

IA-BE TUESDAY 1-25-11

① Is $6x + 2y = 12x + 8$

a linear equation? How do you know.

② Solve $6x + 2y = 12x + 8$ for y

③ GRAPH: $y = 3x + 4$, how many "X VALUES" do you need?

④ Using any two points from the T-Table in #③, find the slope of $y = 3x + 4$.

* Have homework out, Pg 831 # 1-10
(Lesson 5-1)

1.
WHAT DOES THE WORD "intercept"
MEAN?

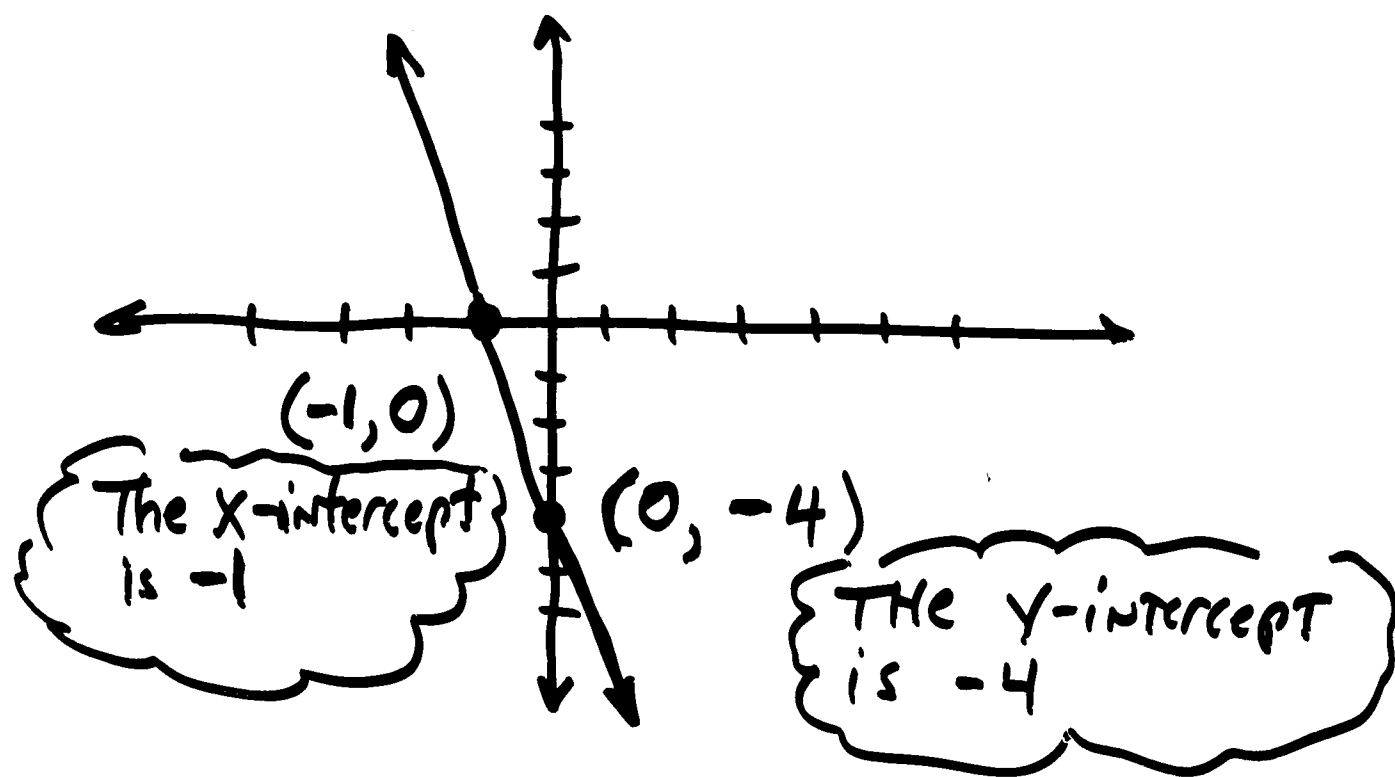
In Algebra, it means "to cross"

ON THE X-Y COORDINATE PLANE
ANY DIAGONAL LINE HAS TWO
intercepts:

X-intercept where the line crosses
the X-AXIS

Y-intercept where the line crosses
the Y-AXIS.
VARIABLE used is "b"

EXAMPLE of X and Y-INTERCEPTS

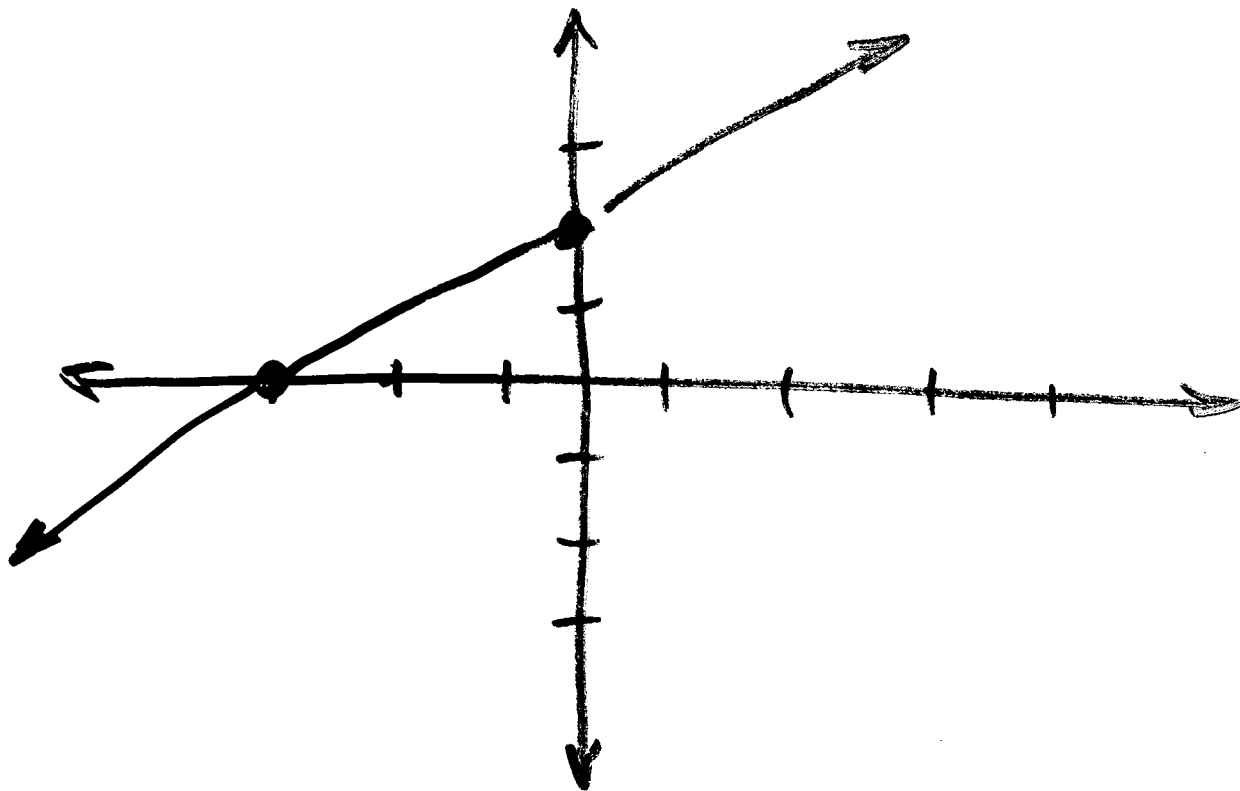


⇒ All X-intercepts HAVE A Y-COORDINATE VALUE of 0

⇒ All Y-intercepts HAVE AN X-COORDINATE VALUE of 0

ON THE graph below:

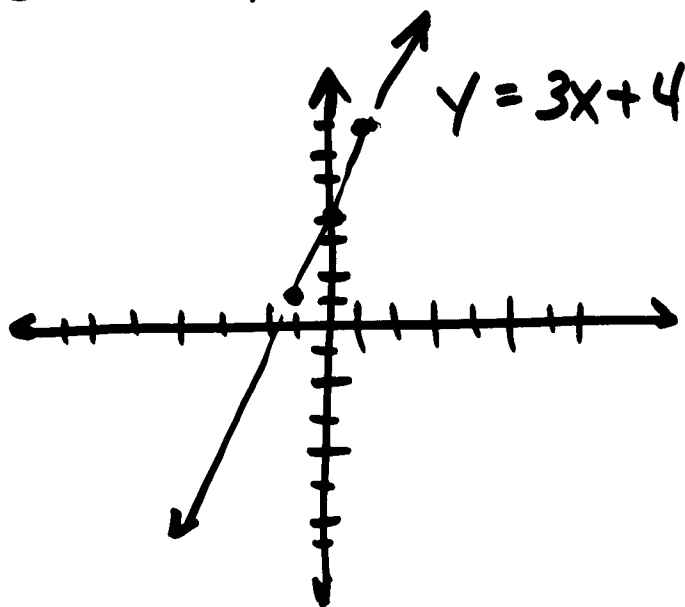
- ① WHAT is the X-intercept?
- ② WHAT ARE THE FULL COORDINATES OF THE POINT WHERE THE LINE CROSSES THE X-AXIS?
- ③ WHAT is the Y-intercept = b?
- ④ WHAT ARE THE FULL COORDINATES OF THE POINT WHERE THE LINE CROSSES THE Y-AXIS?



LETS GO BACK AND LOOK AT THE BELL EXERCISE

GRAPHING $y = 3x + 4$

x	$y = 3x + 4$
-1	$3(-1) + 4 = 1$
0	$3(0) + 4 = 4$
1	$3(1) + 4 = 7$



Slope $m \Rightarrow (0, 4), (1, 7)$

$$\frac{7-4}{1-0} = \frac{3}{1} = \boxed{3 = m}$$

LOOK AT $y = 3x + 4$

Do you see A CONNECTION between
 $m = 3$ AND $y = 3x + 4$?

What is b , the y -intercept?

$b = 4$ Do you see THE CONNECTION
WITH $y = 3x + 4$?

It turns out THAT for ANY
 LINEAR EQUATION "solved for y ";
 the number in front of x
 (the coefficient of x)
 will always be m , the SLOPE
 and the number "by itself" will
 always be b , the y -intercept.

$$y = 3x + 4 \quad \text{is in the form}$$

$$y = mx + b$$

$$m = 3 \text{ or } \frac{\text{RISE}}{\text{RUN}} = \frac{3}{1} \quad \text{AND } b = 4$$

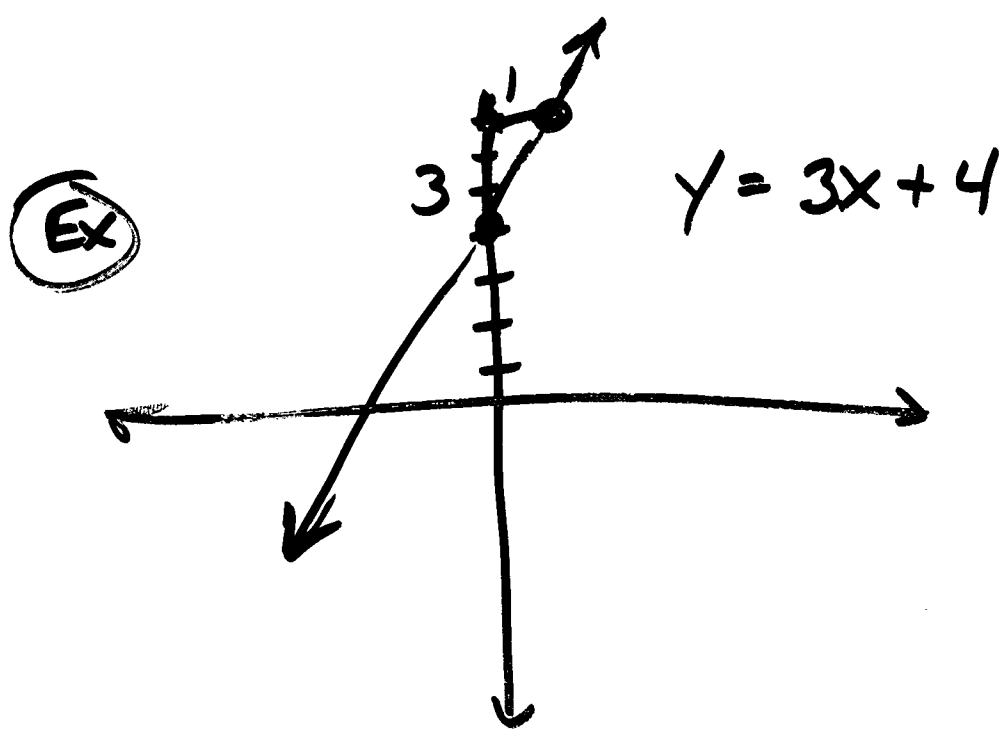
or it crosses THE y AXIS AT $(0, 4)$

$$y = mx + b \quad \text{is called the}$$

↓ ↓
 Slope - Intercept Form OF
 A LINEAR EQUATION

Since ONLY ONE line CAN PASS through (0, 4) WITH A POSITIVE slope of $\frac{3}{1}$, you CAN USE THE $y = mx + b$ form to graph a line directly, NO T-Table Needed!

*(M) begin at b , the y -intercept
move by the slope $\begin{matrix} + \\ \nearrow \\ \text{Rise} \\ \text{Run} \end{matrix}$ $\begin{matrix} - \\ \nwarrow \\ \text{Run} \end{matrix}$



Identify THE SLOPE AND
y-intercept then graph THE
line:

① $y = 2x + 1$

② $y = \frac{3}{4}x + 2$

③ $y = -\frac{1}{2}x - 1$

Chapter 5-3 "SLOPE-Intercept Form"

Homework:

- Read Ch. 5-3
- Page 275 # 8-10
(if NOT solved for y ,
do this first!)