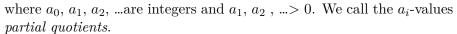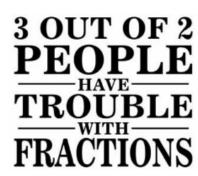# 6875   Continued Fraction

The (simple) continued fraction representation of a real number r is an expression obtained by an iterative process of representing r as the sum of its integer part and the reciprocal of another number, then writing this other number as the sum of its integer part and another reciprocal, and so on. In other words, a continued fraction representation of r is of the form

$$r = a_0 + \cfrac{1}{a_1 + \cfrac{1}{a_2 + \frac{1}{a_3 + \dots}}}$$

3 OUT OF 2 PEOPLE —HAVE— TROUBLE —WITH— FRACTIONS

where a_0, a_1, a_2, …are integers and a_1, a_2 , …> 0. We call the a_i-values *partial quotients*.

For example, in the continued fraction representation of 5.4, the partial quotients are $a_0 = 5$, $a_1 = 2$, $a_2 = 2$. This representation of a real number has several applications in theory and practice. If r is a rational number, the partial quotients are eventually all zero, so we only need to consider a finite number of partial quotients.

Given two rational numbers in continued fraction representation, your task is to perform the four elementary arithmetic operations on these numbers and display the results in continued fraction representation.

Input

The input file contains several test cases, each of them as described below.

The test case consists of three lines. The first line contains two integers n_1 and n_2, where $1 \leq n_i \leq 9$ is the number of partial quotients of rational number r_i for $1 \leq i \leq 2$. The second line contains the partial quotients of r_1 and the third line contains the partial quotients of r_2. The absolute values of the quotients are not more than 10 and you may assume that $r_1 > r_2 > 0$.

Output

For each test case, display the partial quotients of the continued fraction representations of $r_1 + r_2$, $r_1 - r_2$, $r1 \times r2$, and r_1/r_2, in order, each in a line. Consecutive partial quotients on each line are separated by a single space. Do not print any trailing zero partial quotients.

Sample Input

```
4 3
5 1 1 2
5 2 2
```

Sample Output

```
11
0 5
30 4 6
1 27
```