

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 - FEBRUARY 2015
ROUND 5 PLANE GEOMETRY: CIRCLES**

ANSWERS

A) _____ : _____

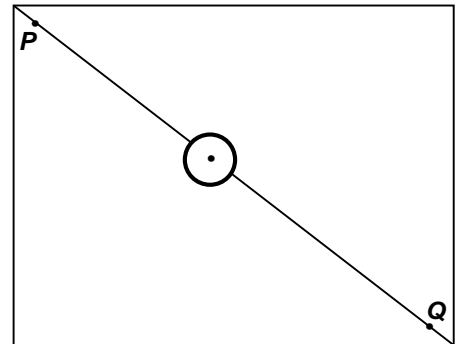
B) _____ units

C) _____ units

- A) Circle 1 has a diameter of $2\sqrt{3}$. Circle 2 has a radius of $\frac{\sqrt{15}}{2}$.

Compute the ratio of the area of the larger circle to the area the smaller circle.

- B) A bead with a 2 inch diameter slides along a metal rod which connects opposite corners of a rectangular 6 inch by 8 inch wooden frame. When the bead touches the side of the frame it reverses direction. Let P and Q , respectively, be the locations of the center of the bead when the bead comes closest to the opposite corners of the frame. Compute PQ .



- C) The length of the secant \overline{AB} is 20.
The length of tangent \overline{BC} is 10.
Let \overline{PQ} be a chord in circle O parallel to \overline{BC} . Compute PQ .

