

7362 Farey Sequence Length

Given a positive integer, N , the sequence of all fractions a/b with $(0 < a \leq b)$, $(1 < b \leq N)$ 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).

Input

The first line of input contains a single integer P , $(1 \leq P \leq 10000)$, 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 , $N(2 \leq N \leq 10000)$, 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

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

Sample Output

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