

**MASSACHUSETTS MATHEMATICS LEAGUE  
DECEMBER 2003  
ROUND 6: POLYGONS**

**ANSWERS**

A) \_\_\_\_\_

B) \_\_\_\_\_

C) \_\_\_\_\_

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A) Calculate the number of diagonals that can be drawn from a single vertex in a regular polygon whose interior angles each measure 165 degrees.

B) A pennant is designed in the shape of an isosceles triangle, triangle ABC with vertex angle B. Points P and R are located on segments CB and AB respectively so that  $AC = AP = PR = RB$ . Calculate the measure of angle B.

C) A yard in the shape of a right triangle has sides that measure 60, 80, and 100 feet. A fence runs from the vertex of the right angle to the hypotenuse separating the yard into two regions of equal perimeter. In simple radical form, calculate the length of the fence.