



NEW ENGLAND MATHEMATICS LEAGUE

P.O. Box 6, Sharon, Massachusetts 02067-0006

All official participants must take this contest at the same time.

Contest Number 2 Any calculator without a QWERTY keyboard is allowed. Answers must be exact or have 4 (or more) significant digits, correctly rounded. **November 10, 2015**

Name _____ Teacher _____ Grade Level _____ Score _____

Time Limit: 30 minutes

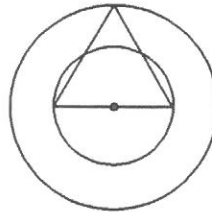
NEXT CONTEST: DEC. 8, 2015

Answer Column

2-1. If 23 is written as the sum of the squares of 4 positive integers (not necessarily different), what is the largest square in this sum?

2-1.

2-2. One side of an equilateral triangle is the diameter of a circle, and one vertex of the triangle lies on a larger circle, concentric with the smaller circle, as shown. If the area of the smaller circle is 16π , what is the area of the larger circle?



2-2.

2-3. When ten mathletes huddled together, they spaced themselves equally around a circle. The sum of the numbers on their uniforms was 300. If each number was the average of the two numbers nearest it, what was the largest of the ten numbers on their uniforms?



2-3.

2-4. What are all real values of $x \neq 0$ that satisfy $|x|^{x^2-x-2} < 1$?

2-4.

2-5. What is the smallest integer $x > 1$ for which $\sqrt{x\sqrt{x\sqrt{x}}}$ is an integer?

2-5.

2-6. The length of each side of a triangle is the reciprocal of a different integer. If one of these integers is 2015, what is the least possible sum of the other two integers?

2-6.

Eighteen books of past contests, *Grades 4, 5, & 6 (Vols. 1, 2, 3, 4, 5, 6)*, *Grades 7 & 8 (Vols. 1, 2, 3, 4, 5, 6)*, and *HS (Vols. 1, 2, 3, 4, 5, 6)*, are available, for \$12.95 each volume (\$15.95 Canadian), from Math League Press, P.O. Box 17, Tenafly, NJ 07670-0017.