

Frequent Prime Ranges

A range $[L..H]$ is called a K -Frequent Prime range if there are at least K primes amongst the numbers $L, L+1, \dots, H$. 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:

```
4
2 1
5 2
5 1
9 3
```

Output:

```
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: $[2..3]$, $[2..4]$, $[2..5]$, $[3..5]$.