

Problem F

Farey Sequence Length

Problem ID: farey
CPU Time limit: 1 second
Memory limit: 1024 MB

Source: 2015 Greater New York Region ACM Regional Contest
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Given a positive integer, N , the sequence of all fractions a/b with $0 \leq a \leq b$, $1 \leq b \leq N$ and a and b relatively prime, listed in increasing order, is called the *Farey Sequence* of order N . For example, the *Farey Sequence* of order 6 is:

$0/1, 1/6, 1/5, 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 1/1$

For this problem, you will write a program to compute the length of the *Farey Sequence* of order N .

Input

The first line of input contains a single integer P ($1 \leq P \leq 10\,000$), which is the number of data sets that follow. Each data set should be processed identically and independently.

Each data set consists of a single line of input. It contains the data set number, K , followed by the order N ($2 \leq N \leq 10\,000$) of the *Farey Sequence* whose length is to be found.

Output

For each data set there is a single line of output. The single output line consists of the data set number, K , followed by a single space followed by the length of the *Farey Sequence* as a decimal integer.

Sample Input 1

```
4
1 6
2 15
3 57
4 9999
```

Sample Output 1

```
1 13
2 73
3 1001
4 30393487
```