LESSON NO. 6: EQUATION OF A LINE II

2005			
2 (b)	<i>L</i> is the line $3x - 4$ <i>L</i> intersects the <i>x</i> -(i) Find the co-or	4y+12=0. axis at <i>a</i> and the <i>y</i> -axis at <i>b</i> . ordinates of <i>a</i> and the co-ordinate	es of <i>b</i> .
	(ii) K is the line that passes through b and is perpendicular to L.Show L and K on a co-ordinate diagram.		
	(iii) Find the equation of <i>K</i> .		
	(iv) The point $(2t, 3t)$ is on the line K. Find the value of t.		
(c)	The lines $2x - y + 3 = 0$ and $4x - y + k = 0$ intersect at a point. (i) Find, in terms of k, the co-ordinates of the point of intersection of the lines.		
a	(ii) For what value	ue of k is the point of intersectio	n on the y-axis?
Solution 2 (b) (i)	ON)	To find the <i>x</i> -intercept: Put $y = 0$. To find the <i>y</i> -intercept: Put $x = 0$.	
$x-interod\Rightarrow 3x$	cept: Put $y = 0$ -4(0)+12 = 0 \Rightarrow 3x -4 \Rightarrow $a(-4, 0)$ is the	r=-12	
v-inter	cent : Put $x = 0$		
\Rightarrow 3(0)	$-4y+12=0 \Longrightarrow 12$	y = 4y	
$\therefore y = 3$	$B \Rightarrow b(0, 3)$ is the y-in	ntercept.	
2 (b) (ii	i) <i>K</i> <i>a</i> (-4, 0)	<i>y</i> <i>L</i> <i>b</i> (0, 3)	
			Cont





2002 2 (a) Find the co-ordinates of the point of intersection of the line 4x + y = 5

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and 3x - 2y = 12.
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SOLUTION

INTERSECTING LINES To find out where two lines intersect, solve their equations **simultaneously**.

 $4x + y = 5....(1)(\times 2)$ 3x - 2y = 12...(2)

$$8x+2y = 10$$

$$3x-2y = 12$$

$$11x = 22 \Longrightarrow x = 2$$

Substitute this value of x into Eqn. (1).

 $\therefore 4(2) + y = 5 \Longrightarrow 8 + y = 5$

 $\therefore y = -3$

Point of intersection: (2, -3)

1998

- 2 (c) The equation of the line L is x 2y + 10 = 0.
 - *L* contains the point t(2, 6).
 - (i) Find the equation of the line N which passes through t and which is perpendicular to L.
 - (ii) The line *N* cuts the *x*-axis at *r* and it cuts the *y*-axis at *s*. Calculate the ratio

$$\frac{|rt|}{|ts|}$$
.

Give your answer in the form $\frac{p}{q}$, where p and q are whole numbers.

SOLUTION



