

CLASS 10 – CBSE | MATHEMATICS

PAIR OF LINEAR EQUATIONS

SECTION -A (Multiple choice questions)

- The pair of equations $y = 0$ and $y = -7$ has
(a) one solution (b) infinitely many solutions (c) two solutions (d) no solution
- The pair of linear equations $2x = 5y + 6$ and $15y = 6x - 18$ represents two lines which are :
(a) intersecting (b) coincident (c) parallel (d) None
- If $ax + by = a^2 - b^2$ & $bx + ay = 0$, then the value of $x + y$ is :
(a) $a^2 - b^2$ (b) $a + b$ (c) $a - b$ (d) $a^2 + b^2$
- One equation of a pair of dependent linear equations is $-5x + 7y = -2$. The second equation can be
(a) $10x + 14y + 4 = 0$ (b) $10x - 14y - 4 = 0$ (c) $-10x + 14y + 4 = 0$ (d) $10x - 14y = -4$
- The value of k for which the system of equations $2x + 3y = 5$ and $4x + ky = 10$ has an infinite number of solutions, is:
(a) 1 (b) 3 (c) 6 (d) 0
- If $31x + 43y = 117$ and $43x + 31y = 105$, then the value of $(x + y)$ is:
(a) 2 (b) 3 (c) 4 (d) 5
- The pair of equations $x + 2y + 5 = 0$ and $-3x - 6y + 1 = 0$ have
(a) a unique solution (b) exactly two solutions (c) infinitely many solutions (d) no solution
- Aruna has only Re 1 and Rs 2 coins with her. If the total number of coins that she has is 50 and the amount of money with her is Rs 75, then the number of Re 1 and Rs 2 coins are, respectively
(a) 35 and 15 (b) 35 and 20 (c) 15 and 35 (d) 25 and 25
- If the lines given by $3x + 2ky = 2$ and $2x + 5y + 1 = 0$ are parallel, then the value of k is
(a) $-\frac{5}{4}$ (b) $\frac{2}{5}$ (c) $\frac{15}{4}$ (d) $\frac{3}{2}$
- 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) $ab = 6$

SECTION – B

11. Solve for x & y : $49x - 57y = 172$; $57x - 49y = 252$
12. For which values of a and b , will the pair of linear equations have infinitely many solutions?
: $x + 2y = 1$ & $(a - b)x + (a + b)y = a + b - 2$
13. In a competitive examination, one mark is awarded for each correct answer while $\frac{1}{2}$ mark is deducted for every wrong answer. Jayanti answered 120 questions and got 90 marks. How many questions did she answer correctly?
14. For what values of m and n do the given equation has infinitely many solutions?
 $mx + 4y - 6 = 0$, $ny - 12x + 12 = 0$.
15. A number consists of two digits. When the number is divided by the sum of its digits, the quotient is 7. If 27 is subtracted from the number, the digits interchange their places. Find the number.
16. Places A and B are 80 km apart from each other on a highway. A car starts from A and another from B at the same time. If they move in same dir. they meet in 8 hrs. and if they move in opposite dir. they meet in 1 hr 20 minutes. Find speeds of the cars.
17. Draw the graphs 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.
18. Draw the graph of the equations $5x - y = 5$ & $3x - y = 3$. Determine the co-ordinates of the vertices of the triangle formed by these lines and y - axis .
19. 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.
20. 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 Re 1 per banana, and got a total of Rs 400. If he had sold the first lot at the rate of Re 1 per banana, and the second lot at the rate of Rs 4 for 5 bananas, his total collection would have been Rs 460. Find the total number of bananas he had.
21. 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, find their monthly incomes.
22. The larger of two supplementary angles exceeds the smaller by 18 degrees. Find them.
23. A shopkeeper sells a saree at 8% profit and a sweater at 10% discount, thereby, getting a sum Rs 1008. If she had sold the saree at 10% profit and the sweater at 8% discount, she would have got Rs 1028. Find the cost price of the saree and the list price (price before discount) of the sweater.
24. 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?

25. A lending library has a 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.
26. Jamila sold a table and a chair for Rs 1050, thereby making a profit of 10% on the table and 25% on the chair. If she had taken a profit of 25% on the table and 10% on the chair she would have got Rs 1065. Find the cost price of each.
27. A railway half ticket costs 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 station A to B costs Rs 2530. Also, one reserved first class ticket and one reserved first class half ticket from A to B costs Rs 3810. Find the full first class fare from station A to B, and also the reservation charges for a ticket.
28. 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 have received Rs 20 more as annual interest. How much money did she invest in each scheme?
29. At a certain time in a zoo, the number of heads and the number of legs of tiger and peacocks were counted and it was found that there were 47 heads and 152 legs. Find the number of tigers and peacocks in the zoo: Why it is necessary to conserve these animals?
30. A train covered a certain distance at a uniform speed. If the train would have been 6 km/h faster, it would have taken 4 hours less than the scheduled time. And, if the train were slower by 6 km/hr ; it would have taken 6 hours more than the scheduled time. Find the length of the journey.
31. In a two digit number, the digit in the unit place is twice of the digit in the tenth place. If the digits are reversed, the new number is 27 more than the given number. Find the number.
32. 90% and 97% pure acid solutions are mixed to obtain 21 litres of 95% pure acid solution. Find the quantity of each type of acid to be mixed to form the mixture.

PAIR OF LINEAR EQUATIONS - ANSWER KEY

SECTION - A (Multiple Choice Questions)

1. (d)
2. (b)
3. (c)
4. (b)
5. (c)
6. (b)
7. (d)
8. (d)
9. (c)
10. (d)

SECTION – B(Answers)

11. $x = 7, y = 3$
12. $a = 3, b = 1$
13. 100
14. $m = 6, n = -8$
15. 63
16. 35 km/h and 25 km/h
17. Vertices: $(-2,0), (1,0), (2,4)$; Area = 6 sq units
18. Vertices: $(1,0), (0,-5), (0,-3)$
19. Father's age = 40 years
20. 500
21. Incomes: Rs 18,000 and Rs 14,000
22. Angles: 99° and 81°
23. CP of saree = Rs 600; List price of sweater = Rs 400
24. 42 and 24
25. Fixed charge = Rs 15; Extra charge = Rs 3/day
26. CP of table = Rs 500; CP of chair = Rs 400
27. Full fare = Rs 2500; Reservation charge = Rs 30
28. Investment at 8% = Rs 12,000; at 9% = Rs 10,000
29. Tigers = 29, Peacocks = 18
30. 720 km
31. 36
32. 90% solution = 6 L; 97% solution = 15 L