MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 1 - OCTOBER 2012 ANSWERS

Round 1 Geometry Volumes and Surfaces

    A) 18   B) 216   C) $\left(\dfrac{\pi}{6-\pi}, P \right)$

Round 2 Pythagorean Relations

    A) 13   B) $\dfrac{8R}{3}$ C) (160, 70)

Round 3 Linear Equations

    A) $\dfrac{d(a+b-1)}{c}$ or $\dfrac{ad+bd-d}{c}$ B) 4023   C) (99, 202, 496)

Round 4 Fraction & Mixed numbers

    A) 1st: 300 2nd: 900   B) $0, \pm 1, -\dfrac{1}{3}$ C) (5, 8)

                        (all 4 values are required)

Round 5 Absolute value & Inequalities

    A) –5   B) $x \le -12$ or $-6 < x < 3$ C) $\dfrac{5}{2} \le x \le 4$

Round 6 Evaluations

    A) $\dfrac{5}{8}$ (or 0.625)   B) \$62.66   C) $-\dfrac{2}{75}$

Team Round

    A) 4, 5 and 6   D) (6, 8)

    B) 3.5   E) $-\dfrac{13}{3}, \dfrac{-7 \pm 2\sqrt{31}}{5}$ [Do <u>not</u> accept $\dfrac{-7 \pm \sqrt{124}}{5}$.]

    C) (2, 3, 5, 8)   F) (1, 1, 2000)