# MPM 1DI - Unit 5
# Linear Relations

## Day 1 - Equation of a Line
## Slope - Y intercept Form

**Example 1**: Determine the slope and y-intercept of each line. Then determine the equation of each linear relation.

L1: m =

b =

y =

L2: m =

b =

y =

L3: m =

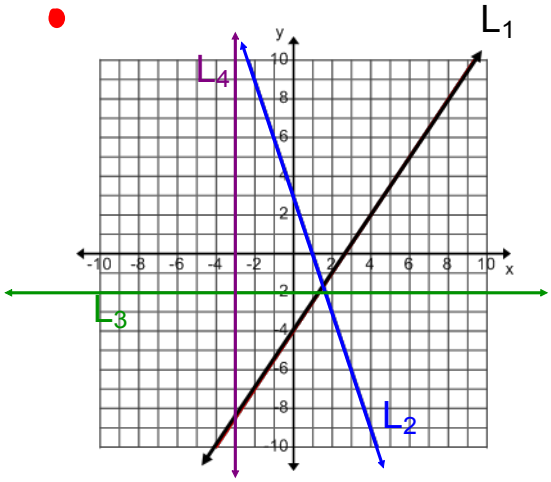
b =

y =

L4: m =

b =

y =



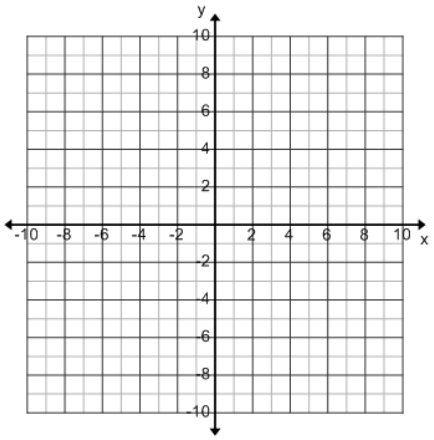

Remember: the equation of a line can be written in slope y-intercept form : $y = mx + b$ , where m is the slope and b is the y-intercept.

**Example 2**: Given the slope and y-intercept, write an equation of the linear relation and then graph the line.

To graph a line given slope and y-intercept:

Step 1: Plot the y-intercept (0,b)

Step 2: Use the slope value to determine rise and run from the y-intercept value.




a) $m = \frac{2}{5},\ b = -5$

b. m = -2, b = 1

c) $m = -\frac{1}{3}, b = 0$

d. m = 5, b = 2

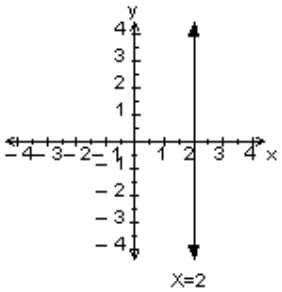
**Special Cases:**

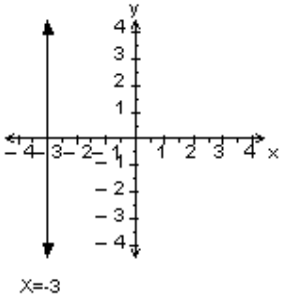
A. Horizontal Lines

- The slope of a horizontal line is **zero**.
- Putting that slope into the equation , we get , y = 0x + b
  ∴ y = b is the equation of a horizontal line.

B. Vertical Lines

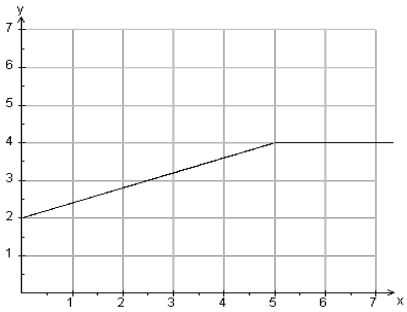
- The slope of a vertical line does not exist.
  We call this **undefined**.
  ∴we cannot use slope y-intercept form for vertical lines.
- Vertical lines are written in the form of , x = a,
  where a is the x-intercept.



**Example 3:** Interpreting graphs

The distance time graph of a person walking in front of a motion sensor is shown below.




a. How far from the sensor did the person start walking?

b. How fast did the person walk?

c. Did the person walk away or towards the sensor?

d. What is happening after 5 seconds?

# Assigned Work

Pg 304-306 # 1, 2, 3, 4, 6(ace), 7(ab), 8, 9, 12