MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 3 - DECEMBER 2009
ROUND 6 PLANE GEOMETRY: POLYGONS (no areas)

******* NO CALCULATORS IN THIS ROUND *******

ANSWERS

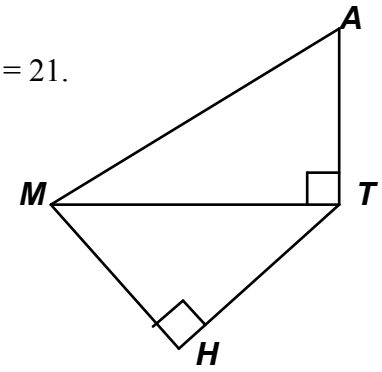
A) _____ °

B) _____

C) _____

A) The angles of ΔPQR measure $(7x - 3)°$, $(6x + 7)°$ and $(95 - 4x)°$. The largest angle is $\angle P$ and the smallest angle is $\angle R$. Determine the $m\angle Q$.

B) Given the quadrilateral $MATH$, where $\overline{MT} \perp \overline{AT}$, $\overline{MH} \perp \overline{TH}$ and $MA = 21$. Compute the sum of the squares of the sides of the quadrilateral.



C) The interior angles of regular polygon P measure $x°$.
The interior angles of regular polygon Q measure $\left(x + \frac{1}{2}\right)°$.
If Q has 8 more sides than P, compute the number of diagonals in Q.