Project Euler #211: Divisor Square Sum

This problem is a programming version of Problem 211 from projecteuler.net

For a positive integer n, let $\sigma_2(n)$ be the sum of the squares of its divisors. For example,

$\sigma_2(10) = 1 + 4 + 25 + 100 = 130$.

You are given two integers N and K, you need to find the sum of all $1 \leq n \leq N$ such that $\sigma_2(n)$ is at most K away from a perfect square.

Input Format

The first line of each test file contains a single integer q which is the number of queries.
Each of the next q lines contains two space-separated integers, N and K.

Constraints

- $1 \leq q \leq 15 \times 10^4$.
- $1 \leq N \leq 6 \times 10^6$.
- $0 \leq K \leq 10^6$.

Output Format

Print the answer to each query in a new line.

Sample Input

```
11
79 0
263 1
292 2
728 3
1437 4
1674 5
1906 6
4281 7
6243 8
9823 9
9882 10
```

Sample Output

```
43
7072
8740
44049
161542
226094
281805
1226992
2443417
5782610
5861404
```

Explanation

For the first one, the only integers less than 79 for which $\sigma_2(n)$ is a square are 1 and 42, hence the answer is 43.