

1. Write each of your solutions on a separate piece of paper.
2. Write your name, address and the name of your school at the top of each piece of paper you turn in.
3. Explain your solution (even if you can only explain part of it, or have only part of a solution). Answers without explanations will receive no credit.

MANHATTAN MATHEMATICAL OLYMPIAD 2001

Grades 7-8

1. The product of a million whole numbers is equal to million. What can be the greatest possible value of the sum of these numbers?
2. There are 2001 marked points in the plane. It is known that the area of any triangle with vertices at the given points is less or equal than 1 cm^2 . Prove that there exists a triangle with area no more than 4 cm^2 , which contains all 2001 points.
3. Integer numbers x, y, z satisfy the equation

$$x^3 + y^3 = z^3.$$

Prove that at least one of them is divisible by 3.

4. You have a pencil, paper and an angle of 19 degrees made out of two equal very thin sticks. Can you construct an angle of 1 degree using only these tools?