Unit 4.4 – Matching Equations and Graphs

Grade 9

Remember:
- When x is constant, line is vertical
- when y is constant, line is horizontal
- If equation is of the form:

$$x + y = \text{number}$$

Your line is oblique / or \

- Solve for 1 variable
- Make a Table of values

In this sub-unit, you will match graphs to equations.

IMPORTANT: YOU MUST always ISOLATE a variable – THAT is, IT SHOULD END-UP BY ITSELF on one side of THE EQUATION

Look at page 184.

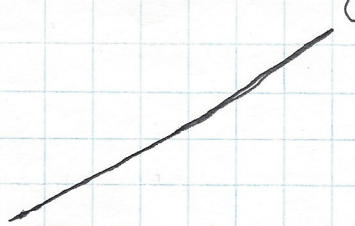
– $\boxed{y = 3x + 3}$

Make a Table of values

X	Y		
0	3	(0,3)	$3(0)+3=3$
1	6	(1,6)	$3(1)+3=6$
2	9	(2,9)	$3(2)+3=9$
3	12	(3,12)	$3(3)+3=12$

Now, see which graph has those points.
You will see that Graph C has a line that passes through those coordinates!

Notice that as x increases, y increases. So your graph must look:



$\boxed{x + y = 3}$

IN THIS CASE, NO VARIABLES ARE ISOLATED

- FIRST solve (isolate) for a variable (let's choose x)

$$x + \cancel{y} - \cancel{y} = 3 - y \Rightarrow \text{so } x = 3 - y$$

- Now, make a Table of values:

	x	y
(3,0)	3	0
(2,1)	2	1
(1,2)	1	2
(0,3)	0	3

$x = 3 - (0) = 3$
$3 - (1) = 2$
$3 - (2) = 1$
$3 - (3) = 0$

Notice how your x values increases, but your y values decrease. therefore your graph must be a line with negative slope:

- Now match your coordinates to the graphs to see which one matches correctly

Then, graph A is

$\boxed{y = 3x - 3}$

- the variable is isolated.
- Now make a Table of values.

	x	y
(0,-3)	0	-3
(1,0)	1	0
(2,3)	2	3
(3,6)	3	6

$y = 3(0) - 3 = -3$
$y = 3(1) - 3 = 0$
$y = 3(2) - 3 = 3$
$y = 3(3) - 3) = 6$

Notice how x-values increase, as well as y-values.

therefore my graph should be a line with positive slope

- The graph that has a line going through the coordinates above is

Graph B.

After you understood the concepts previous, DO:

- Example #1, page 186
- Example #2, page 186

You can get started with your homework:

Page 188 → # 3, 4, 5
Page 189 → # 6, 7, 9
Page 190 → # 13