

Board – CBSE

Class – 10th

Topic – Linear Equation in two variables

1. A part 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 13000 as hostel charges whereas, Mansi who takes food for 25 days pays ₹ 3500 as hostel charges. Find the fixed charges and the cost of food per day.

Ans. fixed:- 1000 & charge per day is 100

2. Ansve using cross multiplication method:

$$x+y=1$$

$$2x - 3y = 11$$

Ans. $x = \frac{32}{5}$ & $y = \frac{3}{5}$

3. Ansve for x and y:

$$6(ax + by) = 3a + 2b$$

$$6(bx - ay) = 3b - 2a$$

Ans. $x = \frac{1}{2}$; $y = \frac{1}{3}$

4. Determine the value of m and n so that the following pair of linear equations have infinite number of Solutions.

$$(2m - 1)x + 3y = 5;$$

$$3x + (n - 1)y = 2$$

Ans. $m = \frac{17}{4}$; $n = \frac{11}{5}$

5. 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 direction they meet in 8 hrs and if they move in opposite directions they meet in 1 hr 20 minutes. Find speeds of the cars.

Ans. A = 35km/hr & B = 25km/hr

6. Find the value of k for which the following pair of linear equations have infinitely many Solutions :
 $2x + 3y = 7$; $(k - 1)x + (k + 2)y = 3k$

Ans. 7

7. Find the values of a and b for which the following pair of linear equations has infinitely many Solutions: $2x + 3y = 7$; $\frac{3}{4}(a + b)x + (2a - b)y = 21$ Ans:- $a = 5$; $b = 1$

Ans. $a = 5$; $b = 1$

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

Ans. $\frac{1}{3}$

9. Write whether the following pair of linear equations is consistent or not

$$x + y = 14,$$

$$x - y = 4$$

Ans. unique Solutions.

10. Ansve for x and y :

$$\frac{ax}{b} - \frac{by}{a} = a + b; ax - by = 2ab$$

Ans. $x = b$; $y = -a$

11. Without drawing the graph, find out the lines representing the following pair of linear equations intersect at a point, are parallel or coincident.

$$18x - 7y = 24; \frac{9}{5}x - \frac{7}{10}y = \frac{9}{10}$$

Ans. lines are parallel

12. Ansve the following system of linear equations graphically.

$$3x + y - 12 = 0;$$

$$x - 3y + 6 = 0$$

Shade the region bounded by the lines and $ii >$ axis. Also, find the area of shaded region.

Ans. 15 sq units

13. The owner of a taxi company decides to run all the taxi on CNG fuels instead of petrol/ diesel. The taxi charges in city comprises of fixed charges together with the charge for the distance covered.

For a journey of 13 km, the charge paid is ₹ 129 and for journey of 22 km, the charge paid is 210. What will a person have to pay for travelling a distance of 32 km?

Ans:- 300

14. 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?

Ans. tigers:-29; peacock:- 18

15. Draw the graphs of the following equations: $x + y = 5$; $x - y = 5$

(i) Find the Solution of the equations from the graph.

(ii) Shade the triangular region formed by the lines and they-axis.

Ans: $x = 5$; $y = 0$

16. 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

Ans. 63

17. Ansvr the following pair of equations

$$\frac{10}{x+y} + \frac{2}{x-y} = 4; \frac{15}{x+y} - \frac{5}{x-y} = -2$$

Ans. $x = 3$