MATH LEAGUE PRESS

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

Contest Number 4

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

January 5, 2021

Name _____ **Teacher** _____ **Grade Level** _____ **Score** _____

Time Limit: 30 minutes

NEXT CONTEST: FEB. 9, 2021

Answer Column

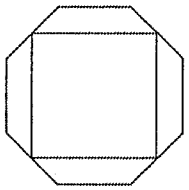
4-1. What is the smallest composite number which is the sum of two different prime numbers?

4-1.

4-2. If the lengths of the sides of right triangle T are 3^2, 4^2, and y, what are both possible values of y?

4-2.

4-3. What is the perimeter of a square whose vertices, as shown, are midpoints of alternating sides of a regular octagon whose perimeter is $16\sqrt{2}$?

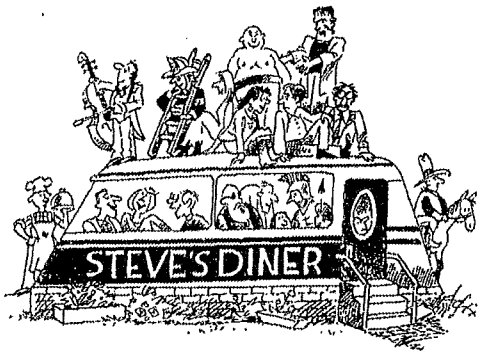


4-3.

4-4. Of the positive integers less than 2021, how many can be written as a difference of two powers of 2?

4-4.

4-5. What is the least number n with the property that, in every group of n people, there are at least three people who are all friends (each knows the other two) or all strangers (none of them knows either of the other two)?



4-5.

4-6. The numbers 12, 34, 56, 78, 90 are five two-digit numbers that use all ten digits. Which five two-digit numbers that use all ten digits have the largest possible product?

4-6.