MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 - FEBRUARY 2017
ROUND 5 PLANE GEOMETRY: CIRCLES

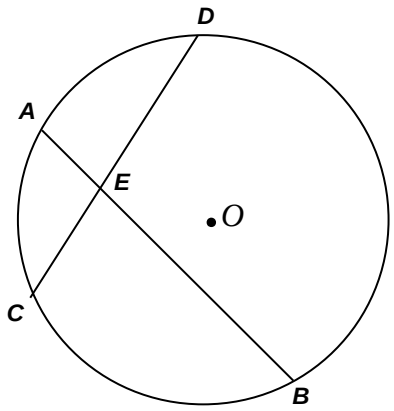
ANSWERS

A) _____

B) _____

C) _____

A) In circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at point E. If the degree measures of minor arcs $\overset{\frown}{AD}$ and $\overset{\frown}{BC}$ are $(2x)^\circ$ and $(10+3x)^\circ$, respectively, and $m\angle BED = 5(x-1)^\circ$, compute the value of x.



B) Circles are inscribed in and circumscribed about an equilateral triangle with sides of lengths 12. Compute the area of the annulus (the ring between the two circles).

C) $\overline{AB}$ and $\overline{CD}$ are perpendicular diameters. Q is on $\overline{AB}$ such that $\overline{PQ} \parallel \overline{CD}$. Points R, S, O and T are collinear. If $PC = 2, CR = 10$ and $RS = 6$, compute PQ.