MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 3 - DECEMBER 2015
ROUND 6 PLANE GEOMETRY: POLYGONS (no areas)

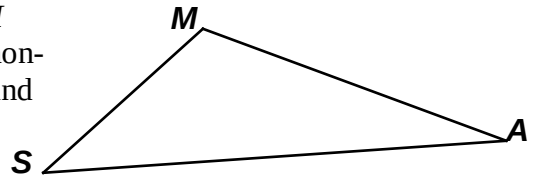
ANSWERS

A) _____

B) _____

C) _____

A) The triangle at the right would most likely be called ΔSAM by someone whose first language is English. However, a non-English speaking student could have started at any vertex and listed the vertices clockwise or counterclockwise, giving many more possible names.



How many different names are possible for polygon DUMBWAITER that begin with a vowel?

B) A concave hexagon *F* has 2 angles measuring 150° and 165°. The remaining 4 angles have measures in a ratio of 1 : 2 : 4 : 8. Compute the measure of the <u>largest</u> interior angle in *F*.
Note: Since the hexagon is concave, one of the interior angles is reflexive, i.e. its measure is between 180° and 360°.

C) If a regular polygon had 6 more sides, its exterior angles would each be decreased by 3°. Compute the measure of an interior angle of the original regular polygon.