Problem F
Hey, Pisano!
Time limit: 12 seconds

You're probably familiar with Fibonacci numbers, but what about Pisano numbers? You will recall that the Fibonacci sequence is defined as

$$\begin{aligned} F_1 &= 1 \\ F_2 &= 1 \\ F_n &= F_{n-1} + F_{n-2},\ n > 2. \end{aligned}$$

The *period* of any sequence is the length of the shortest consecutive subsequence that, at some point, repeats over and over consecutively for the rest of the sequence. The Fibonacci sequence has no period. But, my friend, that's where Pisano comes in. If we take the modulus of the values in the Fibonacci sequence for some value n, then we have a sequence that becomes periodic. The n^{th} Pisano number (written $\pi(n)$) is defined as the period of the Fibonacci sequence modulo n. The table below shows the Pisano number for $n = 2, 3$ and 4.

	Fibonacci sequence																	
n	1	1	2	3	5	8	13	21	34	55	89	144	233	377	610	987	1597	$\pi(n)$
2	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	3
3	1	1	2	0	2	2	1	0	1	1	2	0	2	2	1	0	1	8
4	1	1	2	3	1	0	1	1	2	3	1	0	1	1	2	3	1	6

Note that for $n = 2$ the subsequence `1 1 0 1 1 0` also repeats, but the Pisano number refers to the shortest repeatable subsequence.

What do you say we generalize this? (Actually, friend, you have no say in this.) Given a sequence defined by

$$\begin{aligned} S_1 &= a_1 \\ S_2 &= a_2 \\ S_n &= c_1 S_{n-1} + c_2 S_{n-2},\ n > 2, \end{aligned}$$

we define the n^{th} generalized Pisano number $\pi_g(n)$ as the period of the sequence S_i mod n. And what we define, you compute.

Input

Input consists of a single line containing five integers $a_1\ a_2\ c_1\ c_2\ n$, where a_1, a_2, c_1, c_2 $(-10\,000 \le a_1, a_2 \le 10\,000, -50 \le c_1, c_2 \le 50)$ are used to define the sequence as described above, and n $(1 \le n \le 2\,000)$ is the modulus to apply to the sequence

Output

Output $\pi_g(n)$ for the given sequence and n.

Sample Input 1	Sample Output 1
1 1 1 1 2	3

Sample Input 2	Sample Output 2
1 1 1 1 3	8

Sample Input 3	Sample Output 3
9834 -723 -34 11 958	478