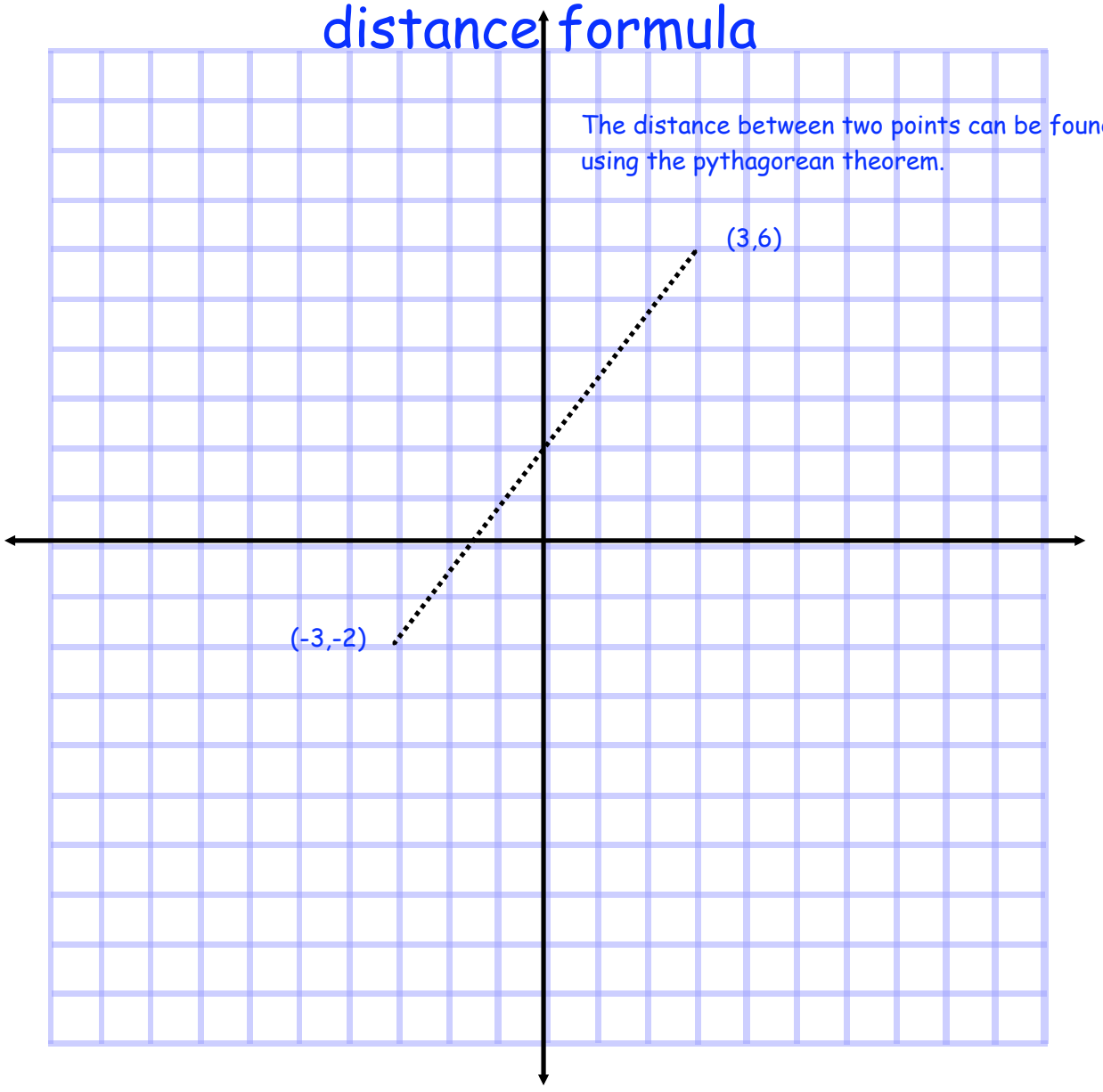
Chapter 9.6
the distance formula
and
the midpoint formula

April 15, 2010

distance formula

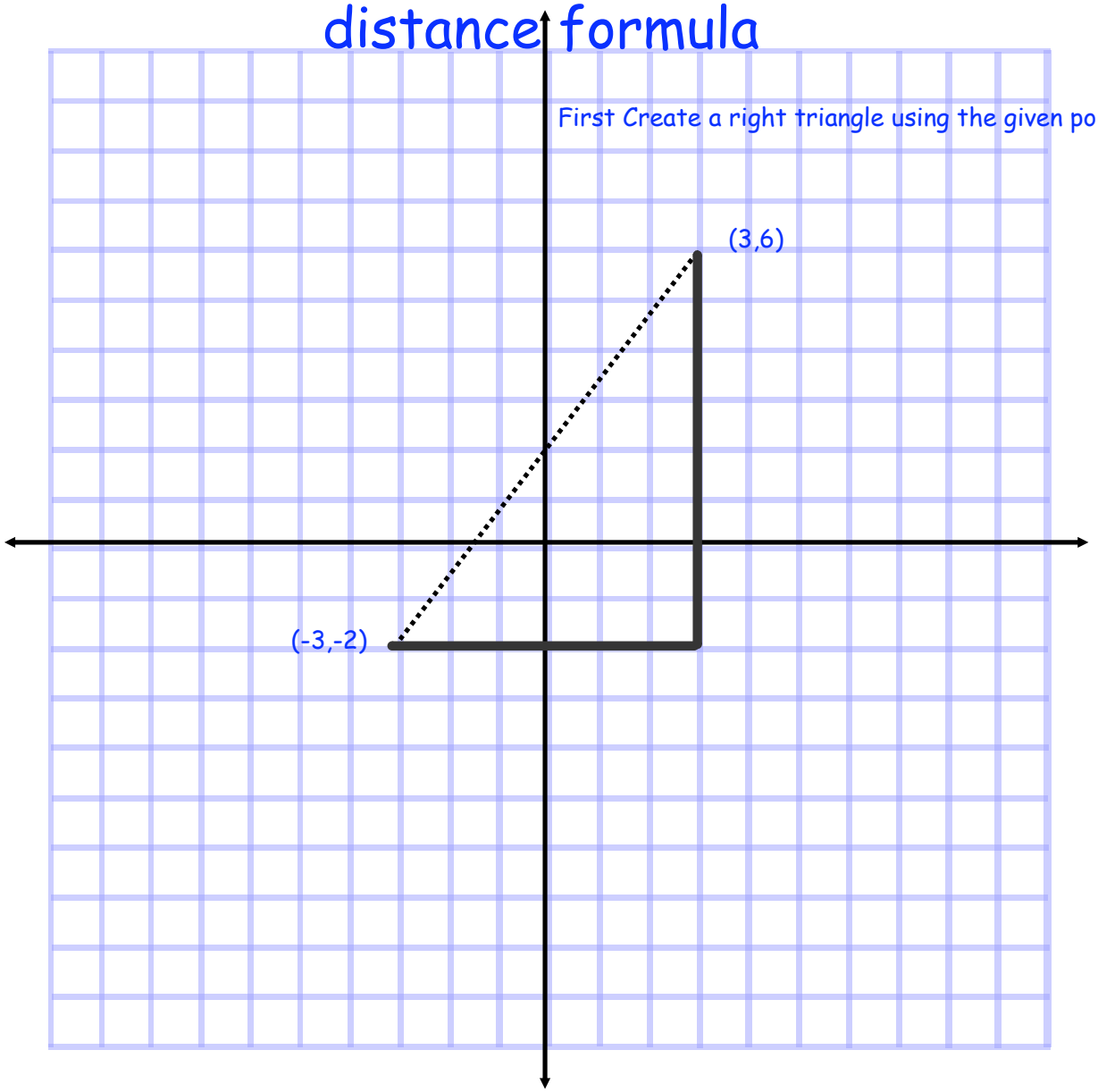
The distance between two points can be found by using the pythagorean theorem.



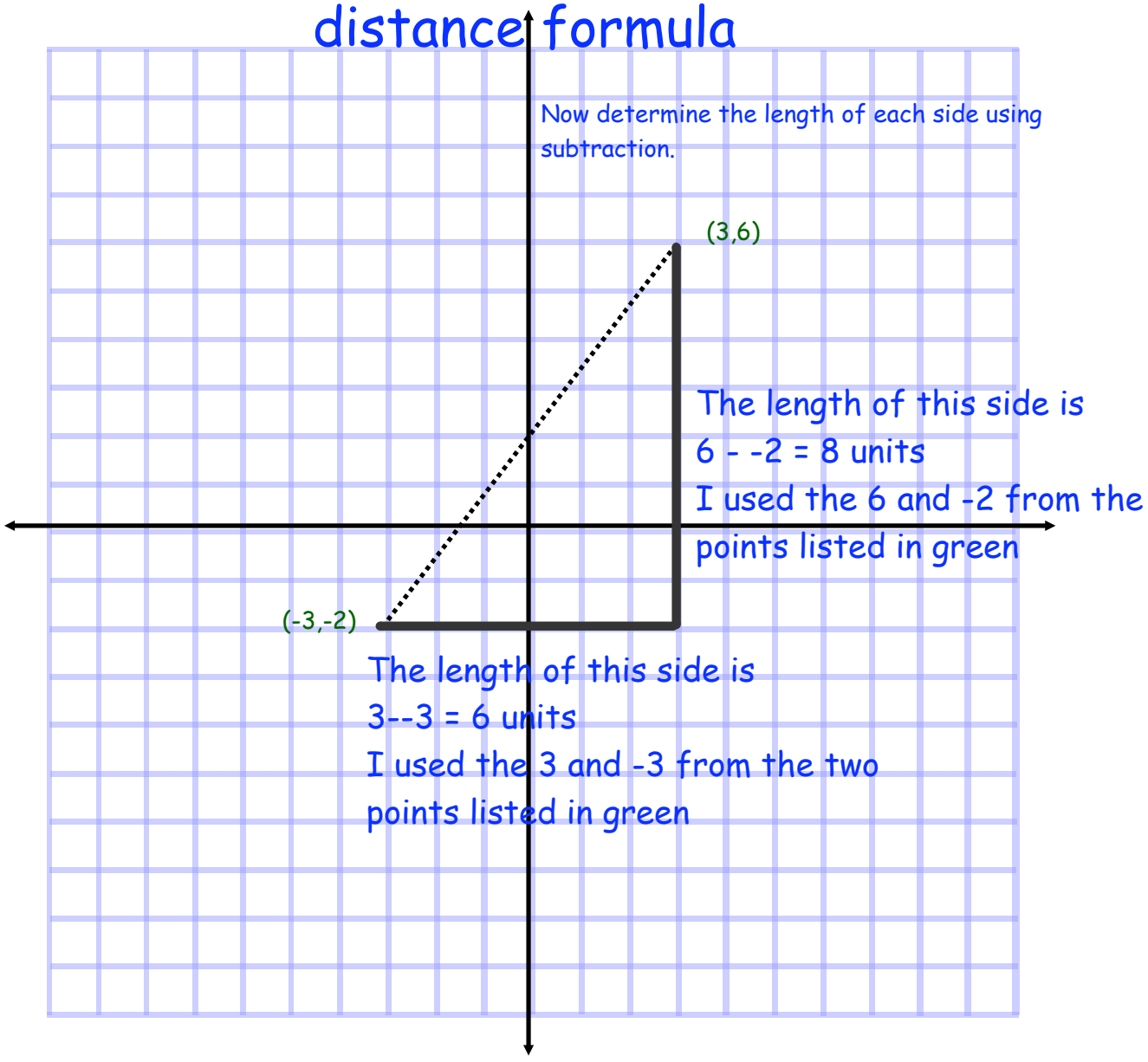
April 15, 2010

distance formula

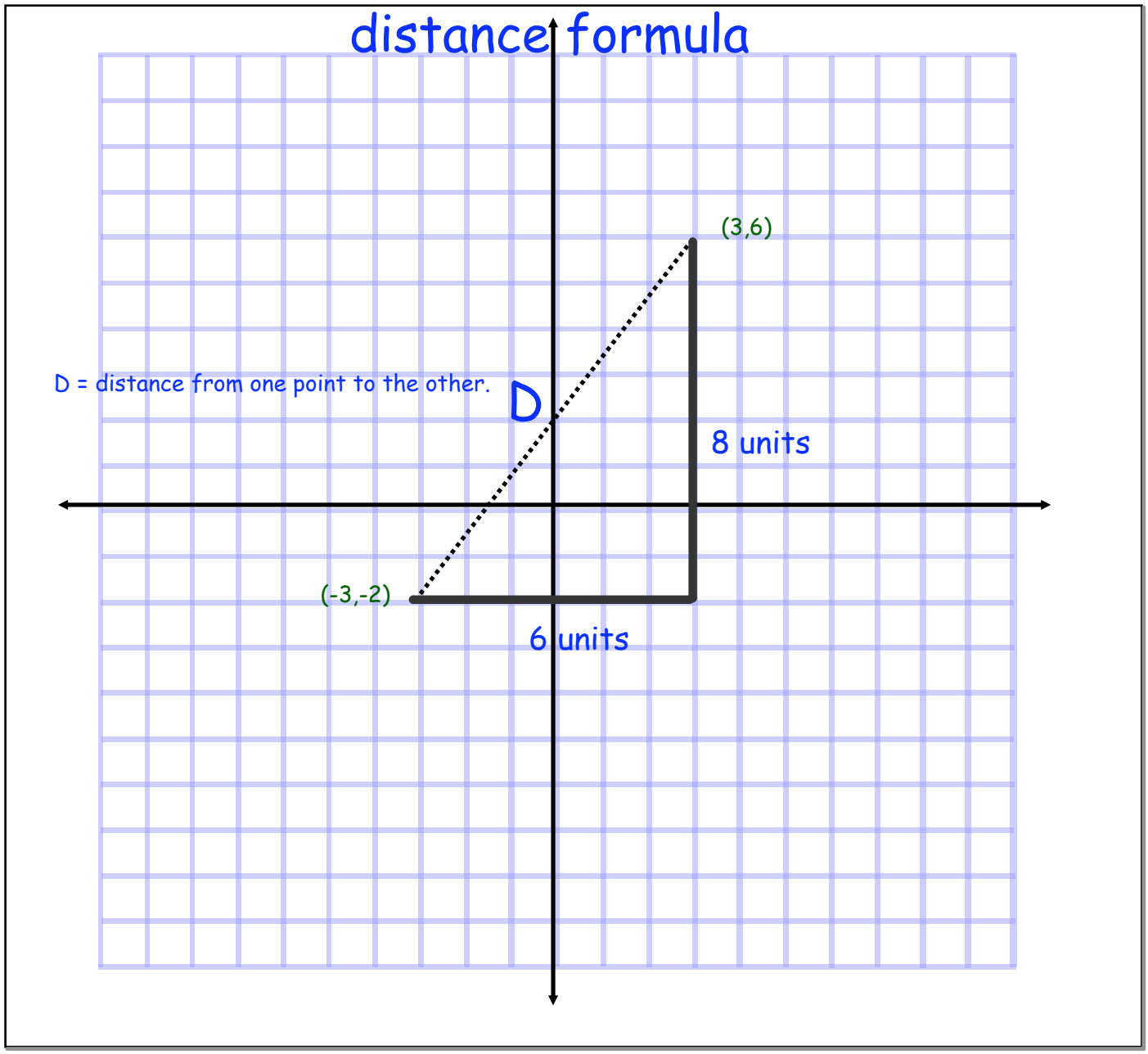
First Create a right triangle using the given points



distance formula



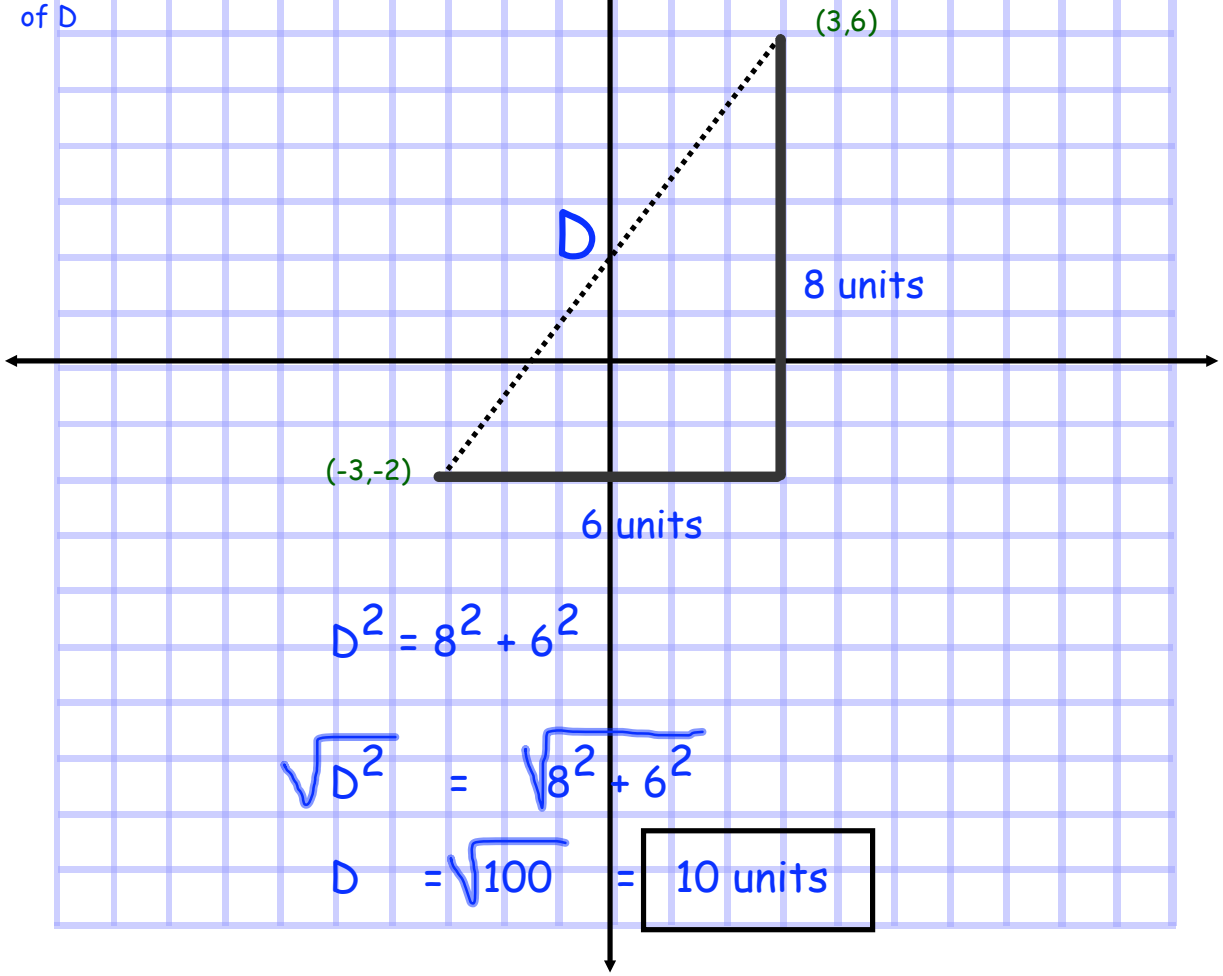
April 15, 2010



April 15, 2010

distance formula

Using the Pythagorean Theorem determine the length of D



$D^2 = 8^2 + 6^2$

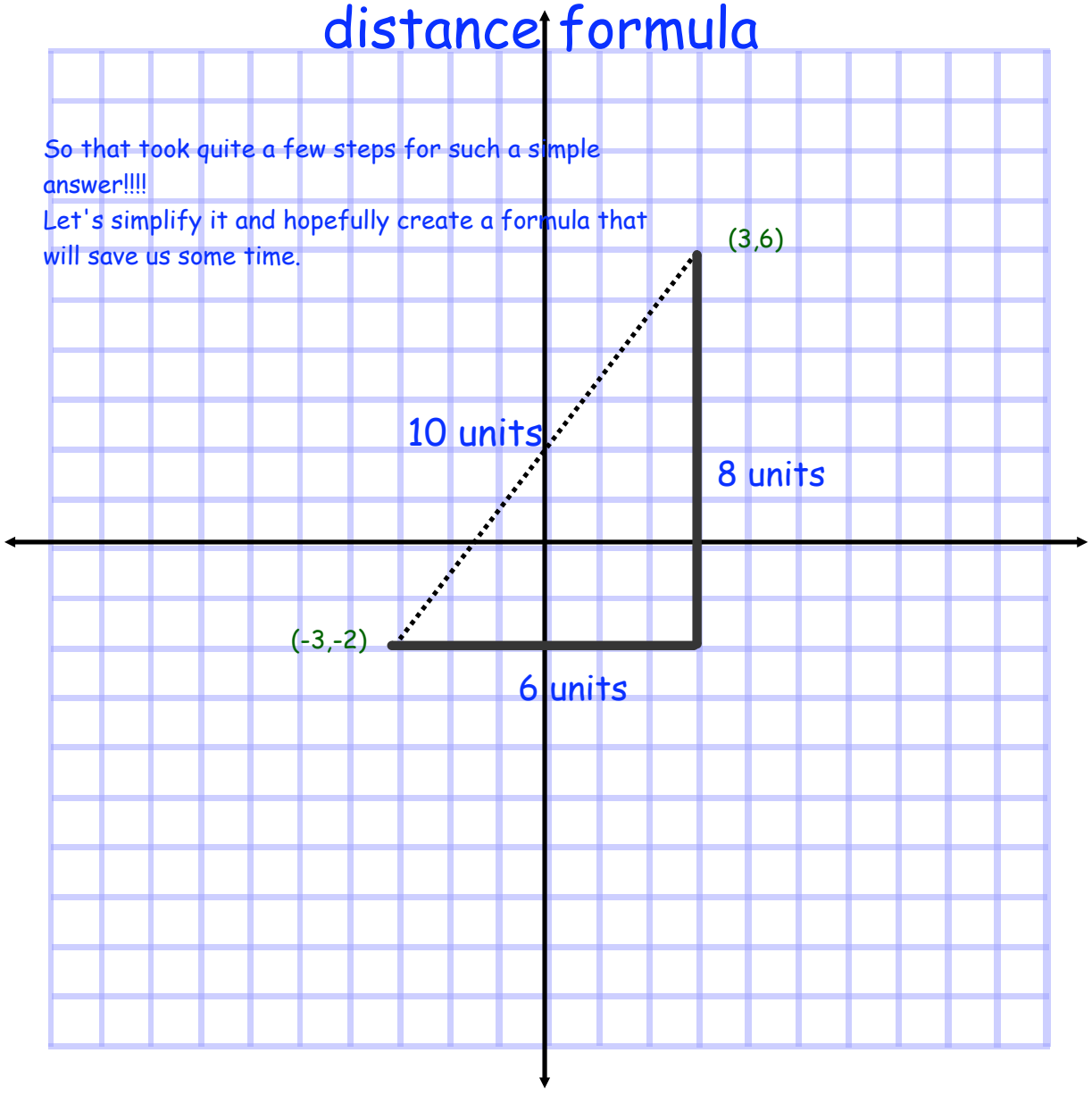
$\sqrt{D^2} = \sqrt{8^2 + 6^2}$

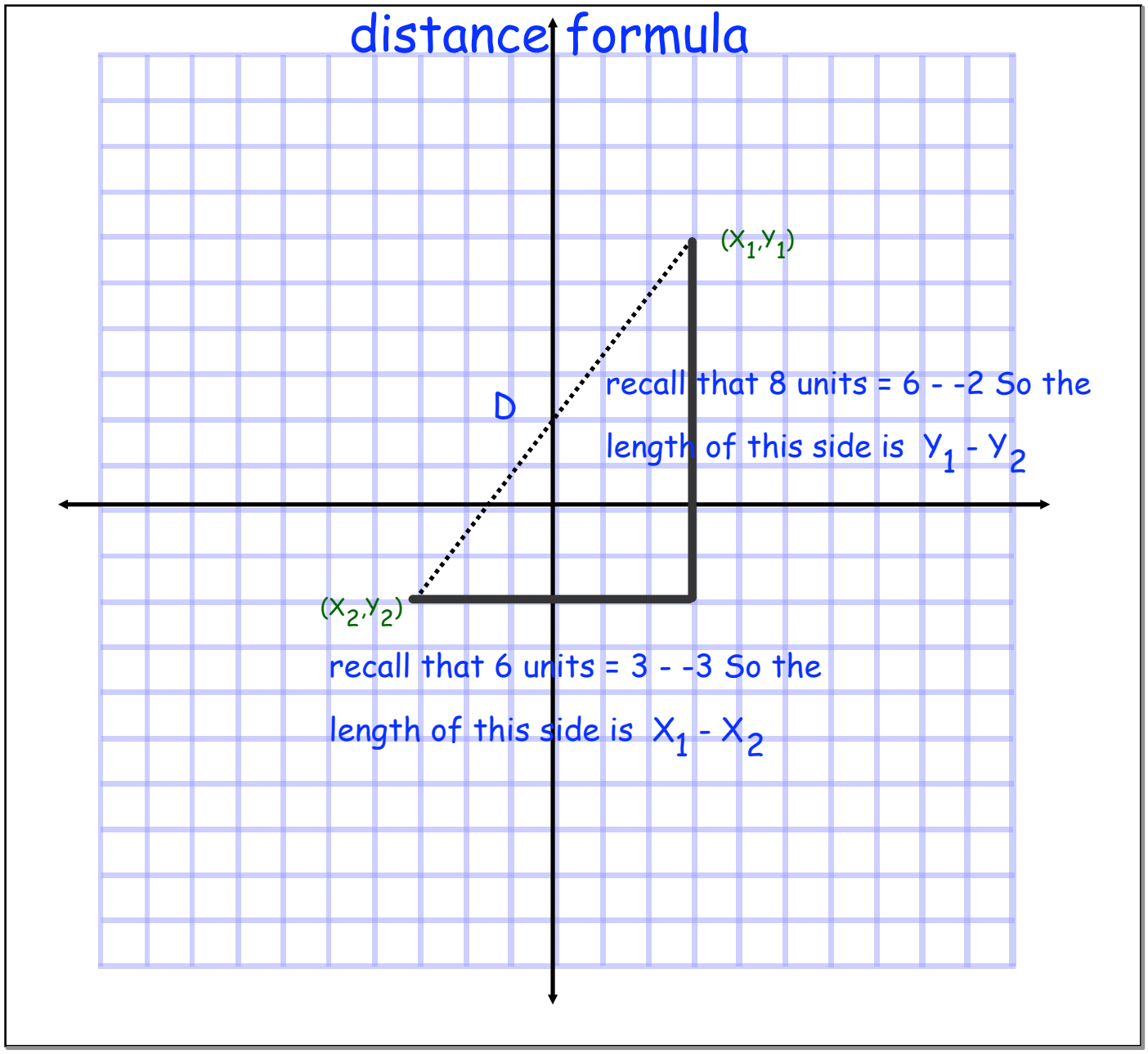
$D = \sqrt{100} = 10 \text{ units}$

April 15, 2010

distance formula

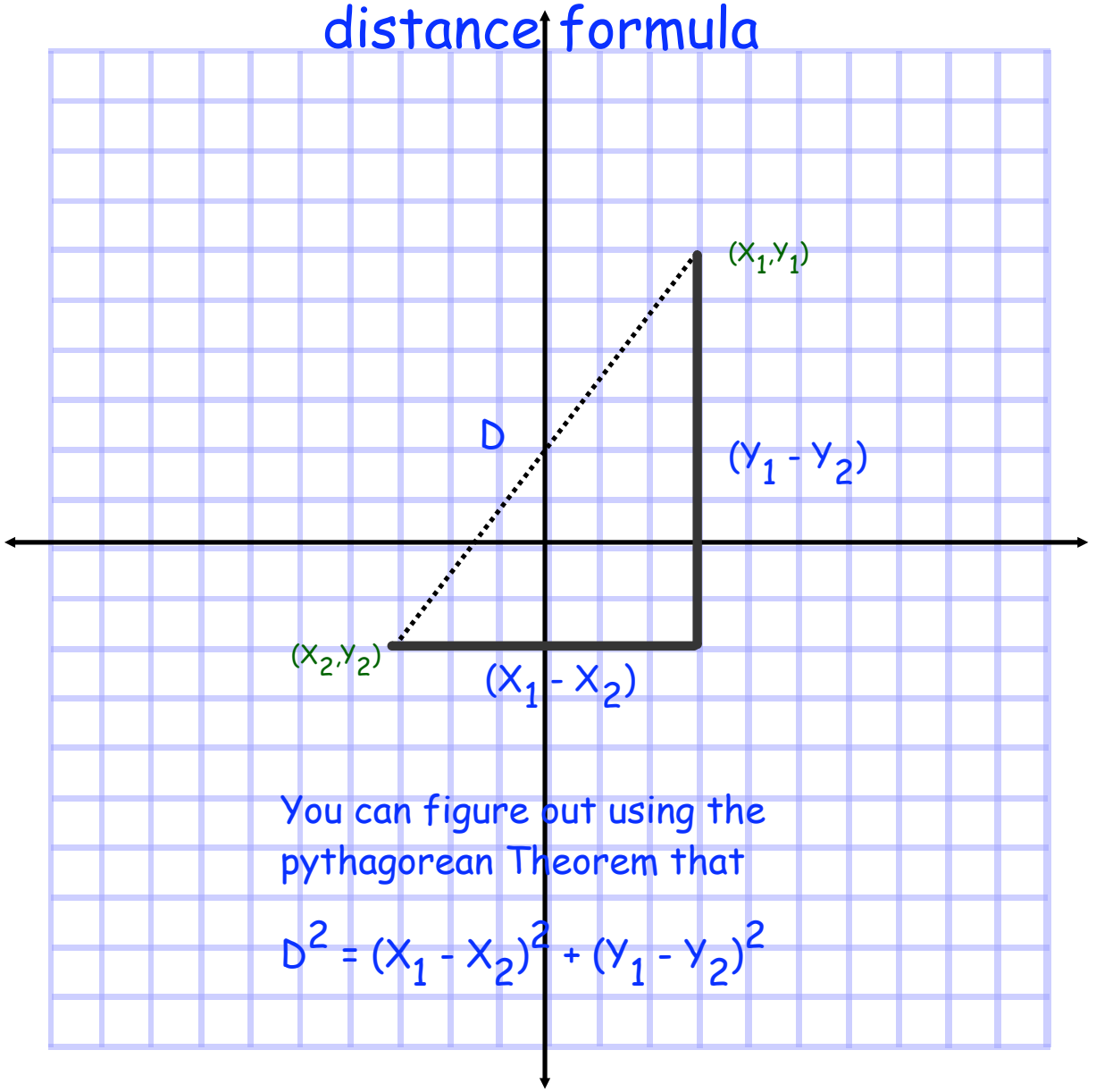
So that took quite a few steps for such a simple answer!!!!
Let's simplify it and hopefully create a formula that will save us some time.




distance formula
(X_1,Y_1)
D
recall that 8 units = 6 - -2 So the
length of this side is $Y_1 - Y_2$
(X_2,Y_2)
recall that 6 units = 3 - -3 So the
length of this side is $X_1 - X_2$

April 15, 2010

distance formula



You can figure out using the pythagorean Theorem that

$$D^2 = (X_1 - X_2)^2 + (Y_1 - Y_2)^2$$

distance formula

You can figure out using the pythagorean Theorem that

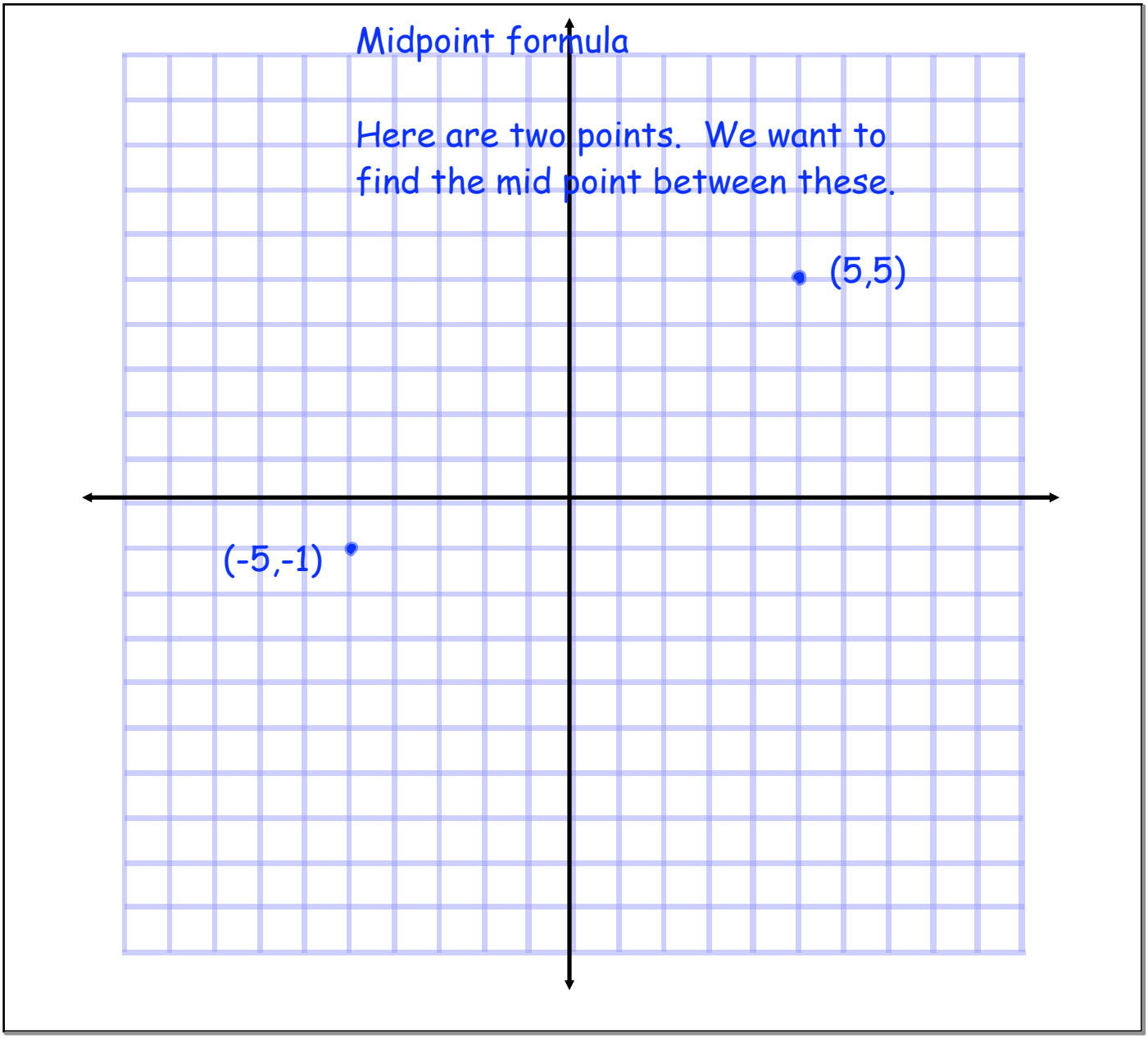
$$D^2 = (X_1 - X_2)^2 + (Y_1 - Y_2)^2$$

just take the square root of each side to solve for length D

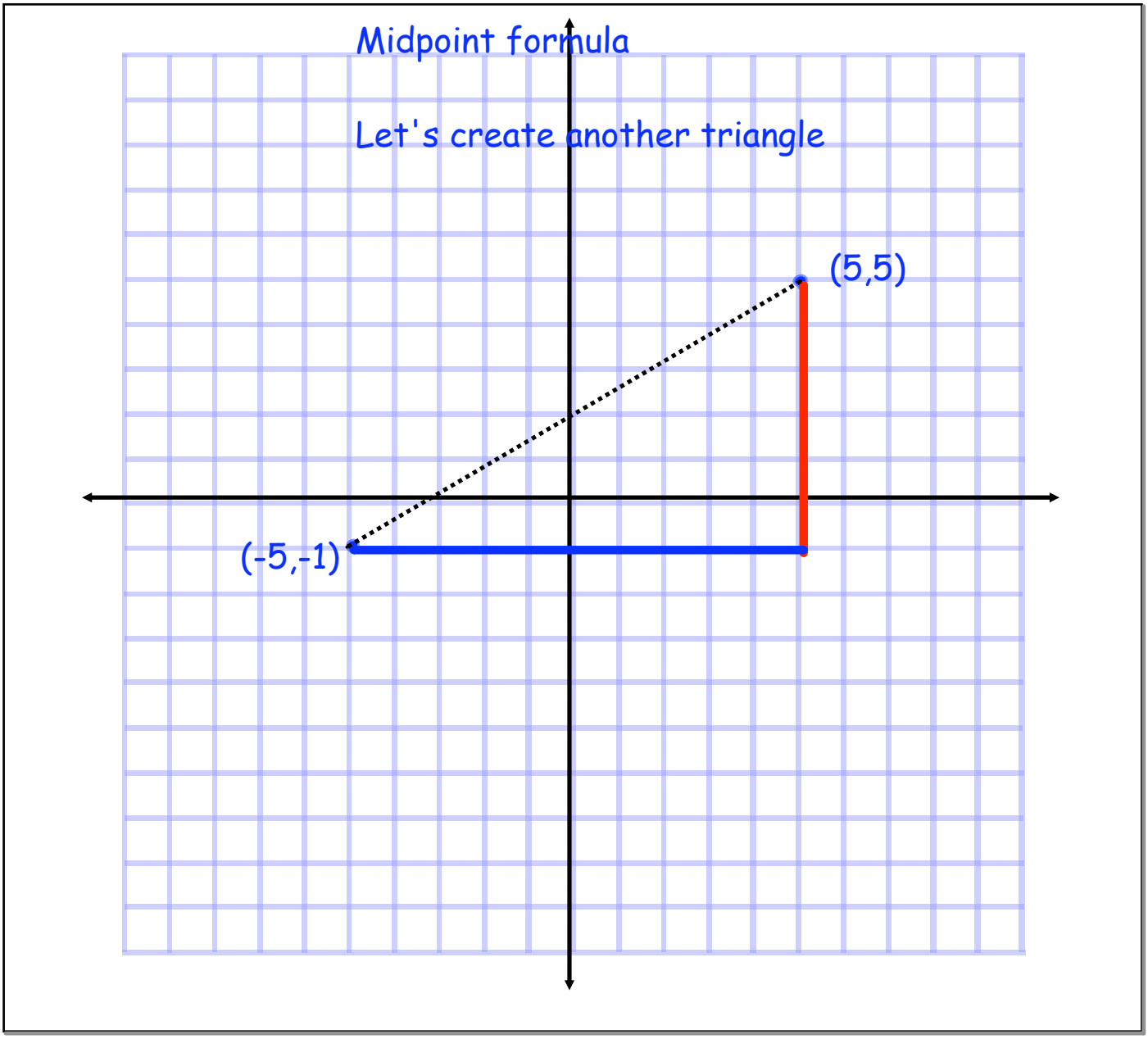
$$D = \sqrt{(X_1 - X_2)^2 + (Y_1 - Y_2)^2}$$

That's it :) Memorize this formula

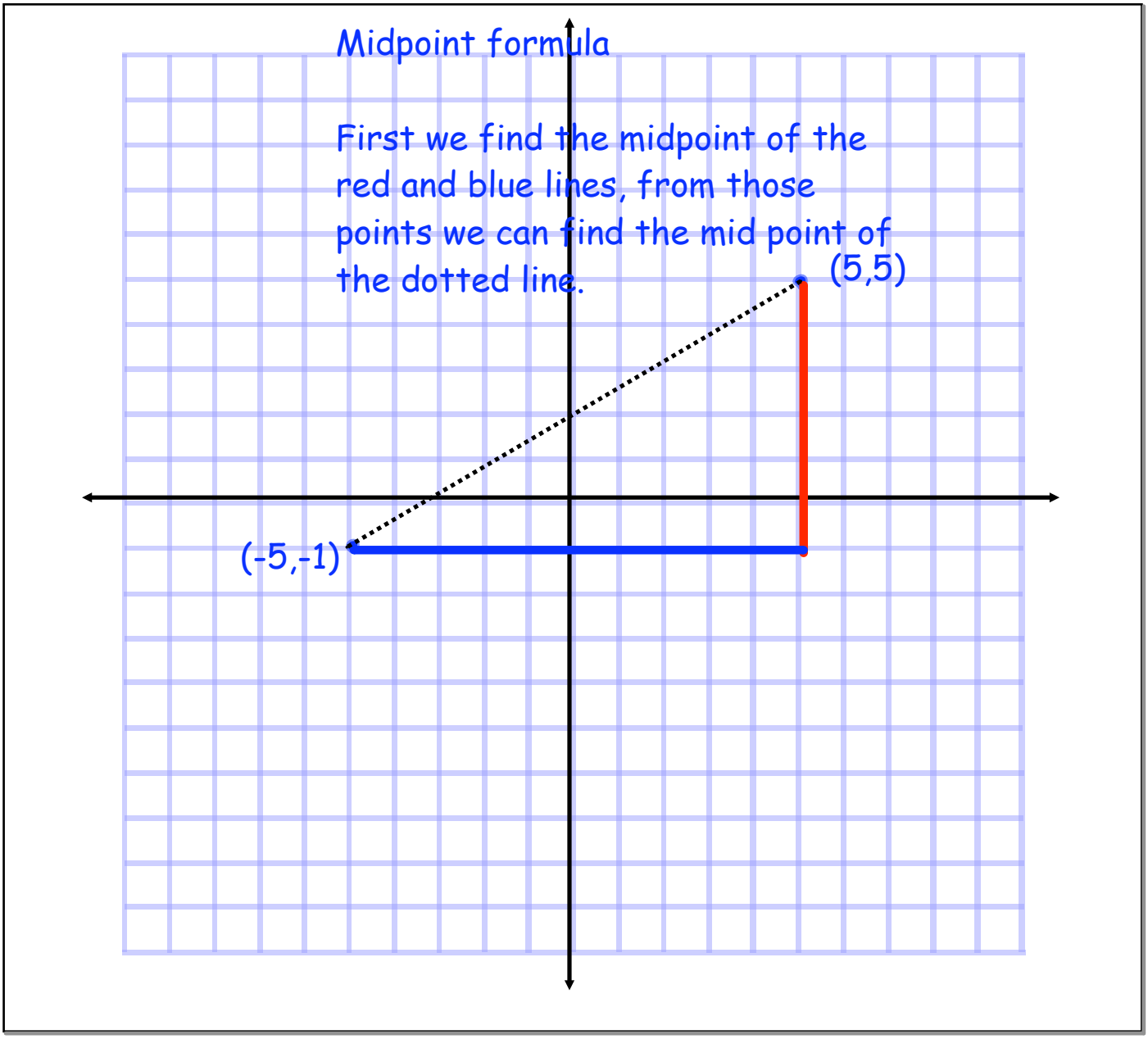
April 15, 2010



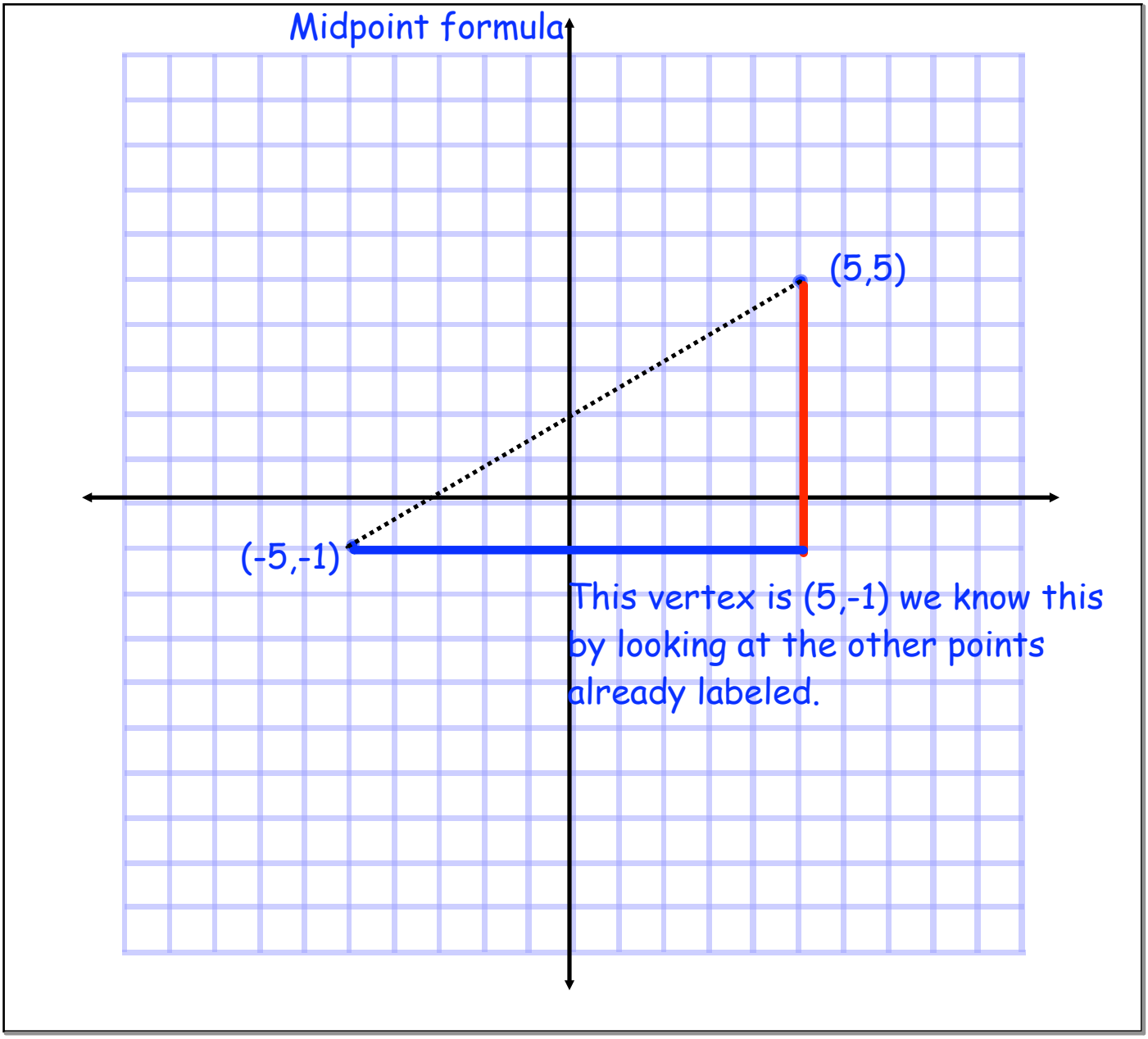
April 15, 2010



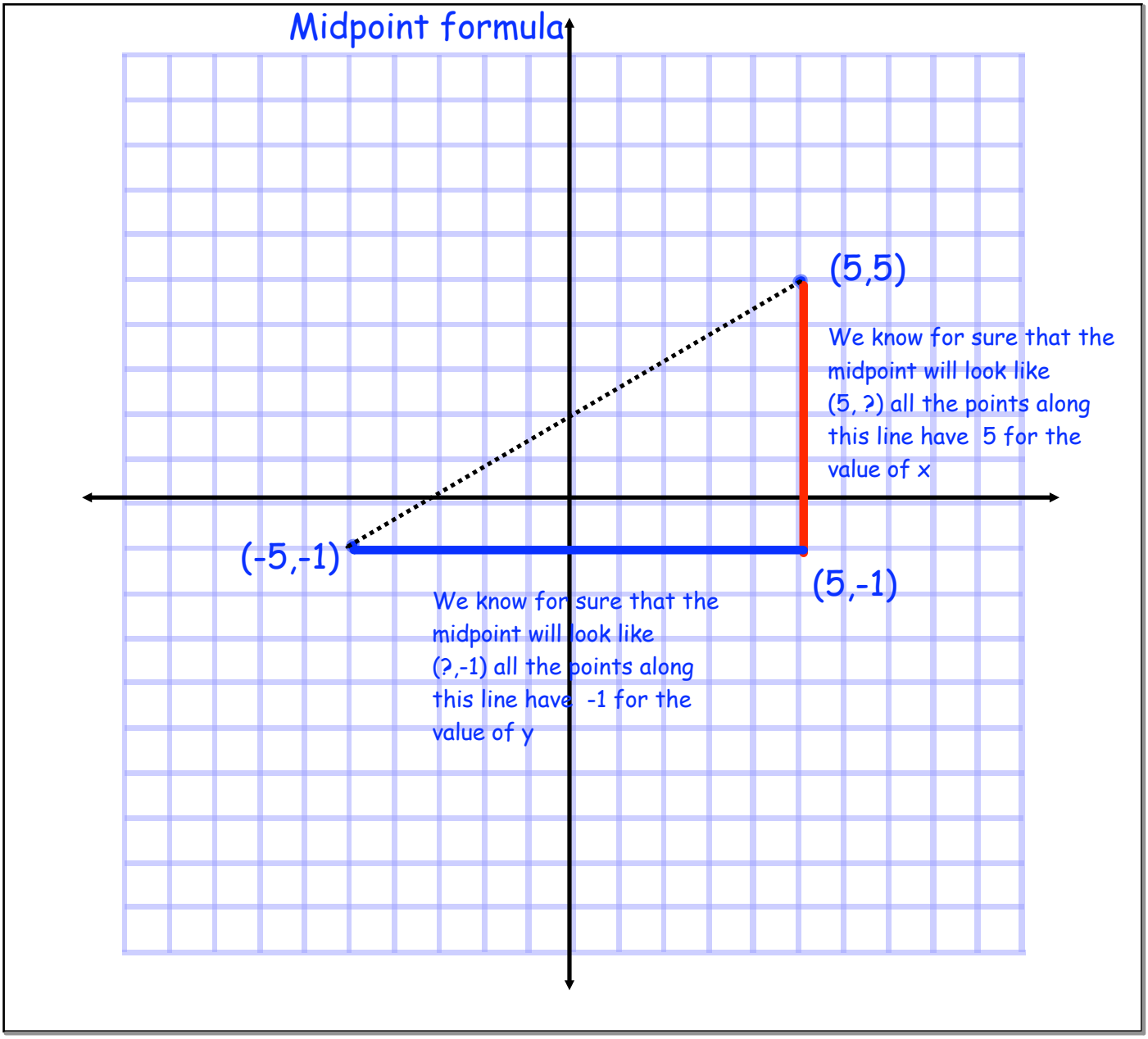
April 15, 2010



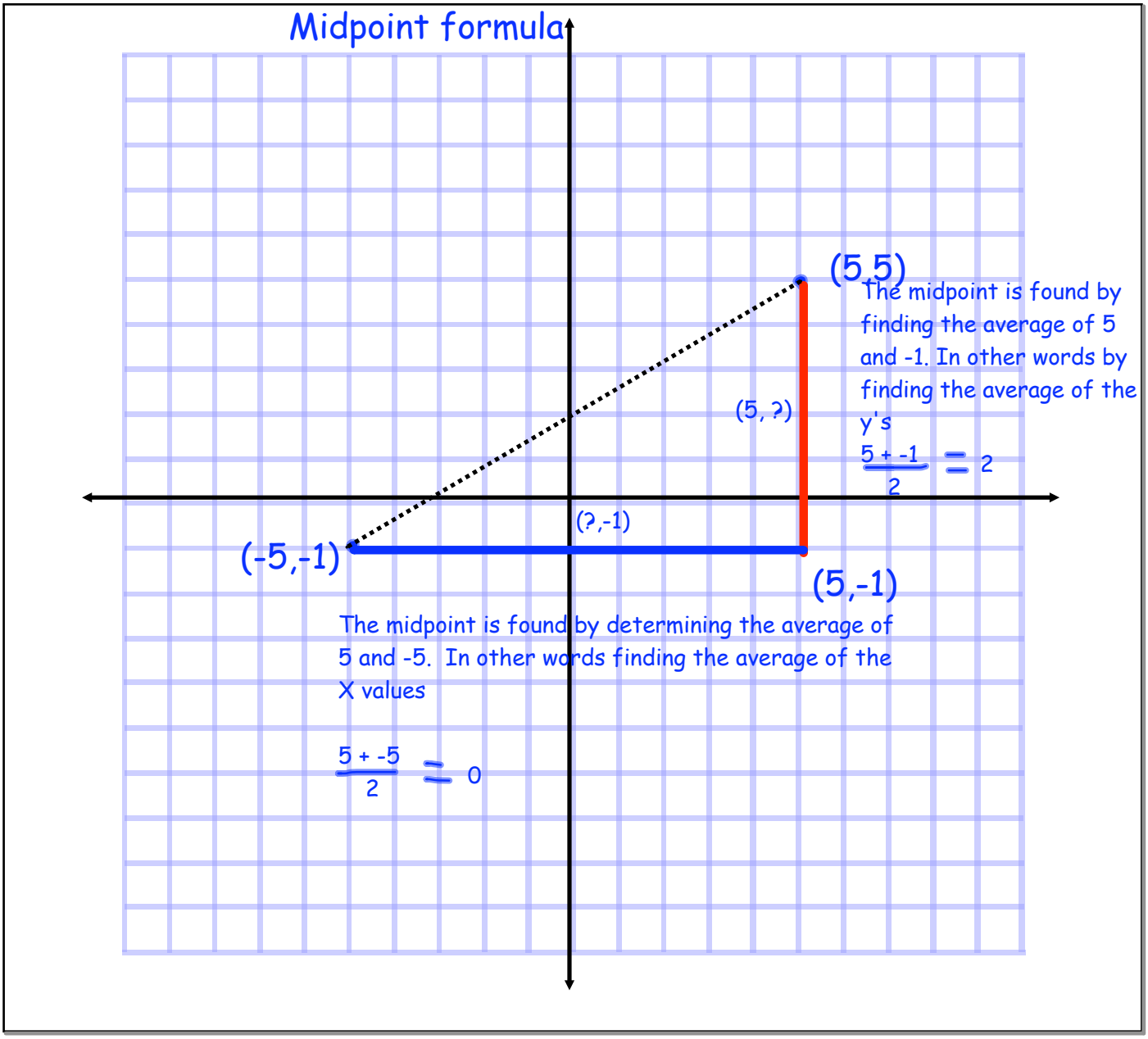
April 15, 2010



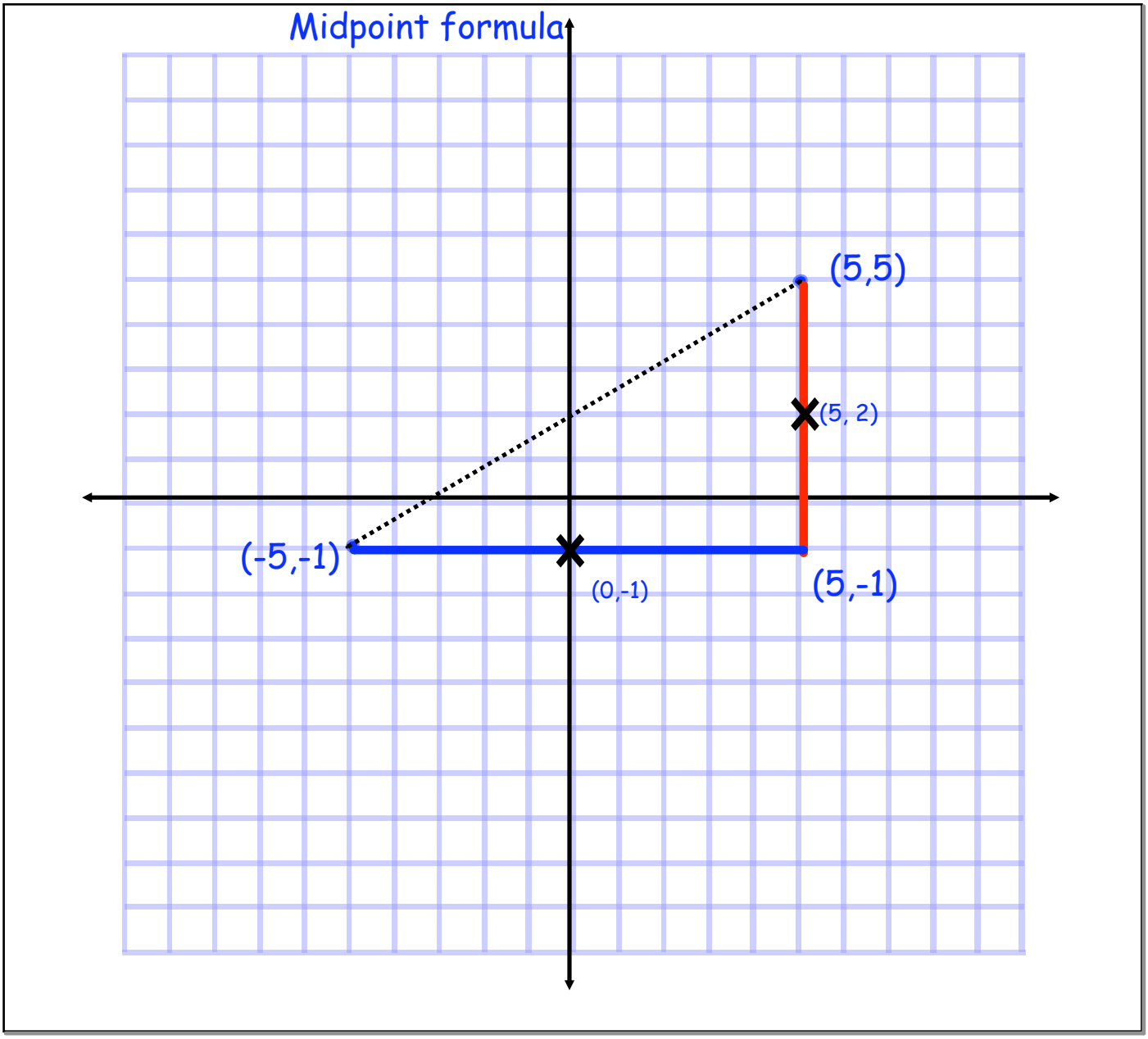
April 15, 2010



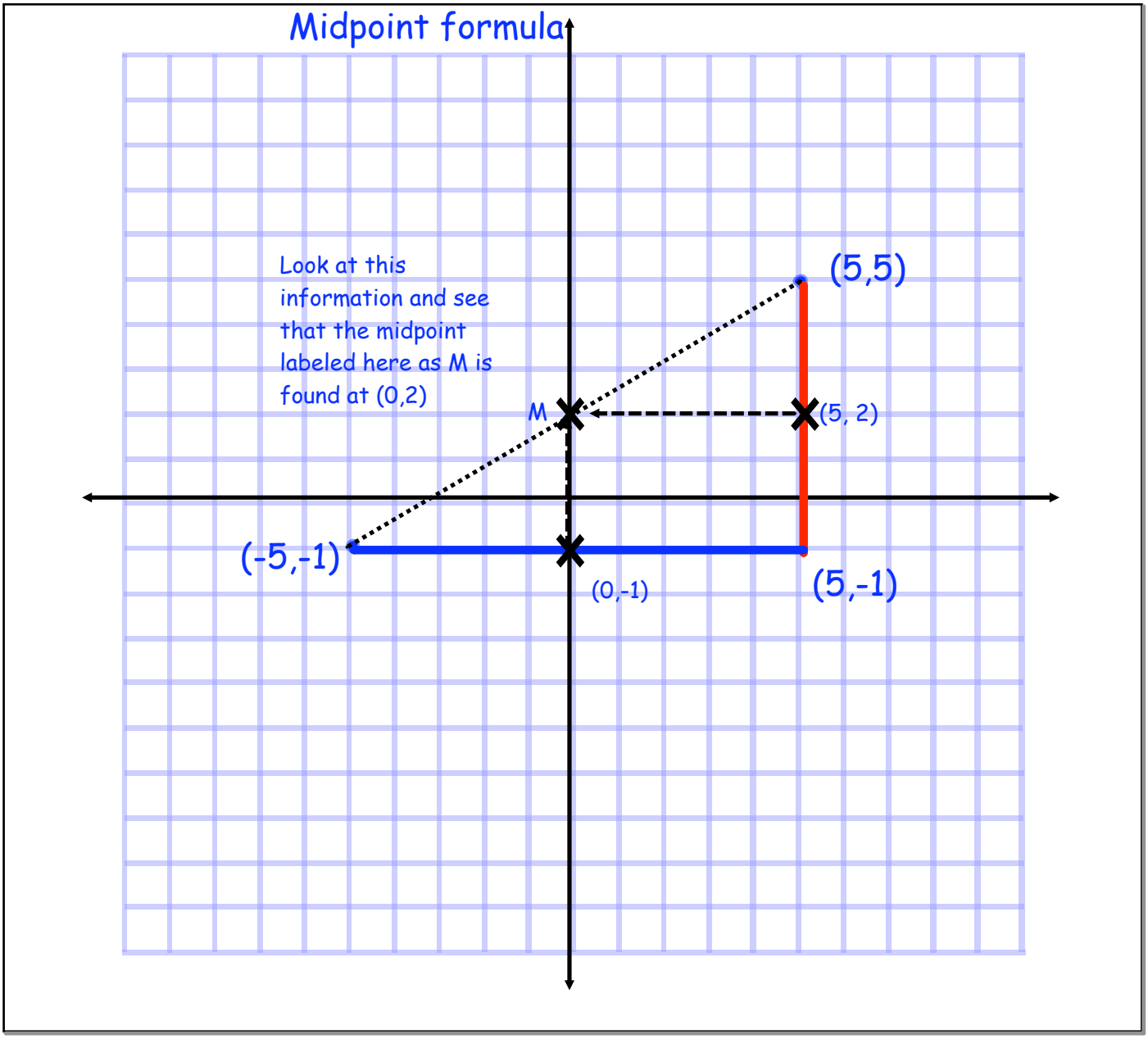
April 15, 2010



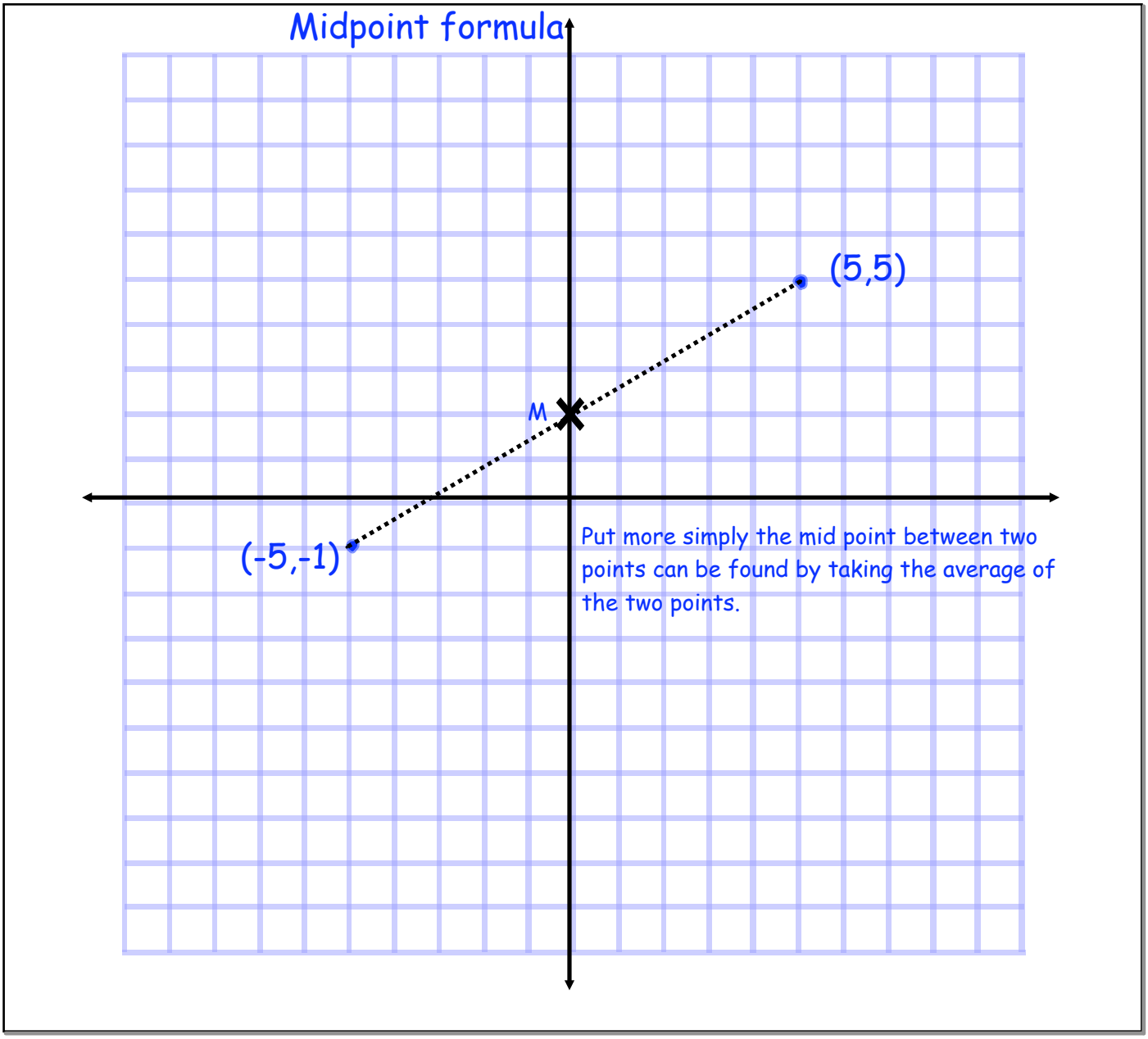
April 15, 2010



April 15, 2010



April 15, 2010



April 15, 2010