

The Pythagorean Spiral Project

Task: To use a protractor and ruler to create a poster of the Pythagorean spiral.

The result needs to be colored and may be creatively decorated. You will need to turn in your poster and a separate sheet of paper with all calculations.

Materials: poster paper (LD size), ruler, protractor, pencil, colored pencils or markers

Follow the steps below and note the way the grading rubric that follows.

1. Place the poster board in landscape orientation. Measure from the top left hand corner 20 cm right and 11.5 cm down. This will be the starting point for your diagram. It will ensure that your spiral stays on the page.
2. Using your ruler create a **segment** that is 5 cm across starting from the starting point and heading towards the center/right of the poster. Make this segment **perpendicular** to the side of the poster. Use your protractor and ruler to create a **congruent** segment that is perpendicular to the original. Connect the endpoints of the two segments to create a **right isosceles triangle**.
3. On a separate piece of paper, use the Pythagorean Theorem to calculate the length of the hypotenuse. Show all work and write your answer as both a square number contained within a square root and as a side length.
4. Using the hypotenuse of the first triangle, create another right triangle on top of the previous hypotenuse. The old hypotenuse will be the new base and create a perpendicular segment to this, with a length of 5. Then connect the two segments to form a new hypotenuse.



5. On your separate sheet of paper, show the calculations to find the length of the new hypotenuse.
6. Continue to repeat this process of connecting and creating new triangles with a side length of 5, using the previous hypotenuse as the other side. Continue to show your calculations on your separate sheet of paper. Create triangles until you have formed a full spiral.
7. Detail your Pythagorean Spiral with a design. Use color and a pattern to make a creative picture.

***Attach the paper with all of your calculations to your poster & make sure your name is on it!

Name _____

Grading Scale	4	3	2	1
Use of protractor calculations	Evidence of each use of protractor shown (show each right angle with an appropriate marking)	Evidence of most uses of protractor is shown	Partial or incorrect protractor use shown	Protractor markings are not visible
Poster Result	The result shows 17 right triangles that rotate around to the right and the last triangle overlaps the original	The result shows an error in creation resulting in one fewer or one more triangle	The result goes the wrong direction and/or is off by more than one triangle	The result does not appear to have followed the proper requirements
Creativity	The poster is creatively colored and decorated	The poster is colored, but the results are not neat	The poster is partially colored or incomplete	The poster is not colored or decorated
Grading Scale	8	6	4	2
Calculations for each hypotenuse	All work is shown using the Pythagorean Theorem and each answer is simplified	All work is shown using the Pythagorean Theorem but some answers are not properly simplified	All work shown but with errors in calculation and/or simplification	Only partial work is shown and/or no evidence of the Pythagorean Theorem
Comments:				
Total Marks:				/20