Review of prerequisite skills –Linear Relations

Jan. 29, 2020

What is a **linear relation**?

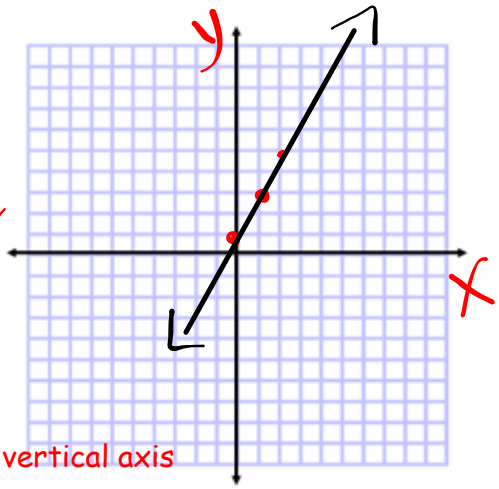
$y = mx + b$

A linear relation can be represented by an equation and/or a graphic.

Ex.:

$y = 2x + 1$

slope $= \frac{2}{1} = \frac{\text{rise}}{\text{run}}$



Key Vocabulary:

Slope: Rise over run - # in front of x

y-intercept: Where the graph crosses the vertical axis

x-intercept: Where the graph crosses the horizontal axis

domain: Set of 'x' values in the relation

range: Set of 'y' values in the relation

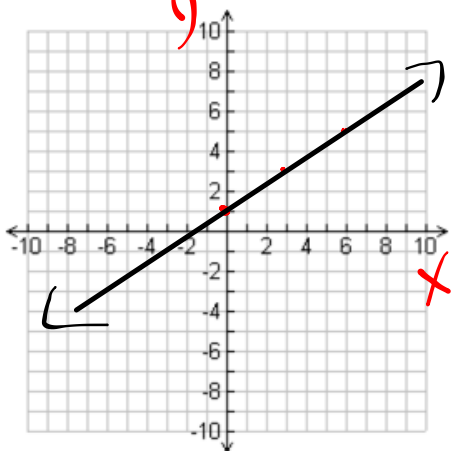
When sketching the line of a linear relation, you can take one of two approaches : **use the slope and y-intercept** OR **use the intercepts (x and y intercepts)**.

Sketch each of these linear equations by using **the slope and the y-intercept**.

Ex. 1 : $y = \frac{2}{3}x + 1$

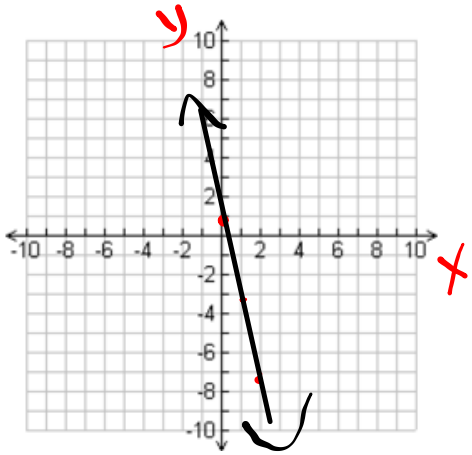
Rise / Run

m = $\frac{2}{3}$ b = +1



Ex. 2: $y = -4x + 1$

m = $\frac{-4}{1}$ b = +1

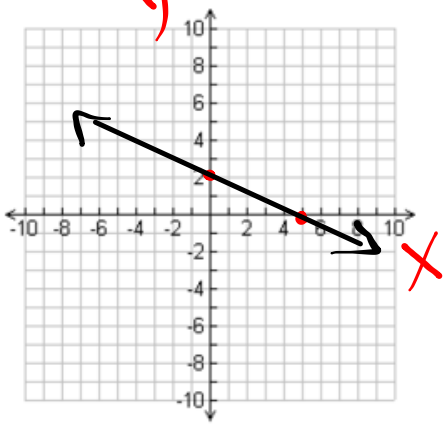


Sketch these linear relations using the **intercepts**.

Ex.3: $2x + 5y = 10$

x-int: $2x = 10$, $x = 5$

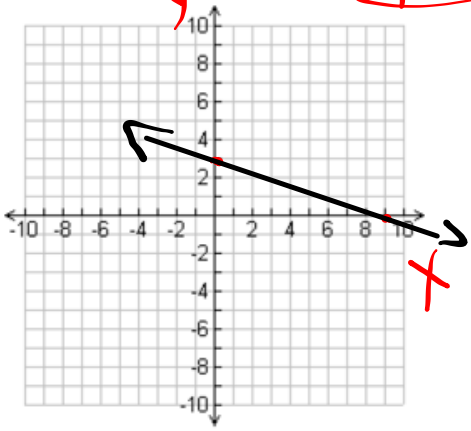
y-int: $5y = 10$, $y = 2$



Ex. 4: $x + 3y = 9$

x-int: $y = 9$

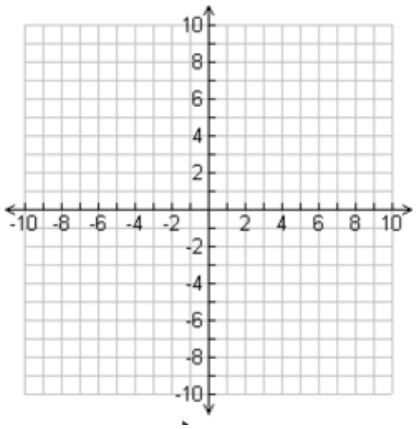
y-int: $3y = 9$, $y = 3$



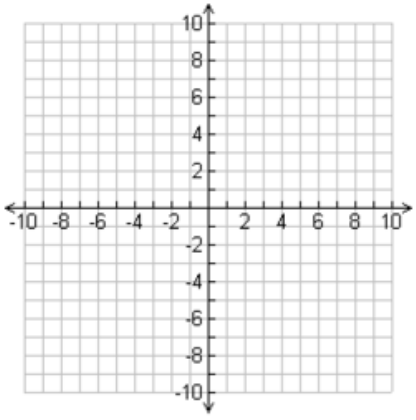
Your turn:

Sketch these linear relations:

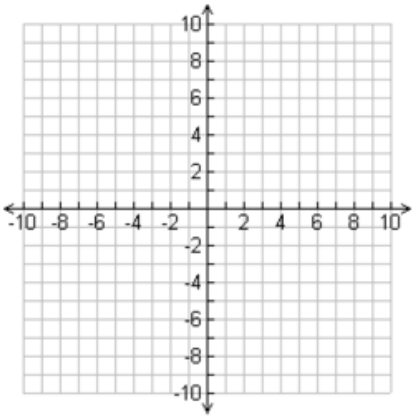
1) $y = -\frac{1}{5}x + 3$



2) $4x - y = -2$



3) $-4x - 2y = -6$



Practice

1. For each of these linear equations:
   - Determine the slope and y-intercept (m & b) **for parts a) – d) only**; and
   - Sketch the line.

a) $y = \frac{1}{2}x + 4$ **b)** $y = -\frac{3}{4}x + 1$ **c)** $y = -\frac{1}{6}x - 8$ **d)** $y = -2x - 7$

e) y = 5 f) $x = -3$ g) $y = 3x - 5$ h) $y = x$

i) $3x + y = 7$ j) $-x - y = 9$ k) $8x - 2y = 12$ l) $-4x - 8 = 4$