Farey Sums

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

$$\frac{0}{1}, \frac{1}{6}, \frac{1}{5}, \frac{1}{4}, \frac{1}{3}, \frac{2}{5}, \frac{1}{2}, \frac{3}{5}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{1}{1}$$

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

$$b_1, b_2, \ldots, b_K$$

then the *Farey Sum of order N* is the sum of b_i/b_{i+1} from $i = 1 \ldots K - 1$.

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

$$\frac{1}{6} + \frac{6}{5} + \frac{5}{4} + \frac{4}{3} + \frac{3}{5} + \frac{5}{2} + \frac{2}{5} + \frac{5}{3} + \frac{3}{4} + \frac{4}{5} + \frac{5}{6} + \frac{6}{1} = \frac{35}{2}$$

Write a program to compute the *Farey Sum of order N* (input)!

Input

The first line of input contains a single integer P, $(1 \leq P \leq 9999)$, 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 1	Sample Output 1
4 1 6 2 15 3 57 4 9999	1 35/2 2 215/2 3 2999/2 4 91180457/2