

**MASSACHUSETTS MATHEMATICS LEAGUE
OCTOBER 2005
ROUND 1 VOLUME & SURFACES**

ANSWERS

A) _____ cubic in.

B) _____ cm

C) _____

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- A) The base of a right pyramid is a square with perimeter 10"; the pyramid's altitude is 9". Find the exact volume of the pyramid.
- B) ABCD is a square of side 8 cm in a horizontal plane. \overline{DK} is a 7 cm. line segment perpendicular to the plane. Q is the midpoint of \overline{AB} . Find the exact length of the longest edge of pyramid KDAQ.
- C) A right triangle with legs of 30 and 40 is rotated around each of its three sides. Rotation about the shorter leg produces cone #1; rotation about the longer leg produces cone #2; rotation about the hypotenuse produces two cones sharing a common base. Find the sum of the volumes of the four cones. Leave answer in terms of π .