# A - Following the Sequence

## Context

Do you enjoy the games of following the sequence? Given a list of numbers, you have to guess the following number in the sequence. For example, try to guess the next number in the following sequences:

5 6 7 8 ...

1 3 6 10 ...

3 6 12 24 ...

1 2 3 5 ...

Of course, there are many possible solutions. For example, if the first sequence is defined as "the next integer number modulo 9", then the answer would be 0. So we have to limit the possible forms of the sequences.

## The Problem

Given a sequence of 4 integer numbers, you have to guess the following number in the sequence. The valid sequences will have the following forms:

- **Add a constant.** The first number of the sequence is arbitrary. The following number will be the previous number plus a constant value. For example, if the first number is 8, and we add 3, the sequence will be: 8, 11, 14, 17, 20... The increment can also be negative. For example, for increment -1 and starting with 2, we have: 2, 1, 0, -1, -2...
- **Add more.** The first number of the sequence is arbitrary. The following number will be the previous number plus an increasing number; this increment is 1 more than the previous increment. For example, if the first number is 1, and we start with an increment of 2, the sequence will be: 1, 3 (=1+2), 6 (=3+3), 10 (=6+4), 15 (=10+5), 21 (=15+6)...
- **Multiply by a constant.** The first number of the sequence is arbitrary. The following number will be the previous number multiplied by a constant. For example, if the first number is 4, and the constant is 3, the sequence will be: 4, 12 (=4*3), 36 (=12*3), 108 (=36*3), 324 (=108*3)... The multiplier is not necessarily an integer, but the result should be an integer. For example, we can have the sequence: 10000, 1000, 100, 10, 1.
- **Fibonacci.** The first and the second number of the sequence are arbitrary. The following number will be the sum of the two previous numbers. For example, if the first numbers are 5 and -1, the sequence will be: 5, -1, 4 (=5-1), 3 (=-1+4), 7 (=4+3), 10 (=3+7)...

If the sequence does not match any of these four types, you must output the universal answer: 42.

## The Input

The input contains several test cases. The first line of the input indicates the number of test cases.

Each test case is described in a line with four integer numbers (from -1000000 to 1000000), separated by blank spaces.

## The Output

For each test case, you have to write an integer number representing the following number in the sequence. If the sequence is not of any of the four types defined above, you have to write: 42.

## Sample Input

```
6
5 6 7 8
1 3 6 10
3 6 12 24
1 2 3 5
1 1 2 2
10000 1000 100 10
```

## Sample Output

```
9
15
48
8
42
1
```