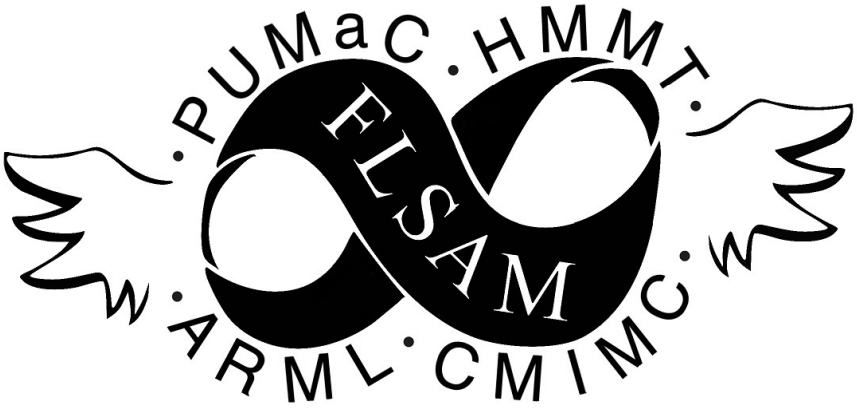
Florida Student Association of Mathematics



2025 HMMT Tryout

January 2025

Round 2: Geometry

This is round two of three, consisting of six problems to be completed in 40 minutes. Scoring is simply based on correct answers; there is no penalty for wrong answers.

1. Consider right triangle ABC with $\angle B = 90^\circ$, with incenter I and circumcenter O, satisfying $\angle IBO = 20^\circ$. Compute the absolute difference between $\angle A$ and $\angle C$.

2. Consider triangle ABC, satisfying $AB = 13, BC = 14, AC = 15$. Let M be the midpoint of BC. Let the line parallel to AC through B intersect (ABM) at X. Compute BX.

3. Consider acute triangle A, B, C with orthocenter H and circumcenter O. Given that $[BCH] = 10, [BCO] = 13, [ACO] = 14$, compute $[ABH]$.

4. Consider triangle ABC with circumcenter O and orthocenter H. The A-altitude meets BC at D and B-altitude meets AC at point E. Given that DE bisects OH, $AB = 20, AC = 24$, compute BC.

5. Consider quadrilateral $ABCD$ with circumcircle centered at O. Given $AB = 2 < CD$, the circumcircle of $\triangle ABO$ is tangent to the circumcircle of $\triangle COD$. The circumcircle of $\triangle AOD$ passes through the center of the circumcircle of $\triangle ABO$. Given that the radius of the circumcircle of $ABCD$ is 6, compute the area of $ABCD$.

6. Consider acute triangle ABC satisfying $AB = 8, AC = 10$. Given that the orthocenter of ABC, the incenter of ABC, the midpoint of BC, and the foot of the A-altitude are concyclic, compute BC.

Q1	Q2	Q3
Q4	Q5	Q6