

**MASSACHUSETTS MATHEMATICS LEAGUE  
CONTEST 6 - MARCH 2013  
ROUND 5 PLANE GEOMETRY: ANYTHING**

**ANSWERS**

A) \_\_\_\_\_ °

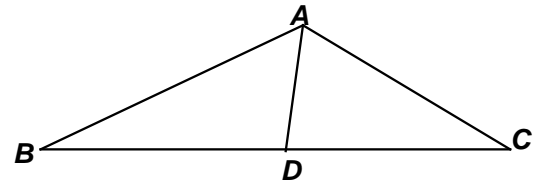
B) \_\_\_\_\_ °

C) ( \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ )

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

A) Regular nonagon DECATHLON is inscribed in circle  $P$ . Chords  $\overline{CO}$  and  $\overline{DT}$  intersect at point  $Q$ , compute the measure of the obtuse  $\angle Q$ .

B) In  $\triangle ABC$ , point  $D$  is located on  $\overline{BC}$  so that  $\overline{AD}$  divides  $\triangle ABC$  into 2 similar triangles. If  $m\angle B = 37^\circ$  and  $AB \neq AC$ , compute  $m\angle BDA + m\angle C$ .



C) Given:  $\overline{AE} \perp \overline{ED}$ ,  $\overline{BC} \perp \overline{DC}$ ,  $\triangle AED \cong \triangle BCD$

$$DE = 6\sqrt{3}, AD = 2.5 \cdot AB \text{ and } BD = 1.25 \cdot BC$$

The area of  $ABCDE$  can be written in the simplified form as  $a(b + \sqrt{c})$ . Compute the ordered triple  $(a, b, c)$ .

