P5 Assign 5 - Pythagoras

This assignment is to be completed by those students on pace for, and interested in, getting 90 or 100% in the credit.

Because this assignment is designed to differentiate between the top students, you are NOT to get any help on it from others. You can ask your teacher clarifying questions but the code is entirely up to you.

Begin by opening the Pythagoras code example we completed in class. **Then duplicate the original example file and give it the new name: Assign5\_Pythagoras.**

First 80%

1. Using text (and an optional font) give your Program a title related to Pythagoras
2. Find a definition/description of Pythagoras’ theorem and paste the whole definition into one or more text lines.
   * Helpful hint - if you want to create multiple lines of text but only want to use a single text( ) code, you can add line breaks by putting **\n** (backslash then n) wherever you want a new line to begin.
3. Change the starting location of your triangle by altering its 3 x-coordinates. It must still be a right triangle, but permanently moved to a new location. Do not use the same location as your neighbour.
4. The height of the triangle is currently 250 pixels. Change it to 200 pixels.
5. Add text on the screen stating the the lengths of all three lines:
   * You can use the default font or add a new one.
   * The text should appear approximately next to the line.
   * The lengths of all three lines must update as you move the mouse.
   * You do not need to state the units of measurement
6. Add text calculating and displaying the surface area of the triangle. (Because the triangle changes, the surface area should update as you move the mouse.)

Eventually you will ask yourself this question: ***Wait, how do I calculate the square root?***  I am not going to tell you... [but this link will](https://www.geeksforgeeks.org/p5-js-sqrt-function/).

How do you know if you did it right?

Your height should always equal 200. Your width should change as you drag your mouse. Do an area calculation outside of P5.js and compare it with what your P5.js file says. If the numbers match, you did it right.

Final 20%

Add a second shape (not a triangle) but its height should change using **mouseY**. Line lengths and **surface areas** must be included.

Still Need a Challenge

This is not for marks, but if you are a glutton for punishment, save the file as version 2 and then try the following (they may not all be possible within the time given).

* Choose only one shape and delete the code for the other
* Change the shape so that it looks somewhat 3D. (you might want to add a picture and then ‘trace’ lines over it)
* Use the mouseX as width but use mouseY to be a Z-axis
* Calculate the VOLUME as you move the mouse.