Fermat vs Pythagoras

Background

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

$$a^n + b^n = c^n$$

for $n > 2$.

The Problem

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

$$x^2 + y^2 = z^2$$

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 $0 < p \leq N$ such that p is not part of any triple (not just relatively prime triples).

The Input

The input consists of a sequence of positive integers, one per line. Each integer in the input file will be less than or equal to 1,000,000. Input is terminated by end-of-file.

The 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.

Sample Input

```
10
25
100
```

Sample Output

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1 4
4 9
16 27
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