

Problem A. The One Polynomial Man

Input file: *standard input*
Output file: *standard output*
Time limit: 4 seconds
Memory limit: 256 mebibytes

Is it a *programming* contest?

You are given a prime number p and two subsets S and V of residues from 0 to $p - 1$.

Your task is to find the number of pairs (a, b) that satisfy the following set of equations:

$$\bullet \left(\prod_{z \in V} \left(\frac{(2a + 3b)^2 + 5a^2}{(3a + b)^2} + \frac{(2a + 5b)^2 + 3b^2}{(3a + 2b)^2} - z \right) \right) \equiv 0$$

- $a \in S$
- $b \in S$

All operations are performed modulo p . Note that, when $a \neq b$, the pairs (a, b) and (b, a) are considered different. Division by zero is not allowed: when any of the two denominators turns into a zero, the congruence is considered false.

Input

The first line contains a single integer p ($2 \leq p \leq 10^6$, p is prime).

The second line contains a single integer n : the size of S ($0 \leq n \leq p$).

The third line contains n distinct integers S_1, S_2, \dots, S_n : the elements of S ($0 \leq S_i \leq p - 1$).

The fourth line contains a single integer m : the size of V ($0 \leq m \leq p$).

The fifth line contains m distinct integers V_1, V_2, \dots, V_m : the elements of V ($0 \leq V_i \leq p - 1$).

Output

Print one integer: the number of solutions.

Examples

| standard input | standard output |
|--|-----------------|
| 7 4 0 4 5 6 2 2 3 | 8 |
| 19 10 0 3 4 5 8 9 13 14 15 18 10 2 3 5 9 10 11 12 13 14 15 | 42 |