Problem 1 Let $a_1, a_2, ..., a_n$ be n different positive integers where $n \geq 1$. Show that

$$\sum_{i=1}^{n} a_i^3 \geq \left(\sum_{i=1}^{n} a_i \right)^2$$

Problem 2 Find all integers n with $1 < n < 1979$ having the following property: If m is an integer coprime with n and $1 < m < n$, then m is a prime number.

Problem 3 There are two circles of perimeter 1979. Let 1979 points be marked on the first circle, and several arcs with the total length of 1 on the second. Show that it is possible to place the second circle onto the first in such a way that none of the marked points is covered by a marked arc.