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PROBLEMS

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# C. Turtle Fingers: Count the Values of k

time limit per test: 5 seconds memory limit per test: 256 megabytes input: standard input output: standard output

You are given three **positive** integers a, b and l (a, b, l > 0).

It can be shown that there always exists a way to choose **non-negative** (i.e.  $\geq 0$ ) integers k, x, and y such that  $l = k \cdot a^x \cdot b^y$ .

Your task is to find the number of distinct possible values of *k* across all such ways.

#### Input

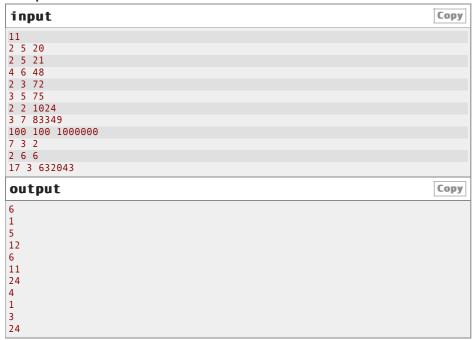
The first line contains the integer t ( $1 \le t \le 10^4$ ) — the number of test cases.

The following t lines contain three integers, a, b and l ( $2 \le a, b \le 100, 1 \le l \le 10^6$ ) — description of a test case.

#### Output

Output t lines, with the i-th  $(1 \le i \le t)$  line containing an integer, the answer to the i-th test case.

## Example



#### Note

In the first test case, a=2, b=5, l=20. The possible values of k (and corresponding x, y) are as follows:

- Choose k = 1, x = 2, y = 1. Then  $k \cdot a^x \cdot b^y = 1 \cdot 2^2 \cdot 5^1 = 20 = l$ .
- Choose k = 2, x = 1, y = 1. Then  $k \cdot a^x \cdot b^y = 2 \cdot 2^1 \cdot 5^1 = 20 = l$ .
- Choose k = 4, x = 0, y = 1. Then  $k \cdot a^x \cdot b^y = 4 \cdot 2^0 \cdot 5^1 = 20 = 1$ .
- Choose k = 5, x = 2, y = 0. Then  $k \cdot a^x \cdot b^y = 5 \cdot 2^2 \cdot 5^0 = 20 = l$ .
- Choose k = 10, x = 1, y = 0. Then  $k \cdot a^x \cdot b^y = 10 \cdot 2^1 \cdot 5^0 = 20 = l$ .
- Choose k = 20, x = 0, y = 0. Then  $k \cdot a^x \cdot b^y = 20 \cdot 2^0 \cdot 5^0 = 20 = l$ .

## Codeforces Round 929 (Div. 3)

## **Finished**

#### → Practice?

Want to solve the contest problems after the official contest ends? Just register for practice and you will be able to submit solutions.

Register for practice

## → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

## → Problem tags

brute force number theory

No tag edit access

## → Contest materials

• Announcement (en)

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In the second test case, a=2, b=5, l=21. Note that l=21 is not divisible by either a=2 or b=5. Therefore, we can only set x=0, y=0, which corresponds to k=21.

In the third test case, a=4, b=6, l=48. The possible values of k (and corresponding x, y) are as follows:

- Choose k=2, x=1, y=1. Then  $k \cdot a^x \cdot b^y = 2 \cdot 4^1 \cdot 6^1 = 48 = 1$ .
- Choose k = 3, x = 2, y = 0. Then  $k \cdot a^x \cdot b^y = 3 \cdot 4^2 \cdot 6^0 = 48 = 1$ .
- Choose k = 8, x = 0, y = 1. Then  $k \cdot a^x \cdot b^y = 8 \cdot 4^0 \cdot 6^1 = 48 = 1$ .
- Choose k = 12, x = 1, y = 0. Then  $k \cdot a^x \cdot b^y = 12 \cdot 4^1 \cdot 6^0 = 48 = l$ .
- Choose k = 48, x = 0, y = 0. Then  $k \cdot a^x \cdot b^y = 48 \cdot 4^0 \cdot 6^0 = 48 = l$ .

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