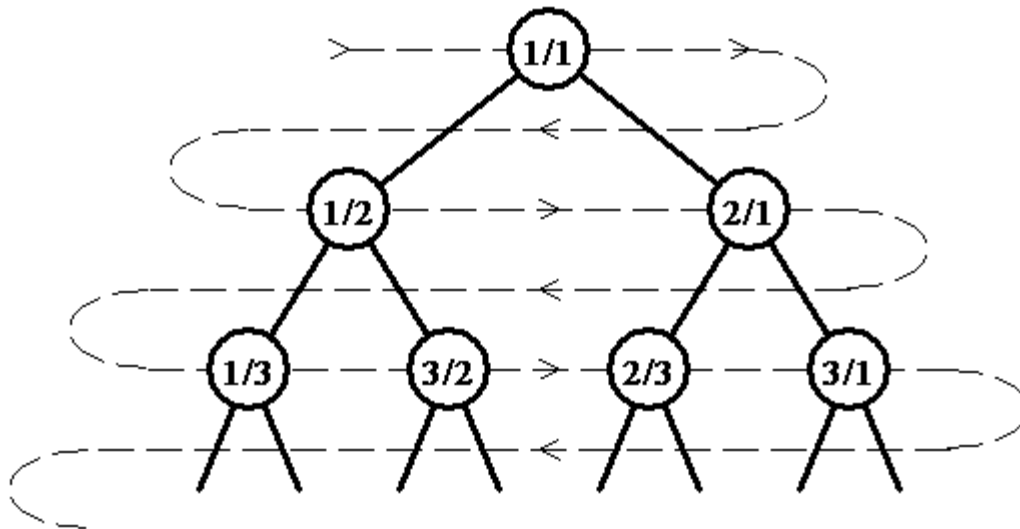# E • A Rational Sequence

A sequence of positive rational numbers is defined as follows:

An infinite full binary tree labeled by positive rational numbers is defined by:

- The label of the root is `1/1`.
- The left child of label `p/q is p/(p+q)`.
- The right child of label `p/q is (p+q)/q`.

The top of the tree is shown in the following figure:

The sequence is defined by doing a level order (breadth first) traversal of the tree (indicated by the light dashed line). So that:

`F(1) = 1/1, F(2) = 1/2, F(3) = 2/1, F(4) = 1/3, F(5) = 3/2, F(6) = 2/3, …`

Write a program which finds the value of *n* for which `F(n)` is **p/q** for inputs **p** and **q**.

Input

The first line of input contains a single integer `P`, (`1 ≤ P ≤ 1000`), 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**, a single space, the numerator, **p**, a forward slash (**/**) and the denominator, **q**, of the desired fraction.

Output

For each data set there is a single line of output. It contains the data set number, `K`, followed by a single space which is then followed by the value of **n** for which F(**n**) is **p/q**. Inputs will be chosen so n will fit in a 32-bit integer.

Sample Input	Sample Output
4	1 1
1 1/1	2 4
2 1/3	3 11
3 5/2	4 1431655765
4 2178309/1346269	