

BE-Alg.1 Tuesday 11-1-11

- 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:

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

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

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

+3 +3

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

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

THE  $y = mx + b$  <sup>form</sup> 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...

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

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

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

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

$$-6 \quad -6$$

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

$$Ax + By = C$$

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:

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## GRAPHING A LINEAR Equation By the Method of Intercepts

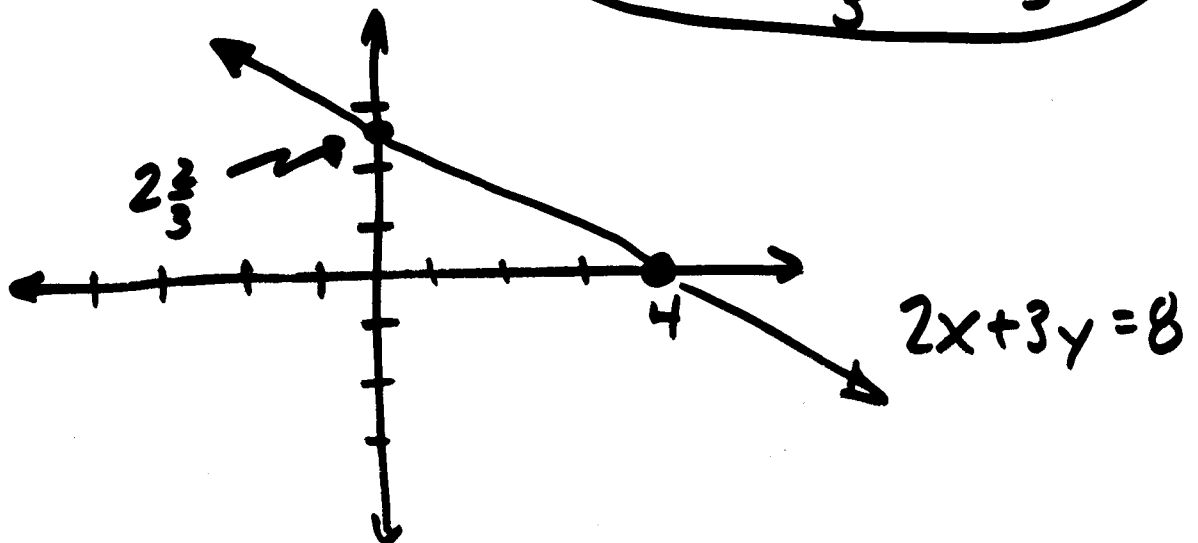
⊙ EX  $2x + 3y = 8$

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

$$X_{INT} = 4$$

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

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



## Summary:

You should be able to recognize

A linear equation:

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

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And put the linear equation

in slope-intercept form:

$$\Rightarrow y = mx + b$$


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OR STANDARD FORM

$$\Rightarrow Ax + By = C$$

$\uparrow$   
positive

$A, B, C$  are integers

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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.