Period

You are given 2 integers **a** and **b**. Let a number be defined as

$$a + b\sqrt{5}$$

. As we know

$$a + b\sqrt{5}$$

will be an irrational number when b is non-zero. In this problem, we call it the AC number. We define

$$[x]_m = x \; mod \; m$$

(where x an integer)

and the operation

$$\otimes$$

on AC number as:

$$(a + b\sqrt{5}) \otimes (c + d\sqrt{5}) = [ac + 5bd]_m + [ad + bc]_m\sqrt{5}$$

This problem is to find the smallest positive integer **n**, such that:

$$\underbrace{(a + b\sqrt{5}) \otimes (a + b\sqrt{5}) \cdots \otimes (a + b\sqrt{5})}_{n \; times} = 1$$

We call the integer **n** as period. You are given **a**, **b** and **m**. Can you figure out the period?

Input Format
The first line of the input contains a single integer T denoting the number of test-cases.
T lines follow, each containing 3 integers - a, b and m separated by a single space.

Output Format
Output the Period if it exists, otherwise output "-1" (quotes only for reference)

Constraints
$1 \leq T \leq 300$
$5 \leq m \leq 10^7$
$0 \leq a, b < m$

Sample Input #00

```
4
0 0 13
1 0 7
3 0 10007
1 1 19
```

Sample Output #00

```
-1
1
5003
18
```

Explanation #00

For the 1st test-case, no amount of operation ⊗ on a = 0, b = 0 gives 1 on the RHS. Hence the answer is -1.
When a = 1, b = 0, we have 1 for n = 1.
On repeated operations, the third and the fourth testcases sum to 1 for n = 5003 and n = 18 respectively.