Orthocenter Investigation

Step 1: Use a geometry software package to draw a triangle.

Step 2: Construct the three altitudes of the triangle. Construct the point of concurrency of these three altitudes. Label this point A. Point A is the _____ of the triangle.

Step 3: Hide the three altitudes of the triangle.

Step 4: Draw a segment from each vertex of the triangle to the orthocenter, forming three new triangles within the original triangle.

Step 5: Construct the orthocenter of one of the new triangles formed in step 4. Where is this orthocenter?

Step 6: Repeat step 5 for the other two triangles formed in step 3. Where is the orthocenter for each of these triangles?

Step 7: Drag the vertices of the original triangle. What is the relationship between the four orthocenters?

Step 8: The orthocenter of any triangle formed by two vertices of another triangle and the orthocenter of that triangle is_____.

Step 9: Conjecture: If one point in a given set of four points is the orthocenter of the other three, then _____.