

**MASSACHUSETTS MATHEMATICS LEAGUE
OCTOBER 2004
ROUND 1 VOLUME & SURFACES**

ANSWERS

A) _____

B) _____

C) _____

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- A) The measure of the diagonal of a cube is $2\sqrt{6}$. Find the number of square units in the total surface area.
- B) A hollow metal sphere with diameter 0.20 m and thickness 0.01 m is melted and recast into small solid right cones with a base circumference of 0.20 m and height 0.03 m. If no volume is lost in this process, how many of the cones can be made (rounding down to the nearest whole number)?
- C) When a prism with a square base is enlarged by increasing its height by 12 but leaving the base unchanged, the surface area doubles while the volume triples. Find the original surface area.