Rank of a Fraction

Let us consider a set of fractions x/y, such that 0 <= x/y <= 1, y <= n and gcd(x, y) = 1.

For example, say n = 5. Then we have the following set in increasing order :

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

You are given n, a and b. The task is to find the rank of a/b in a set of fractions as stated above which is in increasing order.

Input

The first line of the input contains t (t <= 20), the number of test cases. Then t lines follow. In each of the t lines you are given n, a and b. (n <= 100000).

Output

Print t lines. The ith line contains the rank of a fraction a/b for a given n, a and b in the (i + 1)th line of input. All answers fit within a signed integer.

Example

Input:
2
5 3 4
8 5 7

Output:
9
17