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. ≥ 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 ($1 \leq t \leq 10^4$) — the number of test cases.

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

Output

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

Example

input Copy

```
11
2 5 20
2 5 21
4 6 48
2 3 72
3 5 75
2 2 1024
3 7 83349
100 100 1000000
7 3 2
2 6 6
17 3 632043
```

output Copy

```
6
1
5
12
6
11
24
4
1
3
24
```

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

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