CODEFORCES β
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HOME   CONTESTS   GYM   PROBLEMSET   GROUPS   RATING   API   RCC 🏆   VK CUP 🏆   HFT BATTLE 🏆

PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   HACKS   ROOM   STANDINGS   CUSTOM INVOCATION

C. Mister B and Beacons on Field

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

Mister B has a house in the middle of a giant plain field, which attracted aliens life. For convenience, aliens specified the Cartesian coordinate system on the field in such a way that Mister B's house has coordinates $(0, 0)$. After that they sent three beacons to the field, but something went wrong. One beacon was completely destroyed, while the other two landed in positions with coordinates $(m, 0)$ and $(0, n)$, respectively, but shut down.

Mister B was interested in this devices, so he decided to take them home. He came to the first beacon, placed at $(m, 0)$, lifted it up and carried the beacon home choosing the shortest path. After that he came to the other beacon, placed at $(0, n)$, and also carried it home choosing the shortest path. When first beacon was lifted up, the navigation system of the beacons was activated.

Partially destroyed navigation system started to work in following way.

At time moments when both survived beacons are at points with integer coordinates the system tries to find a location for the third beacon. It succeeds if and only if there is a point with integer coordinates such that the area of the triangle formed by the two survived beacons and this point is equal to s. In this case the system sends a packet of information with beacon positions to aliens, otherwise it doesn't.

Compute how many packets of information system sent while Mister B was moving the beacons.

Input

The first line contains one integer t ($1 \le t \le 1000$) — the number of test cases. The next $3 \cdot t$ lines describe t test cases.

Every test case is described in three lines as follows. **Note that each parameter is given as a product of three factors.**

The first line of a test case contains three space-separated integers: n_1, n_2, n_3 ($1 \le n_i \le 10^6$) such that $n = n_1 \cdot n_2 \cdot n_3$.

The second line contains three space-separated integers: m_1, m_2, m_3 ($1 \le m_i \le 10^6$) such that $m = m_1 \cdot m_2 \cdot m_3$.

The third line contains three space-separated integers: s_1, s_2, s_3 ($1 \le s_i \le 10^6$) such that $s = s_1 \cdot s_2 \cdot s_3$.

Note that for hacks only tests with $t = 1$ allowed.

Output

Print t integers one per line — the answers for each test.

Example

input

```
3
2 1 1
2 1 1
1 1 3
1 5 1
2 2 1
1 1 2
10 6 18
2 103 2
13 1 13
```

output
4 7 171

Note

First test case contains the following beacon positions: $(2, 0)$ and $(0, 2)$, $s = 3$. The following packets could be sent: $((2, 0), (0, 2), (-1, 0))$, $((1, 0), (0, 2), (4, 0))$, $((0, 0), (0, 2), (3, 1))$, $((0, 0), (0, 1), (-6, 0))$, where (b_1, b_2, p) has next description: b_1 — first beacon position, b_2 — second beacon position, p — some generated point.

Second test case contains the following beacon initial positions: $(4, 0)$ and $(0, 5)$, $s = 2$. The following packets could be sent: $((4, 0), (0, 5), (0, 4))$, $((3, 0), (0, 5), (2, 3))$, $((2, 0), (0, 5), (2, 2))$, $((1, 0), (0, 5), (1, 4))$, $((0, 0), (0, 4), (0, -1))$, $((0, 0), (0, 2), (2, 0))$, $((0, 0), (0, 1), (4, 0))$.