

18/04/20

X

17. Solve for x and y : $\frac{4}{x} + 5y = 7$ and $\frac{3}{x} + 4y = 5$
and find the value of ' n ' for which $nx = 4 - 2y$.
[ICCE 11]
18. Solve the following pair of equations :
 $\frac{10}{x+y} + \frac{2}{x-y} = 4$; $\frac{15}{x+y} - \frac{2}{x-y} = -2$
[CBSE D 09]
19. Solve for u and v by changing into linear equations $2(3u - v) = 5uv$; $2(u + 3v) = 5uv$.
[ICCE 10]

Word problems based on articles and costs

20. The cost of 4 pens and 4 pencil boxes is ₹ 100. Three times the cost of a pen is ₹ 15 more than the cost of a pencil box. Form the pair of linear equations for this situation. Find the cost of a pen and a pencil box.
[Exemplar Problem]
21. Vijay had some bananas and he divided them into two lots A and B. He sold the first lot at the rate of ₹ 2 for 3 bananas and the second lot at the rate of ₹ 1 per banana and got a total of ₹ 400. If he had sold the first lot at the rate of ₹ 1 per banana and the second lot at the rate of ₹ 4 for 5 bananas, his total collection would have been ₹ 460. Find the total number of bananas he had.
[Exemplar Problem]
22. The auto fare for the first kilometre is fixed and is different from the rate per km for the remaining distance. A man pays ₹ 57 for the distance of 16 km and ₹ 92 for a distance of 26 km. Find the auto fare for the first kilometre and for each successive kilometre.
[CCE 10]
23. There are two class rooms A and B. If 10 students are sent from A to B, the number of students in each room becomes the same. 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 each class room.
24. A and B have certain number of oranges. A says to B, "If you give me 10 of yours oranges, I will have twice the number of oranges left with you". B replies, "If you give me 10 of your oranges I will have the same number of oranges as left with you". Find the number of oranges with A and B separately. [NCERT]
25. One says, "Give me hundred rupees friend ! I shall then become twice as rich as your". The other replies, "If you give me ten rupees, 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*)
[NCERT]
26. The students of a class are made to stand in rows. If 3 students are extra in a 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.
[NCERT ; CCE III]
27. In a bag containing only white and black balls, half the number of white balls is equal to one-third of the number of black balls. Also, two times the total number of balls exceed three times the number of black balls, by 4. Find the number of balls of each type in the bag.
[NMOC 1998]
28. A wizard having power of magical medicines seeing a cock fight going on, spoke privately to both the owners of the cocks. To one he said, 'if your bird wins, then you give me your stake-money, but if you do not win, I shall give you two-thirds of that. Going to the other, he promised in the same way to give three-fourths. From both of them his gain would be only 12 gold pieces. Tell me O Ornament of the first rate mathematicians, the stake-money of each of the cock-owners.'
(Example from *Mahavira*). [NCERT]
29. A shopkeeper gives books on rent for reading. She takes a fixed charge for the first two days and an additional charge for each day thereafter. Latika paid ₹ 22 for a book kept for six days, while Anand paid ₹ 16 for the book kept for four days. Find the fixed charges and the charge for each extra day.
[Exemplar Problem]
30. 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 ₹2530. Also, one reserved first class ticket and one reserved first class half ticket from A to B cost ₹3810. Find the full first class fair from station A to B and also the reservation charges for a ticket. [Exemplar Problem]

For what values of k or p , will the following pairs of linear equations have unique solutions (17-19)?

17. $x - ky = 2$; $3x + 2y = -5$ [CCE 10]

18. $4x + py + 8 = 0$; $2x + 2y + 2 = 0$ [CCE 10]

19. $2x + ky = 1$; $3x - 5y = 7$.

For what values of k , will the following systems of linear equations have infinitely many solutions (20-21)?

20. $10x + 5y - (k - 5) = 0$; $20x + 10y - k = 0$ [CBSE D 08]

21. $2x + 3y = 4$; $(k + 2)x + 6y = 3k + 2$ [CCE 10]

For what values of k or p , will the following systems of linear equations have no solution (22-23)?

22. $3x + y = 1$; $(2k - 1)x + (k - 1)y = 2k + 1$ [CCE 10]

23. $3x - y - 5 = 0$; $6x - 2y - k = 0$. [CBSE D 10]

Find the values of a and b for which the following systems of linear equations have an infinite number of solutions (24-26).

24. $2x - (a - 4)y = 2b + 1$; $4x - (a - 1)y = 5b - 1$ [CCE 10]

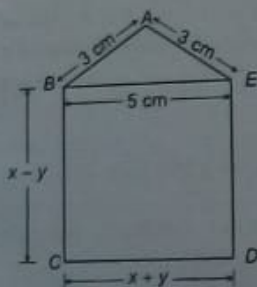
25. $(2a - 1)x + 3y - 5 = 0$; $3x + (b - 1)y - 2 = 0$ [CCE 10]

26. $(a + b)x - 2by = 5a + 2b + 1$; $3x - y = 14$ [CCE 10]

S A Q II

[3 marks each]

1. In the figure given below, ABCDE is a pentagon with $BE \parallel CD$ and $BC \parallel DE$. BC is perpendicular to CD. If the perimeter of ABCDE is 21 cm, find the values of x and y . [CCE 11]



Solve the following pair of equations for x and y (2-10):

2. $99x + 101y = 1499$; $101x + 99y = 1501$ [CCE 11]

3. $4x + \frac{y}{3} = \frac{8}{3}$; $\frac{x}{2} + \frac{3y}{4} = \frac{5}{2}$ [CCE 10]

4. $\frac{4}{x} + 3y = 8$; $\frac{6}{x} - 4y = -5$ [CCE 10]

5. $\frac{5}{x} + \frac{1}{y} = 2$; $\frac{6}{x} - \frac{3}{y} = 1$ $x \neq 0, y \neq 0$

[CBSE Sample Paper 2008]

6. $\frac{3}{x} + \frac{8}{y} = -1$; $\frac{1}{x} - \frac{2}{y} = 2$ $x, y \neq 0$.

[CBSE Sample Paper 2008]

7. $x - y = 0.9$ and $\frac{11}{2(x+y)} = 1$

[CBSE Sample Paper 2008]

8. $\frac{x}{a} + \frac{y}{b} = 2$; $ax - by = a^2 - b^2$. [CCE 10]

9. $\frac{b}{a}x + \frac{a}{b}y = a^2 + b^2$; $x + y = 2ab$. [CBSE OD 08]

10. $\frac{ax}{b} - \frac{by}{a} = a + b$, $ax - by = 2ab$.

[HOTS: CBSE OD 08]

Solve the following pairs of linear equations by any method (11-15):

11. $px + qy = p - q$; $qx - py = p + q$

12. $ax + by = c$; $bx + ay = 1 + c$

13. $\frac{x}{a} - \frac{y}{b} = 0$; $ax + by = a^2 + b^2$

14. $(a - b)x + (a + b)y = a^2 - 2ab - b^2$;
 $(a + b)(x + y) = a^2 + b^2$

[CBSE OD 08, CCE 10]

15. $152x - 378y = -74$;
 $-378x + 152y = -604$.

16. Solve for x and y :

$4x + \frac{6}{y} = 15$, $6x - \frac{8}{y} = 14$

and hence find p if $y = (px - 2)$

18/09/20

Summative Assessment

V S A Q

[1 mark each]

- Find the number of the following pair of linear equations : $x + 2y - 8 = 0$; $2x + 4y = 16$.
[CBSE OD 09]
- For what value of 'a' does the following pair of linear equations have infinitely many solutions?
 $4x - 3y - (a - 2) = 0$; $8x - 6y - a = 0$
[CBSE D 09C]
- Find the value of k so that the system of equations has no solution.
 $3x - y - 5 = 0$; $6x - 2y - k = 0$ [CBSE D 08]
- Is $x = 2, y = 3$ a solution of the linear equation $2x + 3y - 13 = 0$? [CBSE OD 08]
- Is $x = 3, y = 4$ a solution of the linear equation $4x + 3y - 30 = 0$? [CBSE D 08]
- For what value of k, will the following pair of linear equations have infinitely many solutions?
 $2x + 3y - 13 = 0$; $6x - ky - 39 = 0$
[CBSE D 10C]

S A Q I

[2 marks each]

Without drawing the graph, find out whether the lines representing the following pair of linear equations intersect at a point, are parallel or coincident (1 - 4) :

- $-x + 2y + 2 = 0$; $\frac{1}{2}x - \frac{1}{4}y - 1 = 0$
- $4x + 3y - 1 = 5$; $12x + 9y = 15$
- $x + 2y - 3 = 0$; $6y + 3x - 9 = 0$
- $6x - 3y + 10 = 0$; $2x - y + 9 = 0$

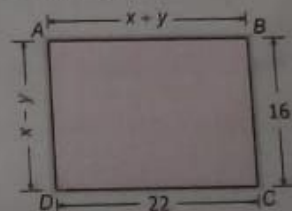
[CBSE Sample Paper 08]

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 following pairs of equations intersect at a point, are parallel or are coincident (5 - 8) :

- $9x - 10y = 21$; $\frac{3x}{2} - \frac{5y}{3} = \frac{7}{2}$ [CBSE D 09]
- $18x - 7y = 24$; $\frac{9x}{5} - \frac{7y}{10} = \frac{9}{10}$ [CBSE D 09]
- $5x + 3y - 6 = 0$; $\frac{9x}{5} + 3y = 6$ [CBSE D 09]
- $x + y = 14$; $x - y = 4$ [CBSE D 09]
- Is the system of linear equations $2x + 3y - 9 = 0$ and $4x + 6y - 18 = 0$ consistent? Justify your answer. [CCE 11]

Solve for x and y (10 - 14) :

- $3x + 4y = 10$ and $2x - 2y = 2$ [CCE 10]
- $47x + 31y = 63$; $31x + 47y = 15$ [CCE 10]
- $148x + 231y = 527$; $231x + 148y = 610$ [CCE 10]
- $4x + \frac{6}{y} = 15$; $3x - \frac{4}{y} = 7$ [CCE 10]
- $\frac{4}{x} + 5y = 7$; $\frac{3}{x} + 4y = 5$ [CCE 11]
- In the figure, ABCD is a rectangle. Find the values of x and y. [NCT 10]



- In the figure below, ABCD is a parallelogram. Find the values of x and y. [CCE 10]

