

Additional GSP Examples of Explorations for Students that can lead to Conjectures, Arguments, and Proofs

Exploration A:

Construction Instructions:

Step 1: Construct a triangle. Label it ABC.

Step 2: Find the midpoints of sides AB, BC, and AC. Label them D, E, and F, respectively.

Step 3: Connect points D, E, and F to form another triangle.

Investigate:

Drag the vertices or sides of triangle ABC. Make sure you drag it into a variety of sizes and shapes. What do you notice about the four triangles?

Conjectures: Write your conjectures below.

Explore More: Construct the medians of triangle ABC? What do you notice?

Construct midpoints on the sides of triangle DEF. Connect the midpoints to form another triangle? Label this triangle GHI. Construct midpoints on the sides of triangle GHI.

Connect the midpoints to form another triangle. What do you notice about the smaller midpoint triangles?

Justify: Verify that your conjectures are true or false. Create an argument to convince your classmates that your conjectures are true (or false).

Exploration B:

Construction Instructions:

Step 1: Construct a circle.

Step 2: Construct a quadrilateral inscribed in the circle (use four points on the circumference of the circle). Label the quadrilateral CDEF.

Investigate:

Measure the lengths of each of the sides of the quadrilateral (they are also chords of the circle). Also measure the arcs intercepted by the chords and the four interior angles of the quadrilateral. Drag one of the vertices of the quadrilateral. What relationships do you notice?

Conjectures: Write your conjectures below.

Justify: Verify that your conjectures are true or false. Create an argument to convince your classmates that your conjectures are true (or false).