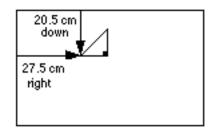
The Pythagorean Spiral - Math Project

Materials: • White Poster Board

- Pencil, Colored Pencils/Markers
- ruler (metric) & metre stick
- 90° corner triangle

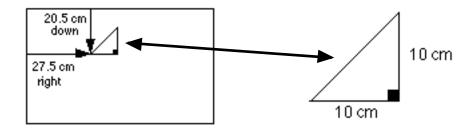
Step 1: Beginning in the correct location

Place the poster board on its side. With the poster board in this position measure from the top left hand corner, 27.5 cm to the right and 20.5 cm down. This position is crucial to placing the full diagram on the poster board. (Diagram right)



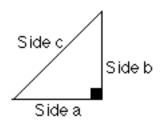
Step 2: Placing the triangle on the poster board

Using your ruler create a right triangle starting at the above location. Draw the triangle to the right of the starting point. The base of the triangle needs to be parallel with the top and the bottom of the poster paper. To create the 90° corner place the triangle tool down and trace the corner. The lengths of the sides of the original triangle should be as shown below:



Calculate the Hypotenuse's Length

Using the Pythagorean theorem calculate the length of the Hypotenuse. Do the calculations on a separate piece of paper and then place the reduced answer on the hypotenuse. All answers must be in their most reduced forms!!! I will do the first one for you:



$$a = 10 \text{ cm}$$
 $b = 10 \text{ cm}$

$$a^{2} + b^{2} = c^{2}$$

$$(10)^{2} + (10)^{2} = c^{2}$$

$$100 + 100 = c^{2}$$

$$200 = c^{2}$$

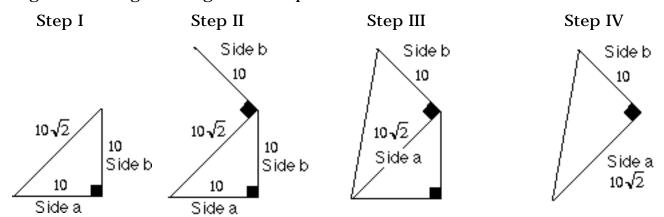
$$\sqrt{200} = c$$

$$\sqrt{100 * 2} = c$$

$$10\sqrt{2} = c$$

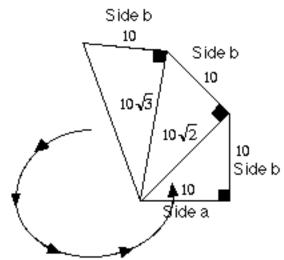
Step 4: Beginning the Spiral Effect

(Step I) Using that hypotenuse of the triangle that you just created, form a new right triangle on top of the previous hypotenuse. (Step II) Create a new side "b" on the old triangle such that it is 90° degrees to the old hypotenuse and 10 cm in length. (Step III) Connect the new side "b" to the center location. (Step IV) Thus forming the next right triangle in the Spiral.



Step 5: Keeping on Going

Return to step 3 to calculate the newly created triangle's hypotenuse. Continue the process 18 times.



Step 6: Coloring in the pattern

Detail your Pythagorean Spiral with a pattern. The pattern should be consistent with the pattern created by the Spiral. Be CREATIVE!!!!

Helpful Hints:

- Complete the assignment in pencil first, and then sharpen up the lines using a black marker
- When labeling the diagram PRINT CLEARLY.
- Use color and creativity to make the spiral pattern.
- Effort and creativity is rewarded!!!
- Examples will be provided in class.