

Guided Discover Lesson

The Golden Triangle

Student directions:

1. Use your compass and ruler to create an isosceles triangle with sides of 13 cm, 13 cm, and 8 cm. Label the vertices A (the vertex), B, and C.
2. Measure and record the angle measures and lengths of sides of triangle ABC.
3. Construct the angle bisector of angle B. Label the unlabeled vertex D. Measure and record the angles of triangle BCD and the lengths of the sides.
4. Construct the angle bisector of angle C. Label the intersection of segment BD and the angle bisector, E. Measure and record the angles of triangle ECD and the lengths of the sides.
5. Construct the angle bisector of angle EDC. Label the intersection of segment EC and the angle bisector, F. Measure and record the angles and the lengths of the sides of triangle EDF.
6. Construct the angle bisector of angle FED. Label the intersection of segment FD and the angle bisector, G. Measure and record the angles and the lengths of the sides of triangle FEG.
7. Continue the same process moving in the same counterclockwise or clockwise direction until the legs of the smallest triangle are 1 cm in length.
8. Starting with the last constructed vertex of the smallest triangle, spiral out, connecting every vertex.
9. Answer the following questions:

What have you noticed about the lengths of the triangles formed?

What pattern, if any, can you determine when observing all the lengths of the sides?

Are these triangles similar? Why or why not?

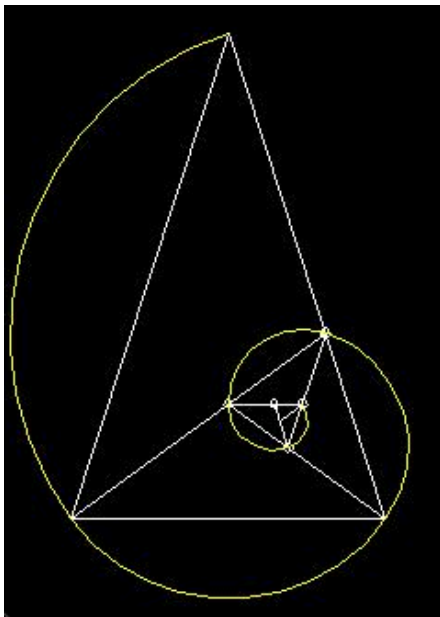
Table to record data:

Triangle	Measures of angles			Lengths of sides		

Teacher note:

Students should notice the sides are all Fibonacci numbers. The triangles are not similar, although they appear to have congruent angles. Have students check the ratios of corresponding sides.

Final spiral:



See website for more information:

<http://www.geocities.com/robinhuiscool/Goldenratio.html>