

Pitagoras y Fermat

FERMAT vs. PITAGORAS

Computer generated and assisted proofs and verification occupy a small niche in the realm of Computer Science. The first proof of the four-color problem was completed with the assistance of a computer program and current efforts in verification have succeeded in verifying the translation of high-level code down to the chip level.

This problem deals with computing quantities relating to part of Fermat's Last Theorem: that there are no integer solutions of

Given a positive integer N , you are to write a program that computes two quantities regarding the solution of

where x , y , and z are constrained to be positive integers less than or equal to N . You are to compute the number of triples (x,y,z) such that $x < y < z$, and they are relatively prime, i.e., have no common divisor larger than 1. You are also to compute the number of values $0 < p < N$ such that p is not part of any triple (not just relatively prime triples).

Input

The input consists of a sequence of positive integers, one per line. The first one is the number of test cases. Each following integer in the input file represents N and will be less than or equal to 1,000,000.

Output

For each integer N in the input file print two integers separated by a space. The first integer is the number of relatively prime triples (such that each component of the triple is $\leq N$). The second number is the number of positive integers $\leq N$ that are not part of any triple whose components are all $\leq N$. There should be one output line for each input line.

Example Input

3
10
25
100

Example Output:

1 4
4 9
16 27