DIVERSITY IN STEM EDUCATION

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## TEACHING MATHEMATICS WITH ENCRYPTION ALGORITHMS FROM PAST TO PRESENT

PURPOSE

In this study, applicaiton-oriented activities were organized that can be used by our teachers working all over the world. The activities were organized as STEM studies, and some concepts of the maathematics course and some of the computer science courses were intertwined. The aims is to enable students to make algorithms and coding by using the main discipline of mathematics, together with some of the achievements of computer science. These activities can be done by using only papaer, pencil, ruler, proteactor, compass and calculator for teachers working in unforable environment, as well as in environments where there is a computer and internet, they are arranged to be done with coding and software. In this way, the activities carried out allow teachers and students to do practical work in any environment.
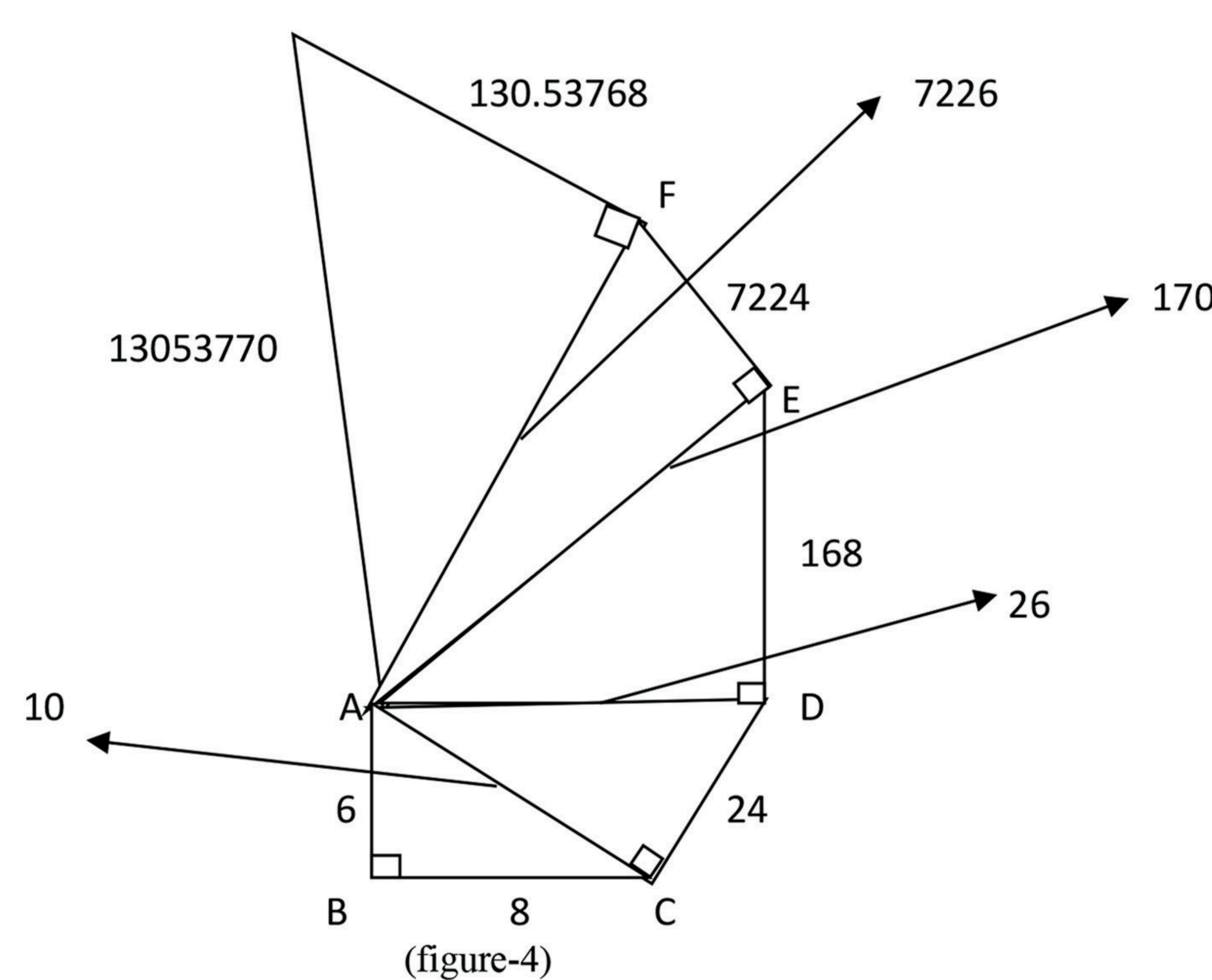
(figure-4)

When the degrees of angles are calculated according to the tangent values of the angles of the A corner in the spiral, the following results are obtained approximately.
m(BAC)=53
m(CAD)=68
m(DAE)=81
m(EAF)=88.4
m(FAG)=88.5
Note: Triangle AFG is nested with triangle ABC due to its angle values. Because it crosses 360 degrees.
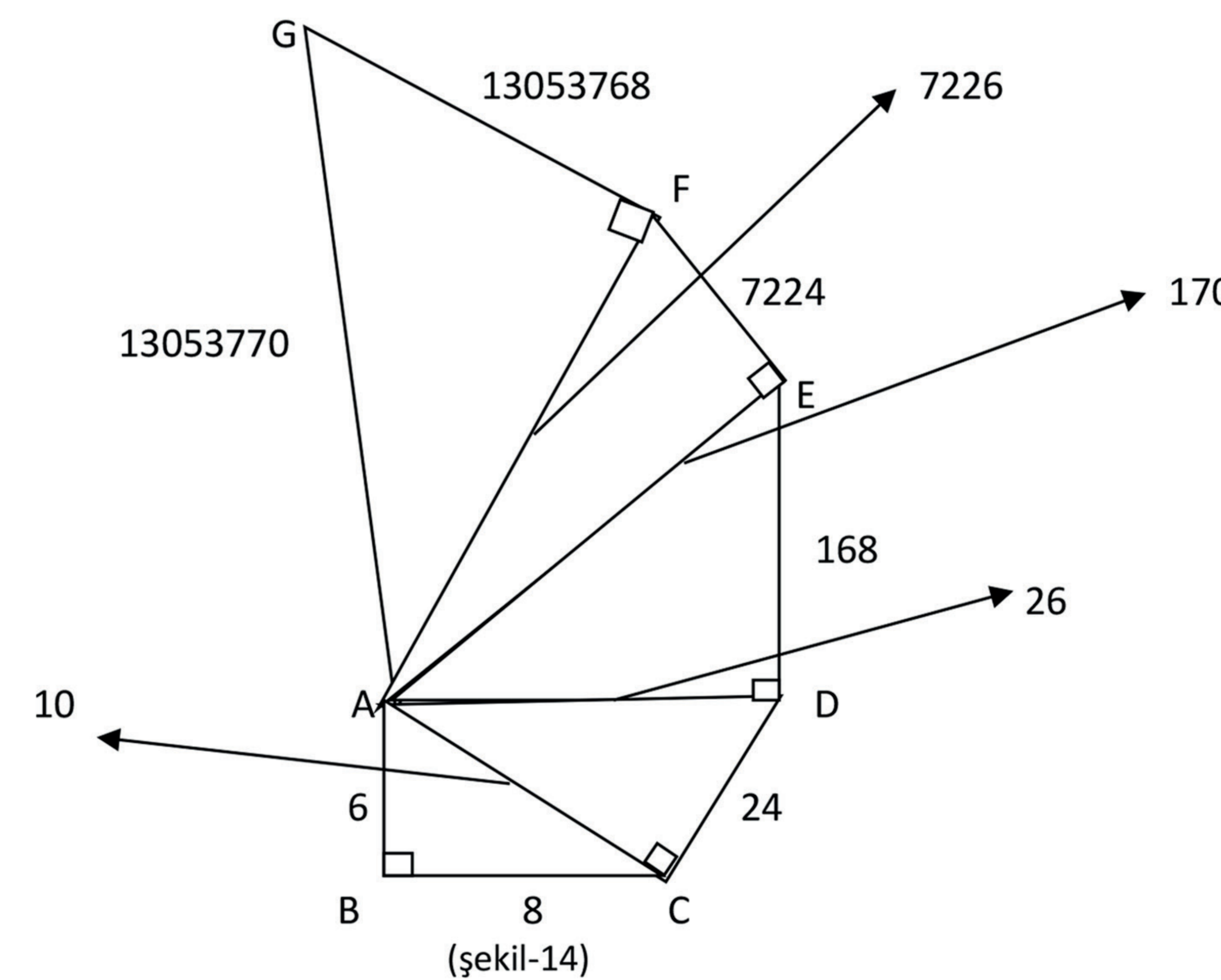
(şekil-14)

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Tablo-11

The triangle given in Figure-4 is distributed to the students . Let them think about why these triangles form a triangular spiral and how the r value should be used. If necessary, they are asked to draw the spiral with a ruler or measure its length. The following rule is then distributed to the students. In particular, the meaning of the tangent value and the angle finding rule are taught and they are provided to find the tangent values and angles depending on the side lengths given above. After which triangle the spiral is intertwined is shown in practice.

For example , if the lACl edge is deleted in figure-14 , ABCD rectangle becomes a Heron Quadrilateral. Because it is formed by the union of two right triangles, both the perimeter and the area are integers. For example, if the lADl edge is deleted in figure-6, the ACDE rectangle becomes a Heron rectangle. The same logic applies here as well. For example, if the edge LAEl is deleted, the ADEF rectangle becomes the Heron Square. From this point of view, we can obtain the infinite Heron Quadrilateral by continuing on the spiral. Also, since there will be infinitely different spirals, there are Heron Quadrilaterals in infinitely different ways. Table 4 ' when examined AFG wherein the angle values of the corner angles of the triangle after the next triangle is no problem in terms of not drawn any selected rectangle will remain between 88.5 degrees and 90 degrees.

Thanks to the method found, students can draw infinitely different spirals. The angles and side lengths of the triangles in this spiral can be found. Heron polygons can be found, especially the Heron Triangle.