Problem H. Frequent Prime Ranges

Time Limit	1000 ms
Mem Limit	1572864 kB
Code Length Limit	50000 B
OS	Linux

A range [L..H] is called a K-Frequent Prime range if there are at least K primes amongst the numbers L, L+1 ... H. Given N and K, calculate how many subranges of the range [2..N] are K-Frequent Prime.

Input

The first line contains the number of test cases T. Each of the next T lines contains 2 integers N and K.

Output

Output T lines, one corresponding to each test case, containing the required answer.

Constraints

$1 \leq T \leq 100$

$2 \leq N \leq 100000$

$0 \leq K \leq 10000$

Example

Input	Output
4 2 1 5 2 5 1 9 3	1 4 9 8

Explanation

Note: For the first test case, the only valid subrange is [2..2], whereas for the second test case, the valid subranges are: [2..3], [2..4], [2..5], [3..5].