

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

- $1 \leq q \leq 10^5$.
- $1 \leq N \leq 6 \times 10^6$.
- $0 \leq K \leq 10^6$.

Output Format

Print the answer to each query in a new line.

Sample Input

```
11
65 0
269 1
312 2
745 3
1457 4
1686 5
1882 6
4270 7
6242 8
9838 9
9868 10
```

Sample Output

```
43
7341
9651
46264
167332
226094
```

278015
1218448
2443417
5802272
5851533

Explanation

For the first one, the only integers less than **65** for which $\sigma_2(n)$ is a square are **1** and **42**, hence the answer is 43.