Hankson's Interesting Question

Problem Description

Dr. Hanks is a well-known expert in BT (Bio-Tech), and his son is named Hankson. Now Hankson, who has just returned from school, is pondering an interesting question.

Today in class, the teacher explained how to find the greatest common divisor and least common multiple of two positive integers c_1 and c_2. Now that Hankson thought he had this knowledge in hand, he began to think of an "inverse problem" of problems such as "finding common divisor" and "finding common multiples". The problem was like this: Given the positive integers a_0,a_1,b_0,b_1, let an unknown positive integer x satisfy:

1. The greatest common divisor of x and a_0 is a_1;

2. The least common multiple of x and b_0 is b_1.

Hankson's "inverse problem" is to find the positive integer x that satisfies the conditions. But after some thought, he realized that such x is not unique, and may not even exist. So, instead, he started thinking about how to solve for the number of x that satisfy the conditions. Please help him program the problem.

Input

The first line contains a positive integer n, indicating that there are n sets of input data. The following n line has a set of input data for each line, which are four positive integers a_0,a_1,b_0,b_1, separated by a space between every two integers. The input data ensures that a_0 is divisible by a_1 and b_1 is divisible by b_0.

Output

There are n lines. The output of each set of input data takes up one line, and it is an integer.

For each set of data: if no such x exists, please output 0; if such x exists, please output the number of x that meet the conditions;

Sample Input

2
41 1 96 288
95 1 37 1776

Sample Output

6
2

Hint

[Explanation of the Sample]

For the first set of input data, x could be 9,18,36,72,144,288, so the number of x is 6 in total.

For the second set of input data, x could be 48 or 1776, so the number of x is 2 in total.

[Data Range]
-For 50% of the data, it is ensured that $1 \leq a_0, a_1, b_0, b_1 \leq 10000$, and $n \leq 100$.
-For 100% of the data, it is ensured that $1 \leq a_0, a_1, b_0, b_1 \leq 2 \times 10^9$, and $n \leq 2000$.