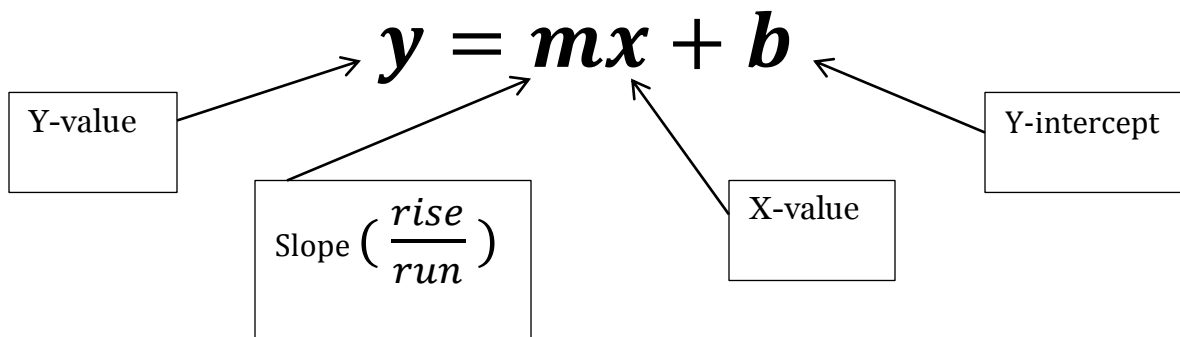# Notes

Topic 03: Solving Decontextualized Single Equations

"Decontextualized equations" simply means just numbers
and variables. No word problems here.

The three best friends in 8th grade math are **EQUATIONS, CHARTS** and **GRAPHS**.

Equations are usually given in what's called the "slope intercept form", or

$$y = mx + b$$

Y-value

Slope $\left(\dfrac{rise}{run}\right)$

X-value

Y-intercept

This ***equation*** can be used to make a ***chart*** and a ***graph***.

If I have this equation:

$y = 2x + 3$

I know my slope
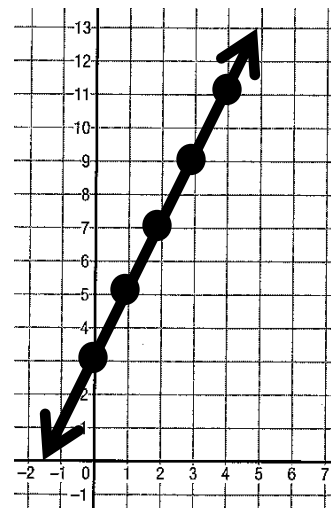(or my rise over run)
is "2".

I know my y-intercept
is "3".

I can build a
chart of values

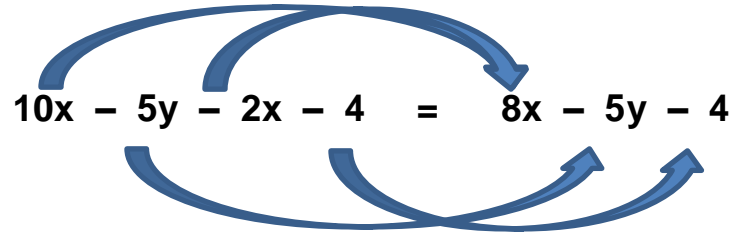| X	Y
0	3
1	5
2	7
3	9
4	11

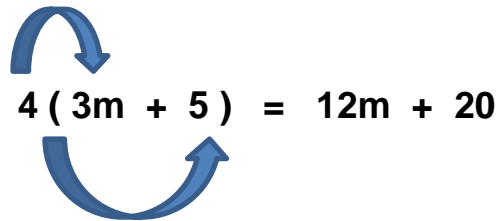I can use that chart of values to plot a graph.

Notes

Also, let's *review* tools from earlier in Middle School:

Combining Like Terms

$$10x - 5y - 2x - 4 \quad = \quad 8x - 5y - 4$$

Using the Distributive Property

$$4(3m + 5) = 12m + 20$$

Solving Equations Using Inverse Operations

$$2x + 7 = 17$$

$$2x + 7 - 7 = 17 - 7$$

$$\frac{2x}{2} = \frac{10}{2}$$

$$x = 5$$

Notes

You can also use these basic moves to convert an equation to
the y = mx + b form.

For example, how do we put 2y + 4 = 6x + 14 in y = mx + b form?

$$2y + 4 = 6x + 14$$

$$2y + 4 - 4 = 6x + 14 - 4$$

$$\frac{2y}{2} = \frac{6x + 10}{2}$$

$$y = 3x + 5$$

Finally, remember that every coordinate along a line ***works as a solution for the
equation to that line***.

For example, if a line contains the points (2 , 5) and (3 , 7), which could be
the equation for that line?

(A) $y = x + 3$
(B) $y = 3x - 2$
(C) $y = 2x + 1$
(D) *There is no solution*

Choice A works for (2 , 5) → $y = x + 3$ → $5 = 2 + 3$ → $5 = 5$

Choice A does not work for (3 , 7) → $y = x + 3$ → $7 = 3 + 3$ → $7 \neq 6$

Choice B works for (3 , 7) → $y = 3x - 2$ → $7 = 3(3) - 2$ → $7 = 7$

Choice B does not work for (2 , 5) → $y = 3x - 2$ → $5 = 3(2) - 2$ → $5 \neq 4$

Choice C works for (2 , 5) → $y = 2x + 1$ → $5 = 2(2) + 1$ → $5 = 5$

Choice C ***also works*** for (3 , 7) → $y = 2x + 1$ → $7 = 2(3) + 1$ → $7 = 7$

The correct answer is therefore ***Choice C***