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

 2 VARIABLES1. Solve graphically the following pairs of linear equations:
(i) $2 x-y=4$
$3 y-x=3 \quad$ Also, find the coordinates of the points where these lines intersect the 2 axes.
(ii) $2 x+3 y=12$
$x-y=1 \quad$ 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 $2 x+3 y=30$
(iii) $y=x, 3 y=x$ and $x+y=8$
(ii) $2 \mathrm{y}-\mathrm{x}=8,5 \mathrm{y}-\mathrm{x}=14$ and $\mathrm{y}-2 \mathrm{x}=1$
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) $4 x-3 y+4=0$
(iii) $2 \mathrm{x}+\mathrm{y}=6$
(iv) $\mathrm{x}+\mathrm{y}=5$
$2 x+y-10=0$
$4 x+3 y-20=0$
$2 x-y+2=0$
$2 x-y+2=0$
4. Solve the following pair of linear equations graphically: $3 x+y-11=0 ; x-y-1=0$

Shade the region bound by these lines and the axis of $y$.
5. Solve each of the following pairs of linear equations graphically:
(i) $\begin{aligned} 5 x-6 y+30 & =0 \\ 5 x+4 y-20 & =0\end{aligned}$
(ii) $3 x-4 y+6=0$
$3 x+y-9=0$
6. Solve the following pairs of equations:
(i) $5 \mathrm{~m}-5 \mathrm{n}=12 ; 2 \mathrm{~m}+9 \mathrm{n}=20$
(ii) $4 / x+5 y=7$

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3 / x+4 y=5
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(iii) $\mathrm{x}-\mathrm{y}=0.9$

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11 / x+y=2
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(vi) $39 x+41 y=76 ; 41 x+39 y=84$
(vii) $x / a+y / b=\mathrm{a}+\mathrm{b}$
$x / a^{2}+y / b^{2}=2$
(viii) $a(x+y)+b(x-y)=a^{2}+b^{2}-a b$

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a(x+y)-b(x-y)=a^{2}+b^{2}+a b
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(iv) $8 x-3 y=5 x y ; 6 x-5 y=-2 x y$
(ix) $\frac{x}{a}-\frac{y}{b}=\mathrm{a}-\mathrm{b} ; \frac{x}{a^{2}}-\frac{y}{b^{2}}=0(\mathrm{a} \neq \mathrm{b})$
(v) $99 x+101 y=499 ; 101 x+99 y=501$
7. If $2 x+y=35$ and $3 x+4 y=65$, find the value of $\frac{x}{y}$
8. Find the value of c for which the pair of equations : $2 \mathrm{x}+\mathrm{cy}=1 ; 3 \mathrm{x}+5 \mathrm{y}=7$ 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) $7 \mathrm{x}-2 \mathrm{y}=3 ; 22 \mathrm{x}-\mathrm{ky}=8$
(ii) $2 \mathrm{x}+\mathrm{ky}=1 ; 3 \mathrm{x}-5 \mathrm{y}=7$
(iii) $2 \mathrm{x}+3 \mathrm{y}-5=0$; $\mathrm{kx}-6 \mathrm{y}-8=$ 0
10. For what value(s) of $k$ will the pair of linear equations: $k x+3 y=k-3 ; 12 x+k y=k$ 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?

