

HIGH SCHOOL MATHEMATICS CONTESTS

Math League Press, P.O. Box 17, Tenafly, New Jersey 07670-0017

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

Contest Number 1

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

October 13, 2020

Name _____ Teacher _____ Grade Level _____ Score _____

Time Limit: 30 minutes

NEXT CONTEST: NOV. 10, 2020

Answer Column

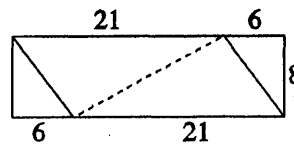
1-1. What is the only real number which, when divided by itself, is 2020 times itself?

1-1.

1-2. For how many different positive integers n is each of n , $n + 2$, and $n + 4$ a prime number?

1-2.

1-3. An 8×27 rectangle is split into four triangles, as shown at the right, by three line segments which divide the rectangle's longer sides into segments of lengths 6 and 21. How long is the dotted segment?



1-3.

1-4. At a company, ten employees and ten interns line up to visit the CEO in ten randomly selected pairs. If each pair of employees receives a copper ring, each pair of interns receives a brass ring, and each employee-intern pair receives a silver ring, what is the probability that the number of copper rings received equals the number of brass rings received?



1-4.

1-5. What's the only positive integer whose two largest divisors have a sum of 111?

1-5.

1-6. For how many different pairs of positive integers (a, b) , with greatest common factor 1, and with $a > b$, does $ab = 30!$?
[NOTE: $30!$ is the product of the first 30 positive integers.]

1-6.

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