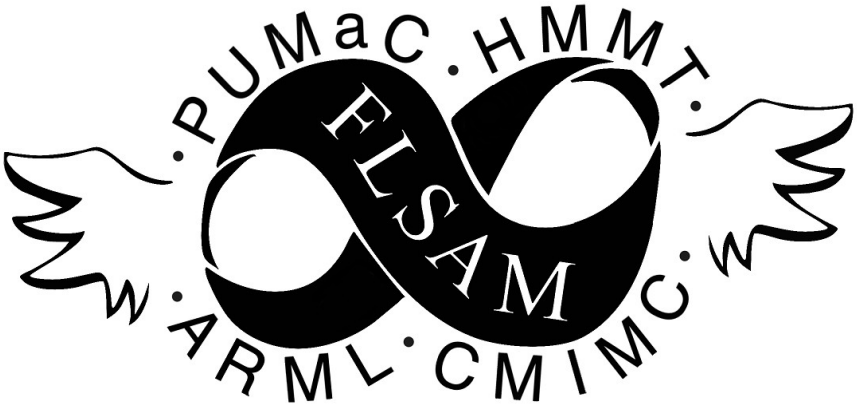
Florida Student Association of Mathematics



2026 HMMT Tryout

January 2026

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. Let $ABCDEF$ be a regular hexagon. Suppose P lies on side CD such that $PABC$ and $PDEF$ have areas 20 and 26, respectively. Compute the area of $ABCDEF$.

2. Let $ABCDEF$ be an equiangular hexagon with alternating sides of lengths 8 and 10. A circle, tangent to the sides of length 8, intersects the sides of length 10 at six distinct points. Compute the area of the polygon formed by the six intersection points.

3. Let $ABCD$ be a rhombus of side length 18. Points P and Q lie outside $ABCD$ such that

$$\angle APB = \angle CQD = 60^\circ \quad \text{and} \quad \angle AQB = \angle CPD = 120^\circ.$$

Given that $PQ = 12$, compute the area of $ABCD$.

4. Let ABC be an acute triangle with orthocenter H and circumcenter O. Suppose lines AO and AH intersect segment BC at X and Y, respectively, such that $BX = 3$, $XY = 5$, and $YC = 2$. Compute the area of $\triangle ABC$.

5. In rhombus $ABCD$ with $\angle A < \angle B$, extend AC past C to P. The circumcircles of ABP and BCP meet lines AD and AB at Q and R, respectively. If $BR = 50$, $CP = 7\sqrt{5}$, and $DQ = 40$, compute the distance from P to RQ.

6. Let ABC be a triangle with $AB = 24$. Points P and Q lie on segments CA and CB such that $PA = AB = BQ$. Suppose AQ and BP intersect at R. Points S and T lie on the circumcircles of ARP and BRQ such that $AS \parallel CB$ and $BT \parallel CA$. Given that $SR = 16$ and $RT = 20$, compute the area of ABC.

Q1	Q2	Q3
Q4	Q5	Q6