

7098 Farey Sums

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:

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

If the denominators of the *Farey Sequence of order N* are:

$$b[1], b[2], \dots, b[K]$$

then the *Farey Sum* of order N is the sum of $b[i]/b[i+1]$ from $i = 1$ to $K-1$.

For example, the *Farey Sum* of order 6 is:

$$1/6 + 6/5 + 5/4 + 4/3 + 3/5 + 5/2 + 2/5 + 5/3 + 3/4 + 4/5 + 5/6 + 6/1 = 35/2$$

Write a program to compute the *Farey Sum* 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 , $(2 \leq N \leq 10000)$, of the *Farey Sum* that is to be computed.

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 *Farey Sum* as a decimal fraction in lowest terms. If the denominator is 1, print only the numerator.

Sample Input

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

Sample Output

```
1 35/2
2 25/2
3 2999/2
4 91180457/2
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