In high school, we have learned a lot about simultaneous equations. In fact, many real-world applications can be described as simultaneous equations. To solve a set of simultaneous equations by hand, we could use many math techniques about algebra, yet these techniques are impractical in computers. A simple concept of finding a solution of a set of simultaneous equations in the sense of computing is to enumerate all the possible solutions if the variables are in integer domain. Write a program to find a solution satisfying the following simultaneous equations:

$$u + 2v + 3w = P$$
$$uvw = Q$$
$$u^3 + v^2 + w = R$$

Note that u, v, and w are unique integer values, satisfying $0 < u < v < w$.

Requirement: Use for loop rather than while loop for simplicity.

Input

The input starts from an integer n, which indicates the number of cases, and n lines follow. Each case in a line contains three integer values, which in turn represent P, Q and R.

Output

For each case, output the three values u, v, and w.

Sample Input

```
2
42 100 43
30 28 24
```

Sample Output

```
Case 1: u = 2, v = 5, w = 10
Case 2: u = 1, v = 4, w = 7
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