 2

541) Solve 5x+4y=10 and 3x-2y+16=0 and hence find the value of m for which y=mx+3.

542) Solve the following pair of equation by using elimination method
8x + 5y = 11, x + y = 4

543) Solve the following pair of equation by using elimination method
x - y = 3, 3x - 2y = 10

544) Solve the following pair of equations by using elimination method.
$4x - 3y = 8, 6x - y = \frac{29}{3}$

545) Solve the following pair of equations by using elimination method
11x + 15y + 23 =0, 7x -2y -20 =0

546) Solve the following pair of equations by using elimination method.
3x-5y=4,9x-2y-7=0

547) Solve the following pair of equations by using elimination method.
x -2y =3, 3x -3y =5

548) Solve the following pair of equation by using elimination method :
0.4x + 0.3y= 1.7,0.7x -02y = 0.8

549) Solve the following pair of equations by using elimination method.
$\frac{x}{4} + \frac{y}{3} = -\frac{1}{12}, \frac{x}{2} - \frac{5}{4}y = \frac{7}{4}$

550) Solve the following pair of equations by using elimination method
$\frac{x}{3} + \frac{y}{3} = 14, \frac{5x}{6} - \frac{y}{3} + 7 = 0$

551) Solve the following pair of equations by using elimination method.
$\frac{x}{10} + \frac{y}{5} + 1 = 15, \frac{x}{8} + \frac{y}{6} = 15$

552) Solve the following pair of linear equation by elimination method
ax + by =0,a^2 + b^2y =c^2

553) Solve the following pair of linear equations by elimination method
(a + b)x + (a -b)y =2ab, (a + b)x -(a -b)y = ab

554) Solve the following pair of linear equations by elimination method
$\frac{bx}{a} + | \frac{ay}{b} = a^2 + b^2, x + y = 2ab$

555) Solve the following pair of linear equations by elimination method.
5ax + 6by = 28; 3ax + 4by = 18

556) Solve the following pair of linear equations by elimination method.
$\frac{ax}{b} - \frac{by}{a} = a + b; ax - by = 2ab$

557) Solve the following pair of linear equation by elimination method.
89x + 91y = 449, 91x + 89y = 451

558) Solve the following pair of linear equations by elimination method.
117x+231y=579,231x+117y=465

559) Solve the following pair of linear equation by elimination method
217x+131y =913,131x+217y =827

560) Solve the following pair of linear equations by elimination method
41x -17y = 99, 17x - 41y = 75

561) Solve the following pair of linear equations by elimination method.
23x-29y=98,29x-23y=11

562) Solve the following pair of linear equation by cross-multiplication method.
4x+6y=5,2x+9y=3

563) Solve the following pair of linear equations by cross-multiplication method.
5x + 4y - 4 = 0, x -12y - 20 = 0

564) Solve the following pair of linear equations by cross-multiplication method.
3 x - 5 y + 1 = 0, 2 x + 3y - 12 = 0

565) Solve the following pair of linear equations by cross-multiplication method.
$\frac{x}{7} + \frac{y}{3} = 5, \frac{x}{2} - \frac{y}{9} = 6$

566) Solve the following pair of linear equations by cross-multiplication method.
$\frac{x}{6} + \frac{y}{15} = 4, \frac{x}{3} - \frac{y}{12} = \frac{-19}{4}$

567) Solve the following pair of linear equation by cross-multiplication method.
(a+2b)x+92a-b)y=2
(a-2b)x+(2a+b)y=3

568) Solve the following pair of linear equation by cross-multiplication method.
(a-b)x+(a+b)y=$2a^2$-$2b^2$;
(a+b)(x+y)=4ab

569) Solve the following pair of linear equation by cross-multiplication method.
6(ax+by) =3a-2b;6(bx-ay) =3b -2a

570) Solve the following pair of linear equations by cross-multiplication method.
bx+cy = a+b:
$ax\left(\frac{1}{a-b} - \frac{1}{a+b}\right) + cy\left(\frac{1}{b-a} - \frac{1}{b+a}\right) = \frac{2a}{a+b}$

571) Solve the following pair of equations andverify the solution
$\frac{2}{x} + \frac{3}{y} = 13; \frac{5}{x} - \frac{4}{y} = -2$

572) Reduce the following pair of equations into a pair of linear equations and solve them
$\frac{2}{2x+3y} + \frac{3}{3x-2y} = \frac{17}{15}, \qquad \frac{5}{3x+2y} + \frac{1}{3x-2y} = 2$

573) Determine algebraically, the vertices of the. triangle formed by the lines 3x - y = 3, 2x - 3y = 2 and x + 2y = 8.

574) Determine algebraically, the vertices of the. triangle formed by the line
5x - y = 5, 6x + y = 17 and x + 2y = 1

575) Aman did a 'Mathematics test' in which each correct answer scored 8 marks, and each incorrect answer reduced the score by 4 marks and scored 20 marks. Had 5 marks been awarded for each correct answer and 1 mark been deducted for each incorrect answer, the answer remains the same. How many questions were there in the test?
Tick (✓) the appropriate: If Arnan decided to tell lie to his parents about a poor test result, what is the most likely to be the immediate effect of his decision?
(i) His year end report reveals the lie.
(ii) He is worried, sleepless and full of fear in his mind.
(iii) He does not understand the next unit of his studies.
(iv) His parents learn about the liewhen they have an interview with Aman's teacher.

576) A railway half ticket cost half the full fare but the reservation charges are the same on a half ticket as on a full ticket. One reserved first class ticket from the stations A to B costs Rs.2530. Also, one reserved first class ticket and one reserved first class half ticket from stations A to B costs Rs.3810. Find the full first class fare from stations A to B and also the reservation charges for a ticket.

577) Using graphical method, solve the following pair of equations.
$x + 2y = 8$ and $3x - 2y = 12$

578) The sum of the digits of a 2-digit number is 9. Also, nine times this number is twice the number obtained by reversing the order of the digits. Find the number.

579) 5 yr ago, Amit was thrice as old as Baljeet. 10 yr hence, Amit shalltye twice as old as Baljeet. What are their present ages?

580) In a flight of 2800 km, an aircraft was slowed down due to bad weather. Its average speed is reduced by 100 km/h and by doing so, the time of flight is increased by 30 min. Find the original duration of the flight.

581) The denominator of a fraction is one more than twice the numerator. If the sum of the fraction and its