BE-Alg.1 WEDNESDAY 10-29-08

① What is A direct variation?

② What should you write down as soon as you see the words "direct variation" or "varies directly"?

③ y varies directly as x, if y is 9 when x is 3 write the EOL.

④ Using the EOL from ③, find y when x is $\frac{2}{3}$.

- Homework review Pg 268 #15, 18, 21, 22, 33-37.

Once you identify that you have a linear equation ⇒ [only x, y and numbers separated by + or −]
You can put it in $y = mx + b$ form by SOLVING for y:

(Ex) $3x + 4 - x + 2 = 4y - 3$

$2x + 4 + 2 = 4y - 3$

$2x + 6 = 4y - 3$

$+3 \qquad +3$

$\frac{2x + 9}{4} = \frac{4y}{4}$

$\boxed{\frac{1}{2}x + \frac{9}{4} = y}$.

THE $y = mx + b$ form is THE MOST USEFUL form of A LINEAR EQUATION SINCE:

- the m and b make it EASY TO graph
- it is in FUNCTION form:

$$y = f(x) = mx + b$$

WHICH is best for:
- T-Tables
- Graphing CALCULATORS
- Spreadsheets
- Computer programs
- OTHER MATH STUFF

BUT THERE ARE OTHER forms...

Going back to:

$3x + 4 - x + 2 = 4y - 3$

Suppose instead of getting y by itself my goal was to get all the x and y terms on one side, and the numbers on the other...

$3x + 4 - x + 2 = 4y - 3$

$2x + 6 = 4y - 3$

$-4y \qquad -4y$

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

$-6 \qquad -6$

$$\boxed{2x - 4y = -9}$$

$Ax + By = C$ STANDARD FORM

You can switch between forms:

$$\boxed{\frac{1}{2}x + \frac{9}{4} = y}$$ S-I Form

$$4\left(\frac{1}{2}x + \frac{9}{4}\right) = y \cdot 4$$

$$2x + 9 = 4y$$

$$-4y \quad -4y$$

$$2x - 4y + 9 = 0$$

$$-9 \quad -9$$

$$\boxed{2x - 4y = -9}$$ STANDARD FORM

MAKE SURE 1st term is POSITIVE

MAKE SURE THERE ARE NO FRACTIONS

We will use the standard form more a little bit later in the course, but here is one use:

Graphing a Linear Equation By the Method of Intercepts

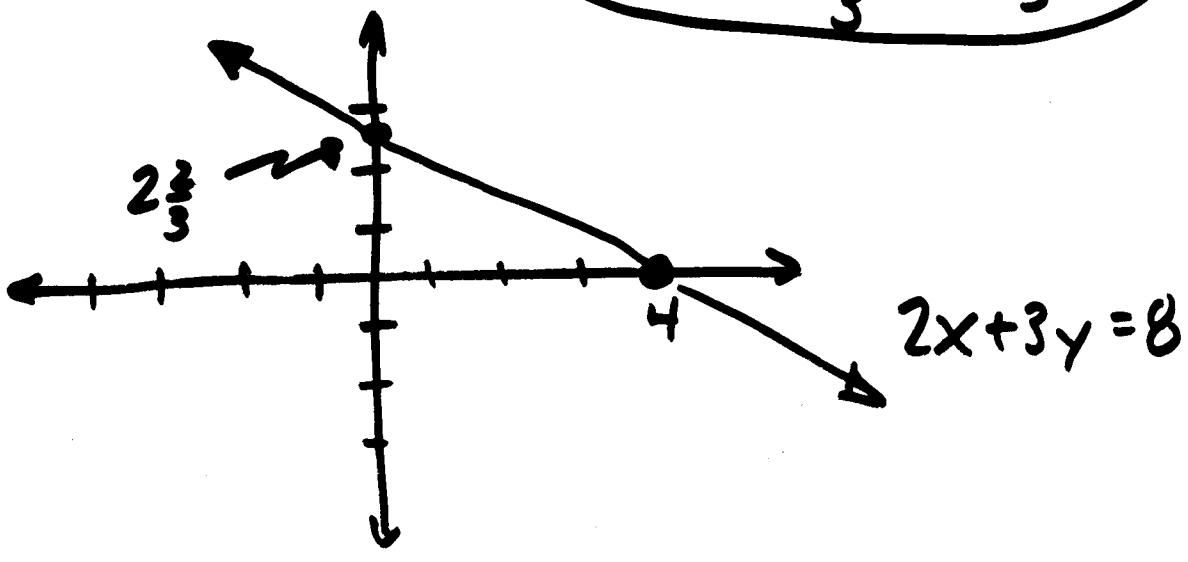
(Ex) $2x + 3y = 8$

$x_{INT} \Rightarrow y = 0 \quad \therefore \quad 2x = 8$

$x_{INT} = 4$

$y_{INT} \Rightarrow x = 0 \quad \therefore \quad 3y = 8$

$y_{INT} = \frac{8}{3} = 2\frac{2}{3}$



Summary:

You should be able to recognize a linear equation:

⇒ x', y', numbers separated by +, −

And put the linear equation in slope-intercept form:

⇒ $y = mx + b$

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or standard form

⇒ $Ax + By = C$

↑ positive A, B, C are integers

And use these forms:

SI	STANDARD
• Graphs (b, m)	• Graphs using intercepts
• Functions	
• EOL's	

Homework: Page 221 # 4-7, 16-21.