Fortune Wheel

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	512 mebibytes

A *Fortune Wheel* has n sectors numbered from 0 to $n-1$ in clockwise order. It also has an arrow pointing at one of the sectors. Right now, it is pointing at sector x.

You are very good at spinning the Wheel. More specifically, you have learned K distinct power spins, characterized by their power $k_1, k_2, \ldots, k_K$. A *power spin* with power p means that you spin the Wheel with such power that the arrow would turn exactly p sectors clockwise: formally, from sector y, it would turn to sector $(y+p) \bmod n$. Also, you can do a common spin: spin the Wheel so that the arrow would be pointing at a uniformly random sector. Your skills allow you to do any number of spins any number of times in any order.

You want the arrow to be pointing at sector 0 as soon as possible. Find the expected value of the number of spins required to do so in an optimal strategy. A strategy is considered optimal if it minimizes the said expected value.

Input

The first line contains three integers: the number of sectors n, the starting sector of the arrow x, and the number of power spins K ($1 \le n \le 10^5$; $0 \le x \le n-1$; $1 \le K \le 500$).

The second line contains k distinct integers $k_1, k_2, \ldots, k_K$ ($1 \le k_i \le n$).

Output

Print a line containing two integers p and q ($0 \le p$; $0 < q$): numerator and denominator of an irreducible fraction p/q which is the expected value of the number of spins. It can be proved that the answer can be represented in this way.

Examples

standard input	*standard output*
6 3 2 2 4	8 3
5 4 1 1	1 1