

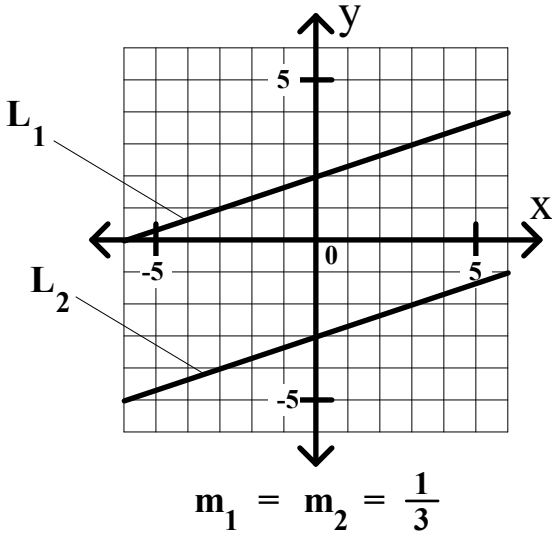
# Algebra II Notes #3 Unit 2 page 1

## Parallel Lines

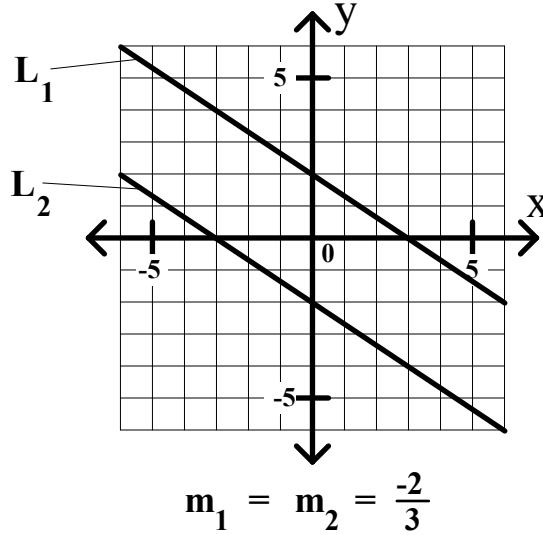
Given:  $L_1$  and  $L_2$  are two oblique lines with slopes,  $m_1$  and  $m_2$ , respectively.  
 $L_1$  is parallel to  $L_2$  if and only if  $m_1 = m_2$ .

Any two horizontal lines are parallel. Any two vertical lines are parallel.

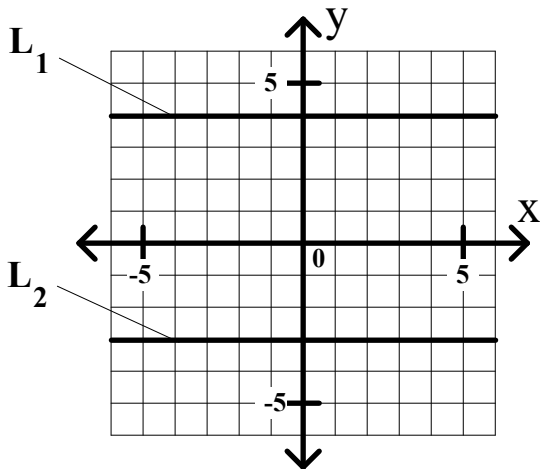
Example 1: Parallel Lines



Example 2: Parallel Lines

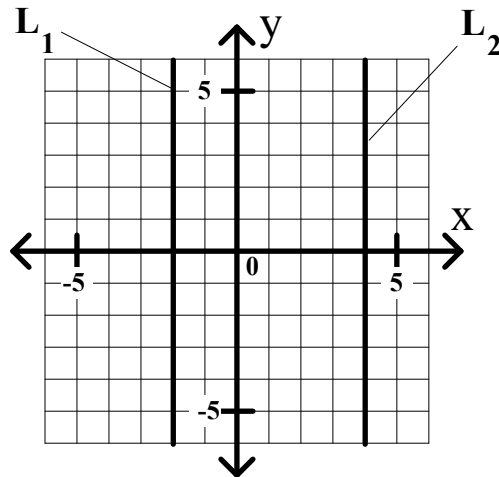


Example 3: Parallel Lines



Horizontal lines are parallel.

Example 4: Parallel Lines



Vertical lines are parallel.

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### Perpendicular Lines

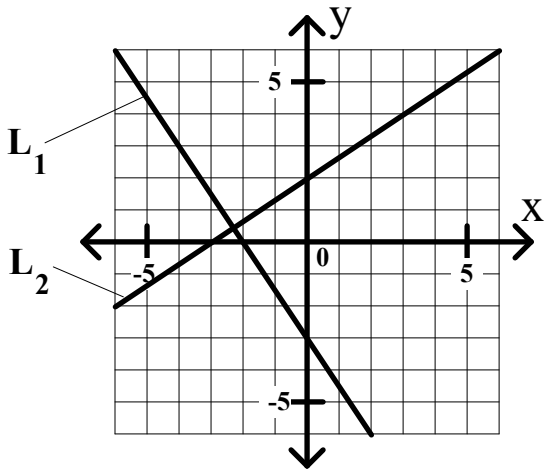
Given:  $L_1$  and  $L_2$  are two oblique lines with slopes,  $m_1$  and  $m_2$ , respectively.

$L_1$  is perpendicular to  $L_2$  if and only if  $(m_1)(m_2) = -1$ .

Note:  $m_1$  is the 'negative reciprocal' of  $m_2$ .

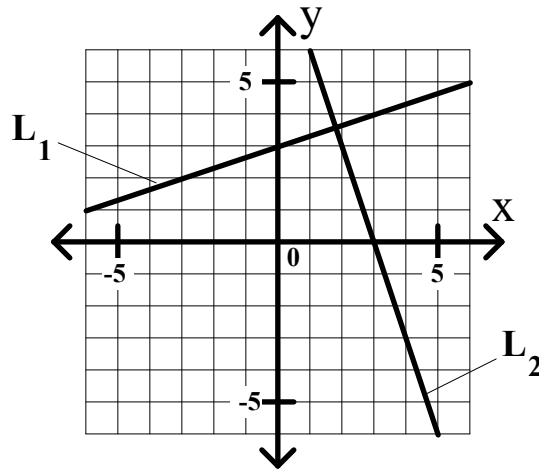
If  $L_1$  is a horizontal line and  $L_2$  is a vertical line, then  $L_1$  is perpendicular to  $L_2$ .

#### Example 1: Perpendicular Lines



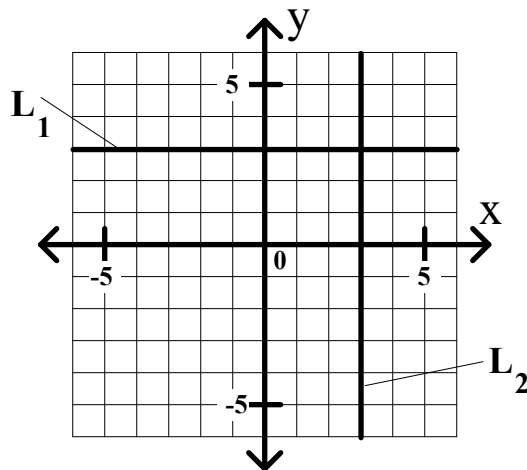
$$m_1 = \frac{-3}{2} \quad m_2 = \frac{2}{3}$$

#### Example 2: Perpendicular Lines



$$m_1 = \frac{1}{3} \quad m_2 = -3$$

#### Example 3: Perpendicular Lines



Any horizontal line is perpendicular to any vertical line.