MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 - FEBRUARY 2014
ROUND 5 PLANE GEOMETRY: CIRCLES

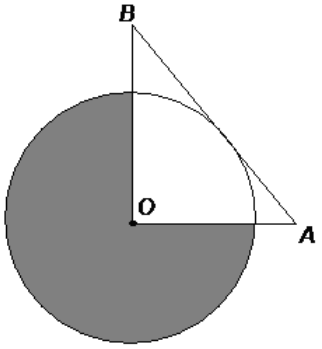
ANSWERS

A) _____

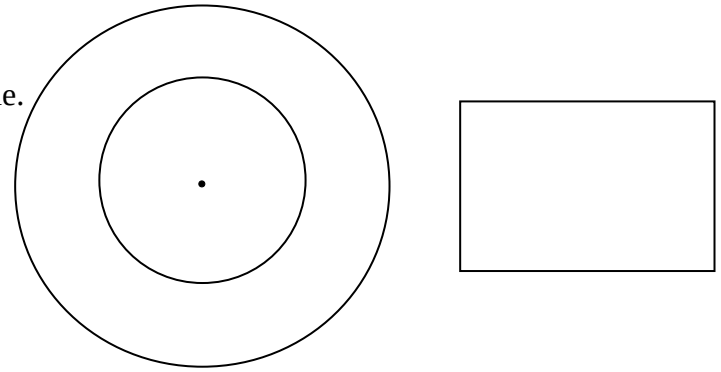
B) _____

C) _____

A) ΔBOA has sides of length 3, 4 and 5.
Circle O is tangent to $\overline{AB}$.
Compute the area of the shaded region.



B) The smaller of two concentric circles has a diameter that is 2/3 the radius of the larger circle.
The area of the region between the circles is equal to the area of a rectangle whose length is twice its width.
Find the ratio of the length of the rectangle to the diameter of the larger circle.



C) In circle O, $\overline{AB}$ and $\overline{CD}$ are perpendicular chords.
$CE = 2$, $DE = 20$, $BF = 13$
AE and BE are integers, where $AE > BE$ and chord $\overline{AB}$ is as short as possible.
Compute FG.