

BE-Alg.1 WEDNESDAY 10-28-09

- 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 $\frac{2}{3}$.
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• Homework review Pg 268 #15, 18, 21, 22, 33-37.

Once you identify that you have
A linear equation $\Rightarrow$ [only x , y and
numbers separated by $+$ or $-$]
You can put it in $y = mx + b$ form
by solving for y :

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

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

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

$+3 \qquad \qquad +3$

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

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

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...

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

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

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

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

$$\quad \quad -6 \quad \quad -6$$

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

$$Ax + By = C$$

STANDARD
Form

You can switch between forms:

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

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

$$2x + 9 = 4y$$

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

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

$$-9 \quad -9$$

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

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

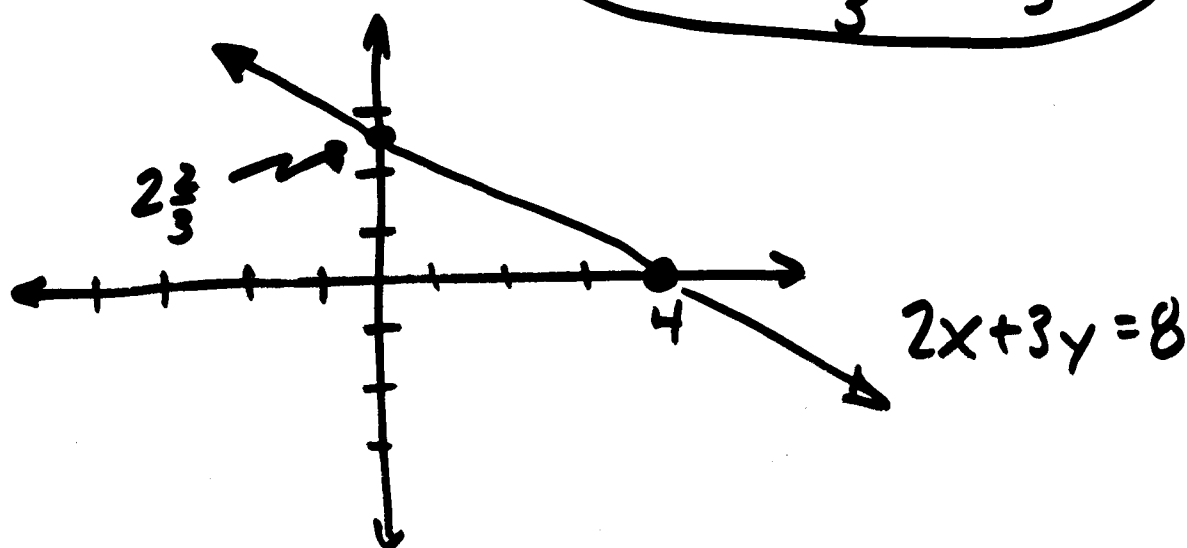
Ⓔ $2x + 3y = 8$

$$X_{\text{INT}} \Rightarrow y = 0 \therefore 2x = 8$$

$$X_{\text{INT}} = 4$$

$$Y_{\text{INT}} \Rightarrow x = 0 \therefore 3y = 8$$

$$Y_{\text{INT}} = \frac{8}{3} = 2\frac{2}{3}$$



Summary:

You should be able to recognize

A linear equation:

$\Rightarrow$ x, y , numbers separated by $+$, $-$

And put the linear equation
in slope-intercept form:

$$\Rightarrow y = mx + b$$

OR STANDARD FORM

$$\Rightarrow Ax + By = C$$

$\uparrow$
positive A, B, C are integers

And use these forms:

SI

- GRAPHS (b, m)
- FUNCTIONS
- EOL'S

STANDARD

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