Class: X   Subject: Mathematics   ASSIGNMENT 1:   April 2010   Chapter: PAIR OF LINEAR EQUATIONS IN 2 VARIABLES

1. Solve graphically the following pairs of linear equations:

   (i) $2x - y = 4$

   $3y - x = 3$ Also, find the coordinates of the points where these lines intersect the 2 axes.

   (ii) $2x + 3y = 12$

   $x - y = 1$ Shade the region (area) between the 2 lines and x axis.

2. Find graphically the coordinates of the vertices of a triangle whose sides have the equations:

   (i) $y = x$, $y = 0$ and $2x + 3y = 30$ (iii) $y = x$, $3y = x$ and $x + y = 8$

   (ii) $2y - x = 8$, $5y - x = 14$ and $y - 2x = 1$

3. Plot a graph for each of the following pairs of equations and shade the region bounded by the 2 lines and the x-axis.

   (i) $x - y + 1 = 0$ (ii) $4x - 3y + 4 = 0$ (iii) $2x + y = 6$ (iv) $x + y = 5$

   $2x + y - 10 = 0$ $4x + 3y - 20 = 0$ $2x - y + 2 = 0$ $2x - y + 2 = 0$

4. Solve the following pair of linear equations graphically: $3x + y - 11 = 0$; $x - y - 1 = 0$

   Shade the region bound by these lines and the axis of y.

5. Solve each of the following pairs of linear equations graphically:

   (i) $5x - 6y + 30 = 0$ (ii) $3x - 4y + 6 = 0$

   $5x + 4y - 20 = 0$ $3x + y - 9 = 0$

6. Solve the following pairs of equations:

   (i) $5m - 5n = 12$; $2m + 9n = 20$ (vi) $39x + 41y = 76$; $41x + 39y = 84$

   (ii) $\dfrac{4}{x} + 5y = 7$ (vii) $\dfrac{x}{a} + \dfrac{y}{b} = a + b$

   $\dfrac{3}{x} + 4y = 5$ $\dfrac{x}{a^2} + \dfrac{y}{b^2} = 2$

   (iii) $x - y = 0.9$ (viii) $a(x + y) + b(x - y) = a^2 + b^2 - ab$

   $\dfrac{11}{x + y} = 2$ $a(x + y) - b(x - y) = a^2 + b^2 + ab$

   (iv) $8x - 3y = 5xy$; $6x - 5y = -2xy$ (ix) $\dfrac{x}{a} - \dfrac{y}{b} = a - b$; $\dfrac{x}{a^2} - \dfrac{y}{b^2} = 0$ $(a \neq b)$

   (v) $99x + 101y = 499$; $101x + 99y = 501$

7. If $2x + y = 35$ and $3x + 4y = 65$, find the value of $\dfrac{x}{y}$

8. Find the value of c for which the pair of equations : $2x + cy = 1$; $3x + 5y = 7$ will have

   (i) a unique solution; (ii) no solution. Is there a value of c for which the system has infinite number of solutions?

9. Find the value of k for which the following pairs of equations have unique solutions:

   (i) $7x - 2y = 3$; $22x - ky = 8$ (ii) $2x + ky = 1$; $3x - 5y = 7$ (iii) $2x + 3y - 5 = 0$; $kx - 6y - 8 = 0$

10. For what value(s) of k will the pair of linear equations: $kx + 3y = k - 3$; $12x + ky = k$ have a unique solution?

11. Last year 1 kg of tea and 3 kg of sugar together cost Rs 96. This year, the rates of tea increased by 15% and that of sugar by 10%. So the amount of tea and sugar now cost Rs. 108.60. Find the per kg rates of tea & sugar last year.

12. A boat goes 24 km upstream & 28 km downstream in 6 hours. In 6.5 hours, it can go 30 km upstream & 21 km downstream. Find the speed of stream and the speed of boat in still water.

13. A person invests some amount @ 12% S.I. and some other amount @ 10% S.I..He receives an annual interest of Rs.1300. But if he interchanges the amounts invested, he shall receive Rs.40 more as interest. How much has he invested at each rate?

14. If 1 is added to both the numerator and the denominator of a fraction, it becomes equal to $\frac{7}{8}$. If, however, 1 is subtracted from both the numerator & denominator of the same fraction, it becomes equal to $\frac{6}{7}$. Find the fraction.

15. The age of a father 8 yrs back was 5 times that of his son. After 8 yrs, his age will be 8 yrs more than double the age of his son. Find their present ages.

16. There are some lotus flowers in a lake. If 1 butterfly sits on each flower, one butterfly is left behind. If 2 butterflies sit on each flower, 1 flower is left behind. What is the no. of flowers? What is the no. of butterflies?