Enrichment 5-3

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## *Constructions—Centroid and Orthocenter*

Follow the directions below to locate a point of concurrency of △*ABC.*

1. Using a construction or folding, find the midpoint of each side of the triangle.

2. Draw all three medians of the triangle.

3. What word names the point of intersection of the three medians? Label this point *D.*

4. Is this point in the interior or the exterior of △*ABC*?

5. Is it possible for this point to lie outside a triangle? Explain.
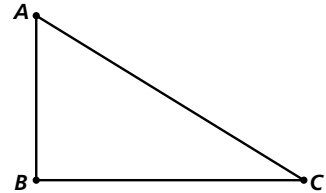
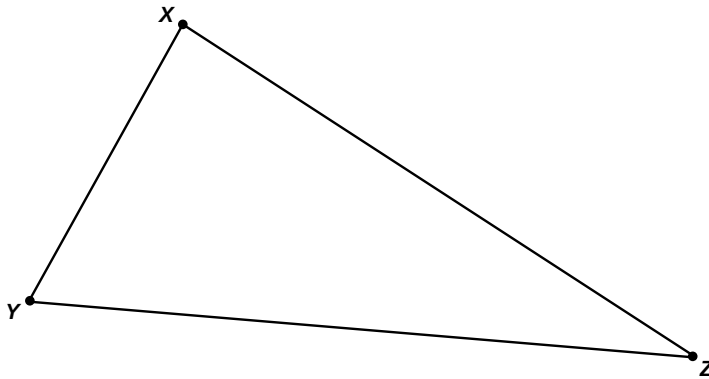**Follow the directions below to locate a point of concurrency of △*EFH.***

6. Construct all three altitudes of △*EFH.* (*Hint:* Remember that some altitudes may lie outside the triangle.)

7. What word names the point of intersection of the altitudes? Label this point *I.*

8. What are the possible locations of point *I*?
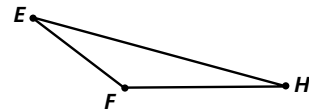
Trace △*XYZ* on a piece of card stock or cardboard, and cut it out.

9. Find the balancing point of the triangle using constructions.

10. Test your answer by placing the point on the tip of a pencil and observing whether the triangle is balanced.

11. Did you find the circumcenter, incenter, centroid, or orthocenter of the triangle?