Graphing

What we've learned so far

- We've learned who Rene Descartes is and how he contributed to mathematics.
- We've learned how the Cartesian plane makes a strong connection between Geometric concepts and Algebraic concepts.
- We've learned that the x and y values in an equation are the same as the (x,y) values for a point on the plane. This way we can draw a 'picture' of a function.

The Failsafe Method

Or the dot-to-dot method

Now we're going to learn what I call the failsafe method for sketching a graph. It is done in just a few short steps that I'll outline below. Then I'll give you and example in the slides that follow.

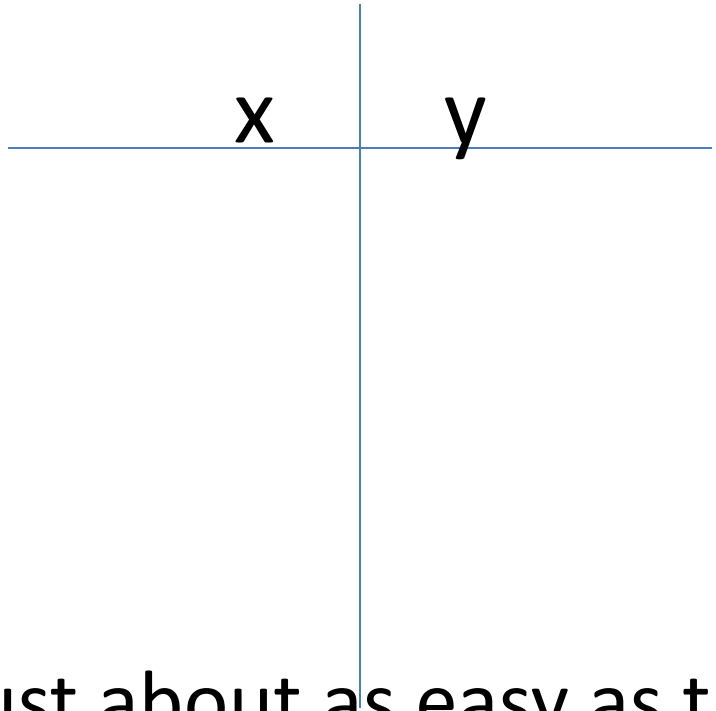
- Write down the equation
- Sketch a T-graph (not to be confused with the cartesian plane)
- Choose some sensible values for x
- Substitute each choice for x into the equation and solve for y in each case
- Write down the resulting y values in your T-graph
- Convert the values in the T-graph to a list of points.
- Plot the points on a cartesian plane.
- If you can't tell what you've got yet, pick some more sensible x values and repeat the last 4 steps.
- Connect the dots.

Write down the Equation

$$y = \frac{1}{2}x+2$$

Well, that was simple enough.

Sketch a T-graph



That was just about as easy as the last step.

Choose some sensible values for x

This step is a little more difficult. We want to choose values for x that will make y easier to find. Let's look at our equation again.

$$y = \frac{1}{2}x + 2$$

We can see that if we pick a 1 for x, we'll get a fractional value for y. (Why is that?)What values can we pick for x that will help us avoid dealing with those despicable fractions? (Write these questions and their answers on your assignment sheet.)

My choices.

x	y
-4	
-2	
0	
2	
4	

Substitute my choices for x and solve for y.

$$y = \frac{1}{2}(-4) + 2$$
$$y = -2 + 2$$
$$y = 0$$

$$y = \frac{1}{2}(-2) + 2$$
$$y = -1 + 2$$
$$y = 1$$

And so forth. Try this for each equation and see if you get the same values as I did.

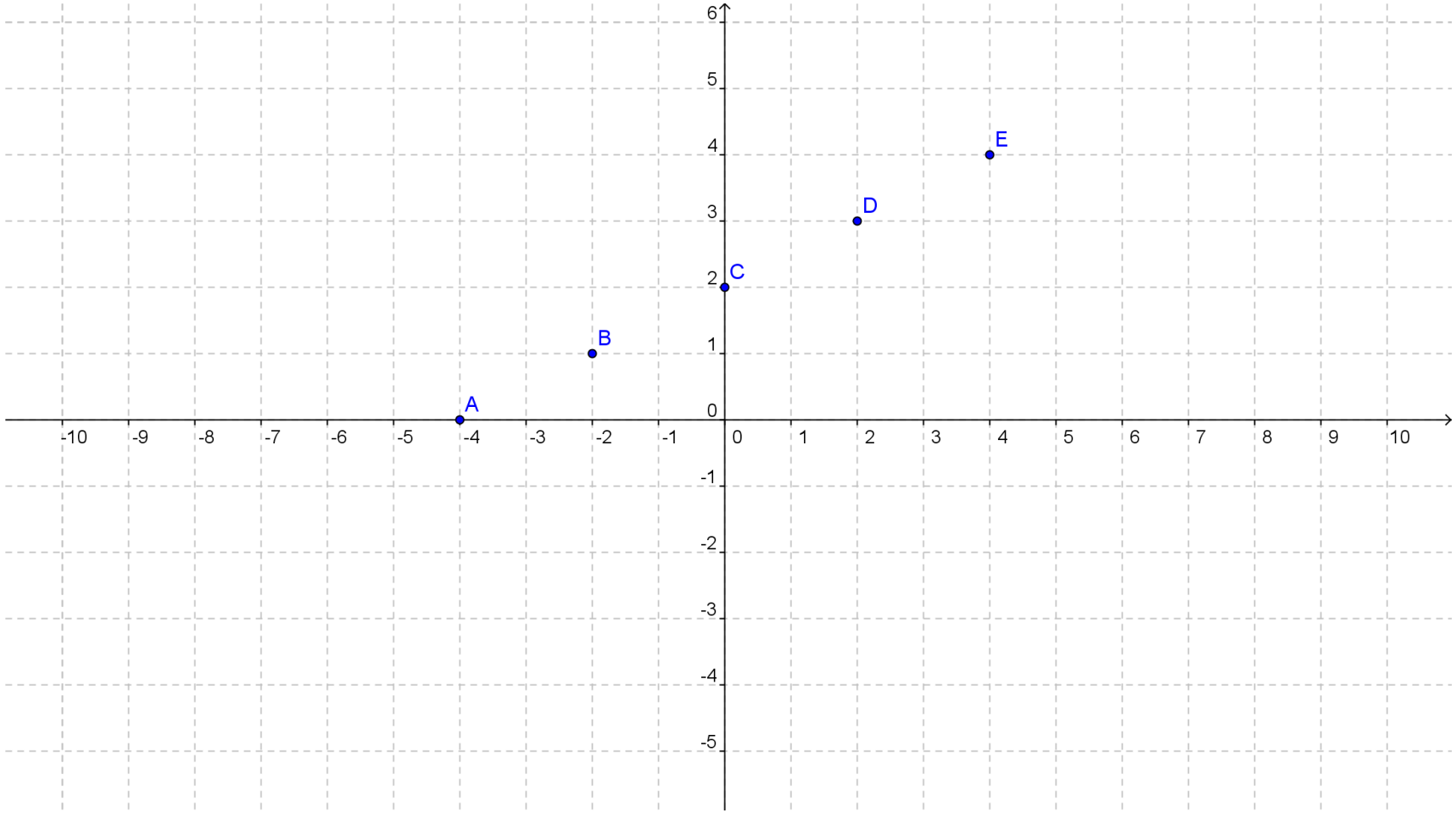
Write down the resulting values for y

x	y
-4	0
-2	1
0	2
2	3
4	4

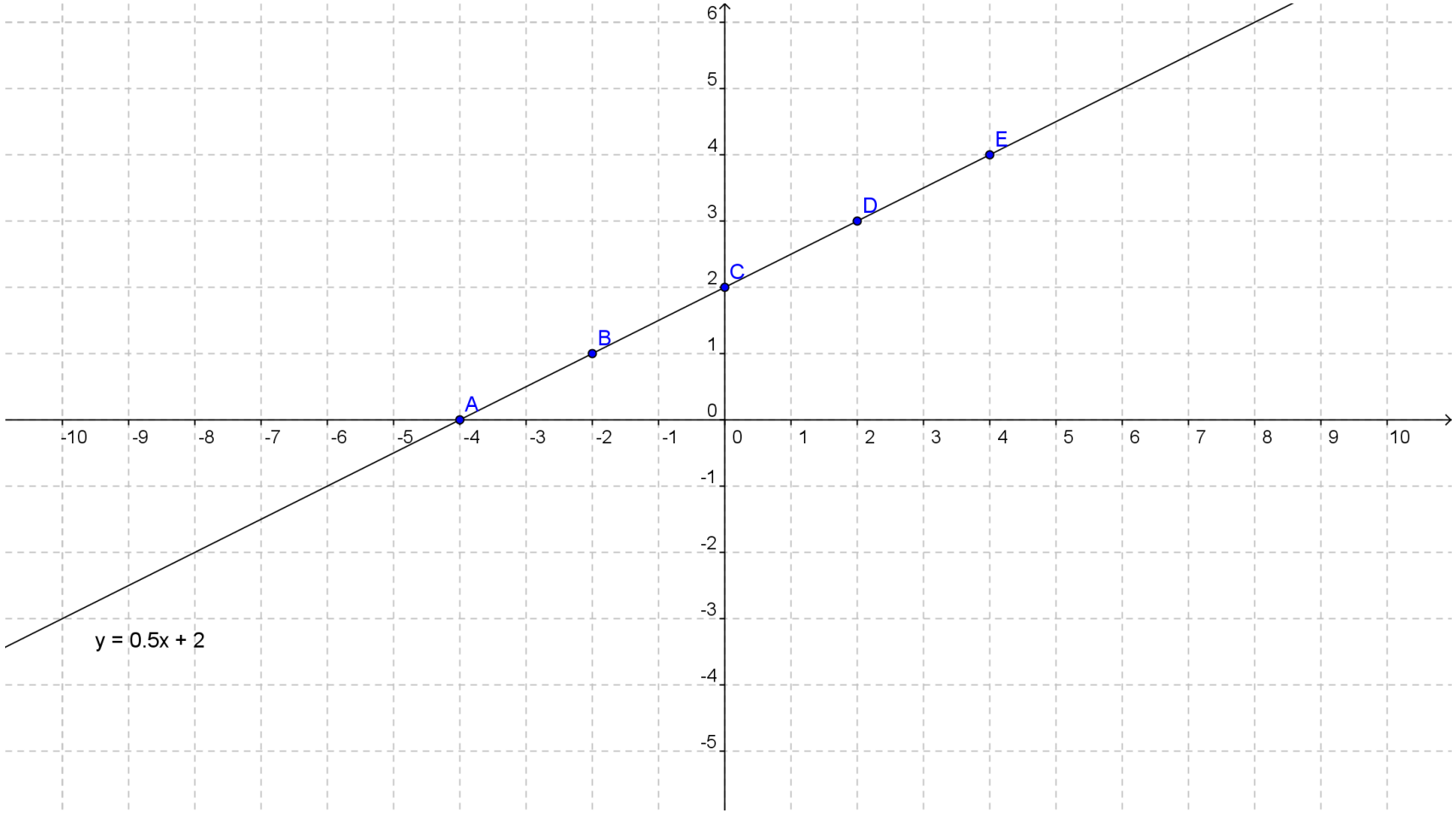
Convert the values in the T-graph to points.

x	y	
-4	0	(-4,0)
-2	1	(-2,1)
0	2	(0,2)
2	3	(2,3)
4	4	(4,4)

Plot the points on a Cartesian Plane



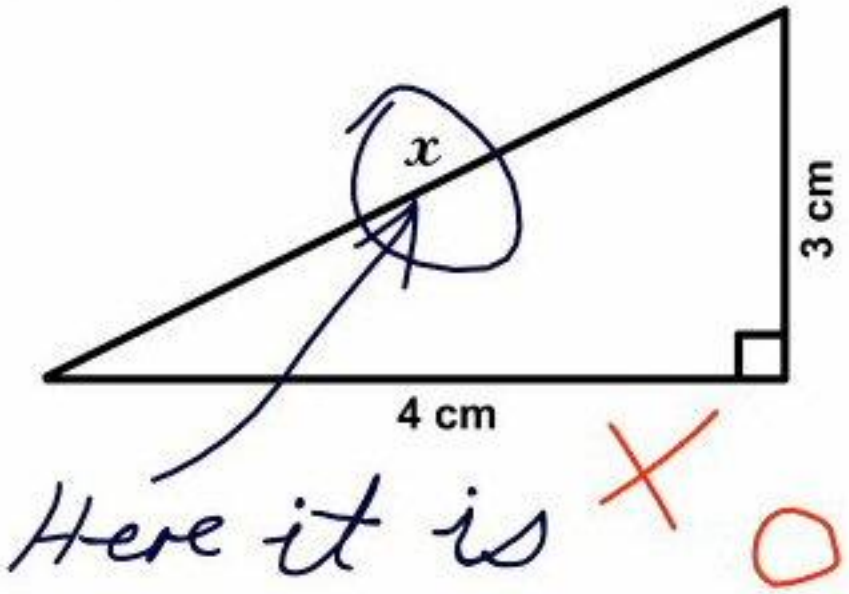
Connect the dots



1. $y = \frac{1}{3}x + 2$
2. $y = x + 2$
3. $y = 3x + 2$
4. $y = \frac{1}{2}x - 1$
5. $y = x - 1$
6. $y = 2x - 1$

Now see if you can graph these equations. Use a straight edge to carefully craft a cartesian plane and then graph them all on the same plane.

3. Find x.



You have now completed the Cartesian Plane Introduction series of power point presentations. Click on the link below to take a short quiz.