Slopes of Lines

C.O.:____
____

L.O.:____
____

Slopes:

The **Slope** of a line is the ratio of *change in* __ (vertical change, or ______) to the *change in* __ (horizontal change, or ____).

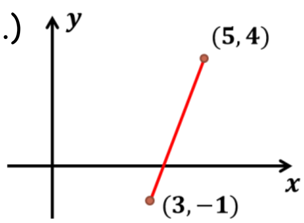
Symbolically, the slope is denoted by an ____.

Algebraically, the slope can be defined using the following equation, with points (x_1, y_1) and (x_2, y_2):

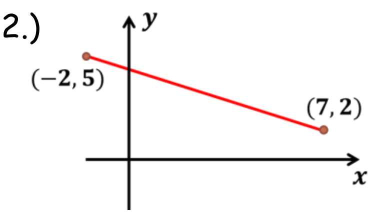
$$m = \frac{\textbf{change in}}{\textbf{change in}} = \underline{\hspace{3cm}} = \underline{\hspace{4cm}}$$

Example with Slopes: Calculate the slope of each Line.

1.)



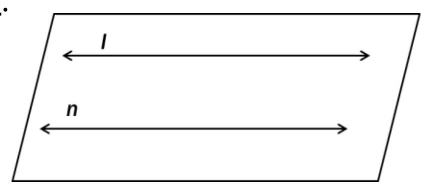
2.)



Slopes of Parallel Lines:

As a reminder, Parallel Lines (ll lines) are coplanar lines that ______________________.

Notation:

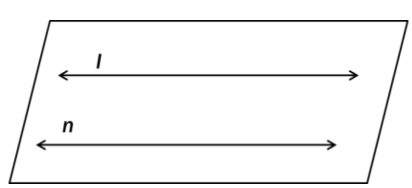


Key Question: From the image given, and from what you know about slopes, can you determine the relationship between the slopes of parallel lines? Discuss this question in your groups

Theorem 13-3: Two nonvertical lines are parallel if and only if ________________ ________________.

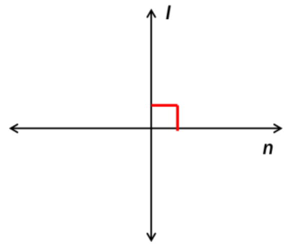
Given:

Then:



<u>Slopes Perpendicular Lines:</u> As a reminder, **Perpendicular Lines ($\perp$ lines)** are lines that ___________________ _____________________________.

Notation:



<u>Key Question:</u> From the image given, and from what you know about slopes, can you determine the relationship between the slopes of perpendicular lines? Discuss this question in your groups

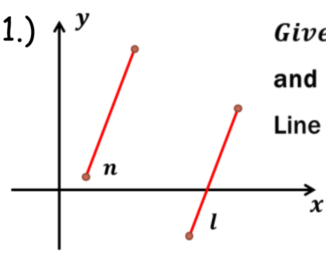
<u>Theorem 13-4:</u> Two nonvertical lines are perpendicular if and only if ___________ _____________________________.

Given:

Then:

<u>Practice</u>: Calculate the slope of each Line.

1.)

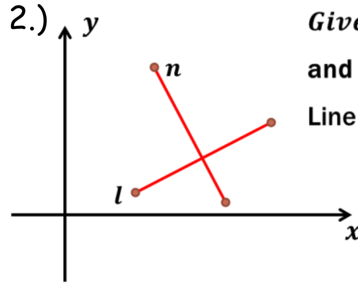


$Given: l \parallel n$

and

Line l has points $(4, -2)$ and $(5, 3)$

2.)



$Given: l \perp n$

and

Line l has points $(2, 1)$ and $(6, 3)$

<u>Group Practice:</u> Complete the table of slope values

Starting Points	Slope	Parallel Slope	Perpendicular Slope
$(1, 2)$ $and\ (-2, -5)$			
$(-4, 3)$ $and\ (6, -6)$			

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