

SPOJ Problem Set (classical)

1391. Summing to a Square Prime

Problem code: CZ_PROB1

$S_{P_2} = \{p \mid p = x_1^2 + x_2^2 \text{ for some } x_1, x_2 \text{ belonging to } \mathbb{Z}\}$ is the set of all primes that can be represented as the sum of any two squares. The function $S_{P_2}(n)$ gives the n^{th} prime number from the set S_{P_2} . Now, given two integers n ($0 < n < 501$) and k ($0 < k < 4$), find $p(S_{P_2}(n), k)$ where $p(a, b)$ gives the number of unordered ways to sum to the given total 'a' with 'b' as its largest part. For example: $p(5, 2) = 3$ {2+2+1, 2+1+1+1, and 1+1+1+1+1}. Here 5 is the total with 2 as the largest part.

Input

The first line gives the number of test cases T followed by T lines of integer pairs, n and k .

Scope:

$0 < T < 501$

$0 < n < 501$

$1 < S_{P_2}(n) < 7994$

$0 < k < 4$

Output

The $p(S_{P_2}(n), k)$ for each n and k . Append a newline character to every test cases' answer.

Example

Input :

3

2 2

3 2

5 3

Output :

3

7

85

Added by: Rahul

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Time limit: 2s

Source limit:3000B

Languages: All

Resource: Sam Collins