UNIT 4: GRAPHING USING INTERCEPTS

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Standard Form

Graphing Lines, $Ax + By = C$ with x and y intercepts

I can graph lines in $Ax + By = C$ form using the x and y-intercepts.

Equations that are written in $Ax + By = C$ form are easier to graph using the x-intercept and y-intercepts. Before we begin, let's see what standard form looks like.

What is Standard Form?

Standard form is presented as

Ax +By = C

Where A and B are coefficients and C is a constant

Examples:

- 2x +4y = 8
- 5x -7y = 12
- 3x – 9y = -18

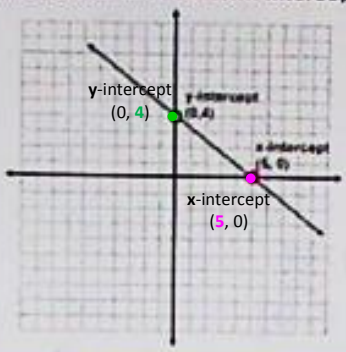
$-3x+5y=9$

x	y
0	9/5
-3	0

$5y = 9$, $\frac{5y}{5} = \frac{9}{5}$, $y = \frac{9}{5}$

$-3x = 9$, $\frac{-3x}{-3} = \frac{9}{-3}$, $x = -3$

Now let's review what the term **intercepts** means. An intercept is where your line crosses an axis. We have an x intercept and a y intercept.



The point where the line touches the x axis is called the **x intercept**

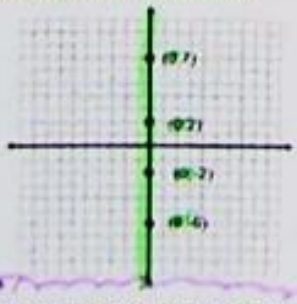
The point where the line touches the y axis is called the **y intercept**

We can find the points where the line crosses the x and y axis, then we would have two points and we'd be able to draw a line.

When equations are written in standard form, it is pretty easy to find the intercepts. Take a look at this diagram, as it will help you to understand the process.

Y intercept

Any point on the y axis is going to have an x coordinate of 0. Take a look!

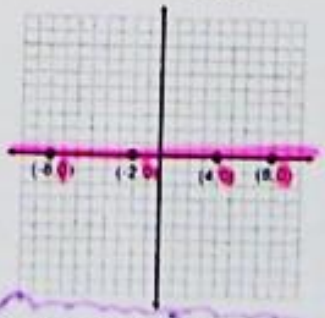


All of these points are y intercepts

So, to find the y intercept within an equation, we are going to let x = 0

X intercept

Any point on the x axis is going to have a y coordinate of 0. Take a look!



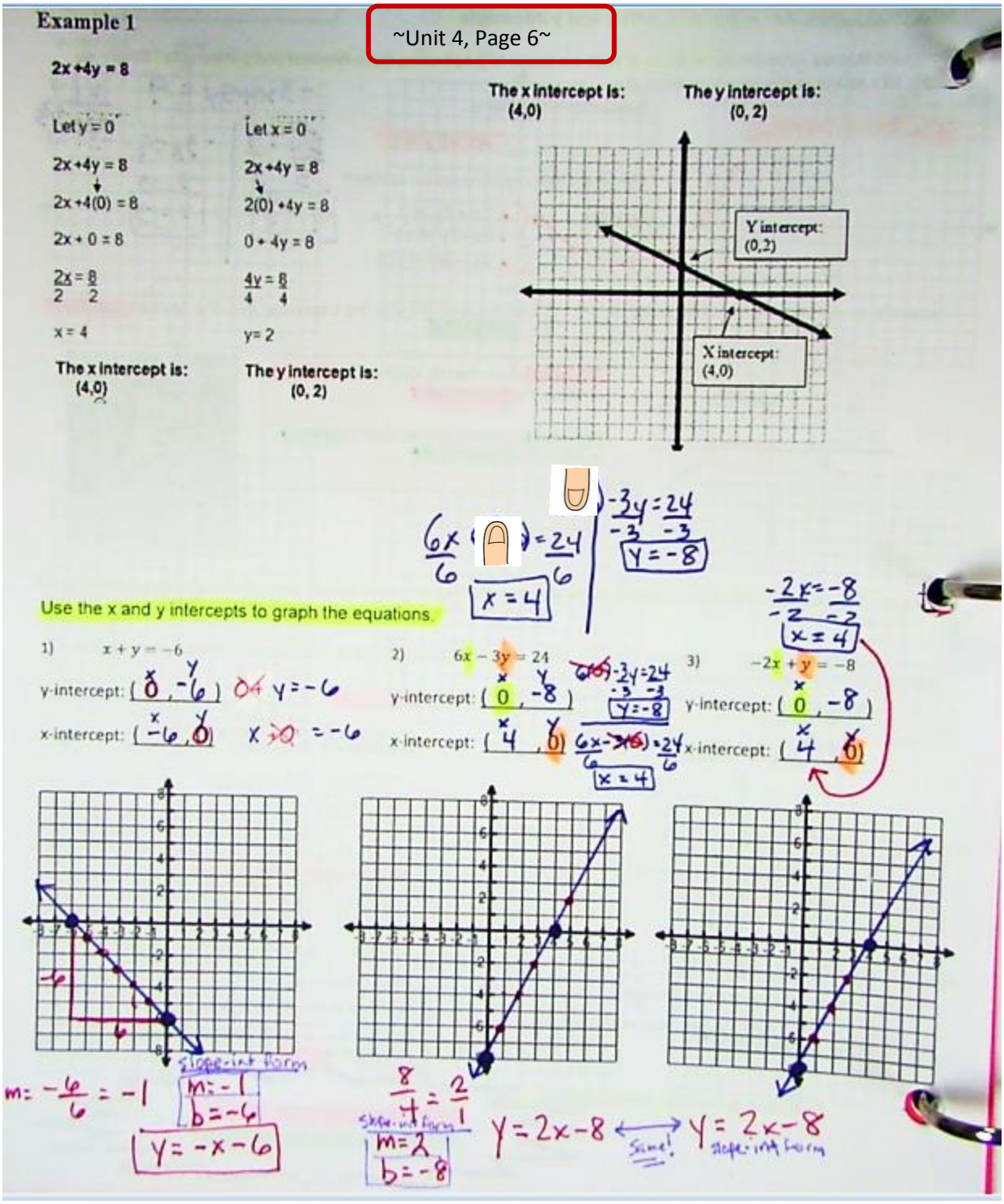
All of these points are x intercepts

So, to find the x intercept within an equation, we are going to let y = 0

Now, let's apply this. Just remember:

To find the x intercept: Let y = 0

To find the y intercept: Let x = 0



A STRATEGY – to make it even easier!

Look at the equation in problem 1: → x + y = – 6

If x equals zero, place your finger over x and see what y equals! y = – 6 (0, _____)

If y equals zero, place your finger over y to see what x equals! x = – 6 (_____, 0)

Now you have two points, (0, -6) and (-6, 0). Graph and connect them to see the line they create.

You can use this method even if x or y is multiplied by a number… because any number times zero equals ZERO! That's what the finger tips in problem 2 above are showing!