

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

Contest Number 3 Any calculator without a QWERTY keyboard is allowed. Answers must be exact or have 4 (or more) significant digits, correctly rounded. December 8, 2020

Name _____ Teacher _____ Grade Level _____ Score _____

Time Limit: 30 minutes

NEXT CONTEST: JAN. 5, 2021

Answer Column

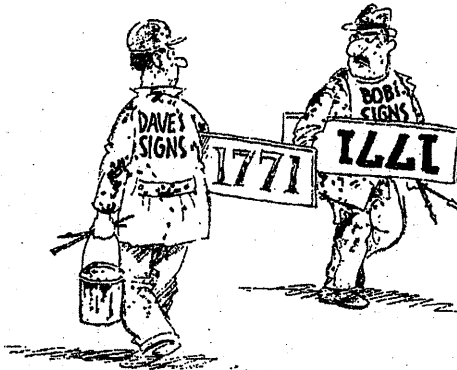
3-1. When written as either 8-15-17 or 15-8-17, the date August 15, 2017 has the property that the sum of the squares of the first two numbers is equal to the square of the third number. What is the first date after August 15, 2017 that has this property?

3-1.

3-2. If $\frac{46}{35} = a + \frac{1}{b + \frac{1}{c + \frac{1}{d}}}$, where a, b, c, and d are positive integers, what is the value of d?

3-2.

3-3. If a number reads the same forwards or backwards, like 404 and 1221, then it's called a palindrome. The first palindrome greater than 9999 is 10001. What is the fifth palindrome greater than 9999?

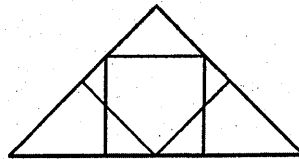


3-3.

3-4. What are all positive real numbers x which satisfy $x^{\sqrt{x}} = x(\sqrt[3]{x})$?

3-4.

3-5. Two squares are inscribed in an isosceles right triangle in different ways, as shown in the diagram. If the larger square's area is 576, what is the smaller square's area?



3-5.

3-6. A polynomial P has non-negative integer coefficients. If P(1) = 8 and P(10) = 2312, what is P(2)?

3-6.

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