GRAPHING EQUATIONS AND INEQUALITIES

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SUBSTITUTION OF X AND Y VALUES IN EQUATIONS

SOLVE WHEN X = 4

$Y = 2X + 3$

$Y = 2 * 4 + 3$

$Y = 8 + 3$

$Y = 11$

- When given the value of either X or Y, you need to know how to SUBSTITUTE the value into the equation and SOLVE!

X / Y TABLES

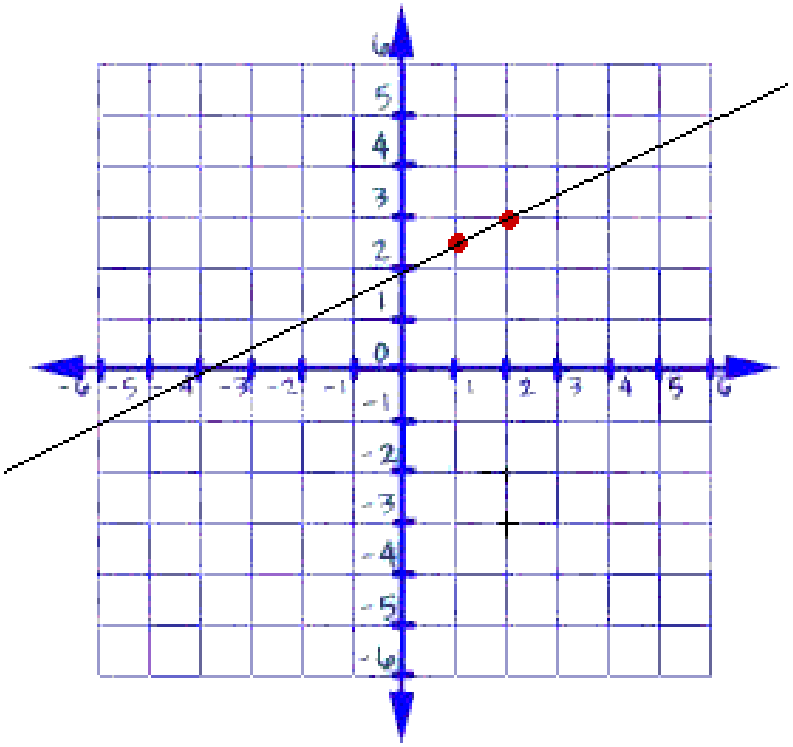
$Y = 7X - 4$

X	Y

- You will need to know how to write an equation based on the relationship of X and Y values on a table.
- You will also need to take the X and Y values and be able to graph them.

VOCABULARY TO KNOW:

$$\text{slope} = \frac{\text{change in y value}}{\text{change in x value}} = \frac{\text{rise}}{\text{run}}$$



- LINEAR – means a STRAIGHT line
- SLOPE = rise / run
- X-INTERCEPT – where a line crosses the X axis
- Y-INTERCEPT – where a line crosses the Y axis
- PARALLEL LINES – Extend forever at an EQUAL distance apart / NEVER touching

ALWAYS have the same slope

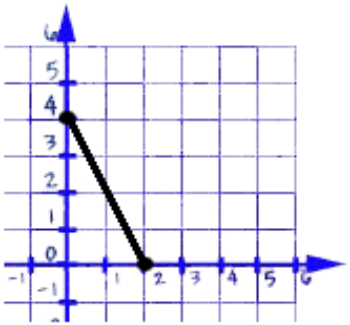
FINDING A SOLUTION SET

1. Find the slope of this line:

Solution: you can use any two points on a line to calculate it's slope. A line has only one slope, so your answer will be the same no matter which points you choose.

Let's use the points (0, 4) and (2, 0) to find the slope.

$$m = \frac{\text{change in y}}{\text{change in x}} = \frac{4 - 0}{0 - 2} = \frac{4}{-2} = -2$$

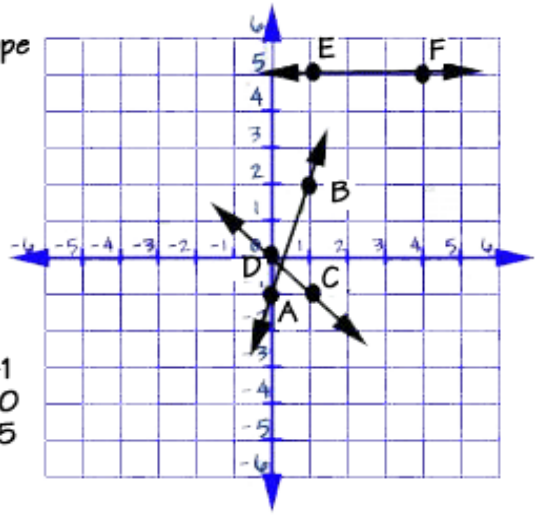


2. What are the values of slope and y-intercept for these lines?

a. line AB
b. line CD
c. line EF

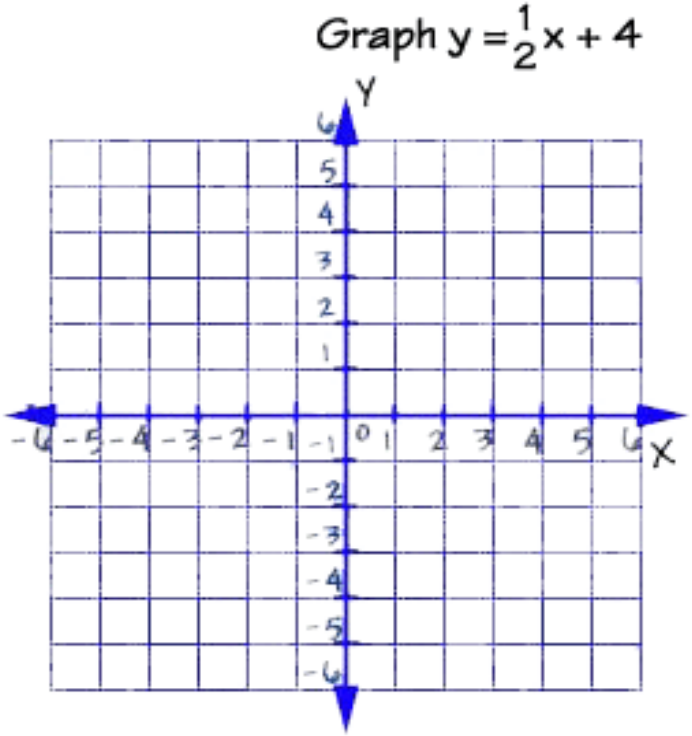
Solution:

a. Slope: 3 y-intercept: -1
b. Slope: -1 y-intercept: 0
c. Slope: 0 y-intercept: 5



- <u>SOLUTION SET</u> – the point at which TWO graphed lines cross.
- When figuring the SLOPE of a line and it is a single number, put it over ONE.

GRAPHING WITH AN X / Y TABLE!

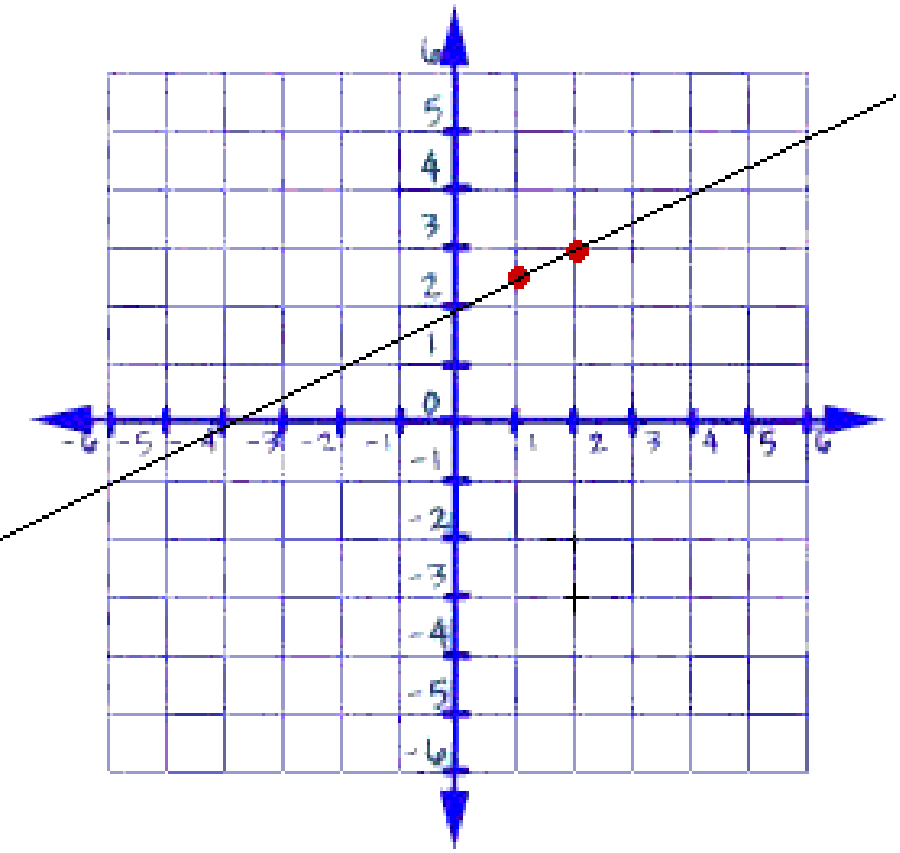


X	Y

- 1.) Pick three values for X
- 2.) REMEMBER: if there is a fraction involved, PICK SMART! You will find it much easier if you pick multiples.
- 3.) "Plug" each X value into the equation to find the Y value.

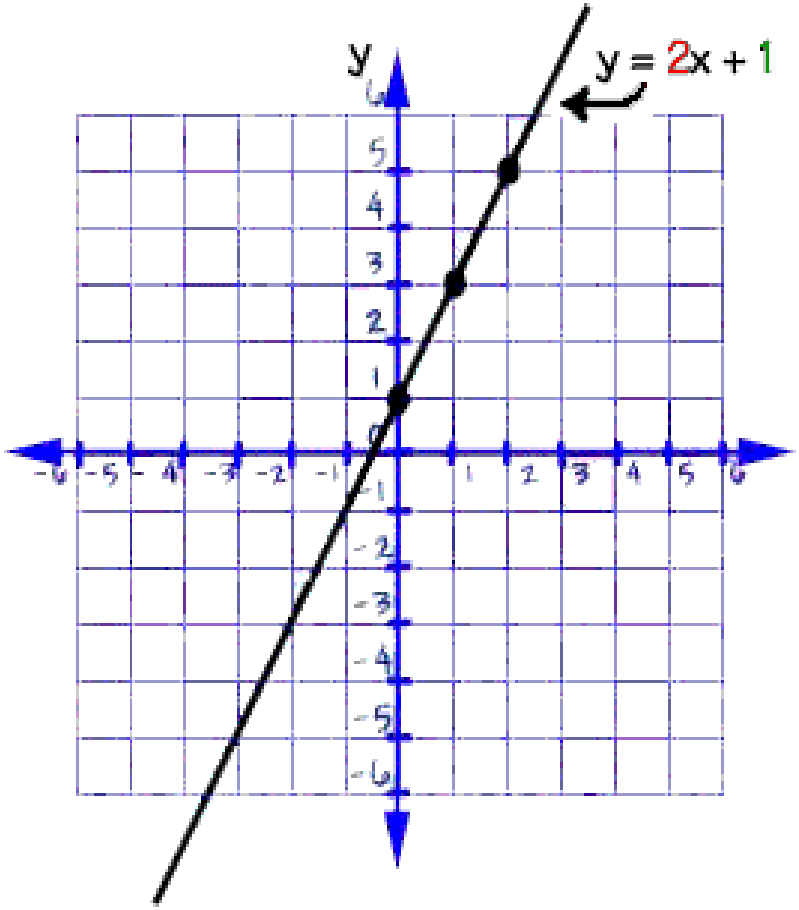
GRAPHING INEQUALITIES

$Y \leq \frac{1}{2} X + 2$



- 1.) CHANGE the sign to an EQUAL sign and find your BOUNDARY LINE
- 2.) Use an X / Y table and graph your solutions.
- 3.) If the sign is < or >, you will use a DOTTED line.
- 4.) If the sign is $\leq$ or $\geq$, you will use a SOLID line.
- 5.) Pick a point and "plug" it into the equation. If it works, shade towards that point. If it doesn't, shade away from the point.

GRAPHING USING THE EQUATION (NOT the X /Y table)



- In the equation, find the number away from the X. This is your Y-intercept.
- Plot this number on the Y axis.
- Use the fraction or number before the X. This is your SLOPE. It will tell you how far to rise and how far to run.