

Necklaces

SwarOSKI necklaces are beautifully designed. Each necklace has N beads, and each bead has a color. If you unhook the necklace, you will get one straight necklace string of N beads. The necklace string can be partitioned into G partitions such that each partition consists of only beads of the same color, and adjacent partitions have different colors. Each partition contains either $K-1$, K , or $K+1$ beads, and at least 1 beads. Moreover, if we observe carefully, the colors among the partitions follow some ordering, and they may repeat. Finally, there are an equal number of partitions with the same color.

For example, let there be $C = 2$ colors and the ordering be: **A B**.

- **AAABBBAAABBB** is a SwarOSKI necklace of length $N = 12$, $K = 3$ ($K = 2$ or $K = 4$ is also a valid one), and 4 partitions; 2 partitions for each color.
- **AABBAABBAABB** is a SwarOSKI necklace of length $N = 12$, $K = 2$ ($K = 1$ or $K = 3$ is also a valid one), and 6 partitions; 3 partitions for each color.
- **AAABBAABBBABB** is a SwarOSKI necklace of length $N = 13$, $K = 2$, and 6 partitions. Notice that each partition has either 1, 2, or 3 beads; 3 partitions for each color.
- **AAAAABBBB** is a SwarOSKI necklace of length $N = 9$, $K = 5$ ($K = 4$ is also a valid one), and 2 partitions; 1 partition for each color.
- **BBAAABBBAA** is NOT a SwarOSKI necklace as it does not follow the colors ordering (**A B**).
- **AAABBBAAAA** is NOT a SwarOSKI necklace as there are an unequal number of partitions for each color (2 **A**-partitions, and 1 **B**-partition).
- **ABBAABBBBAAAAABBBBB** is NOT a SwarOSKI necklace as there is no satisfying K .

Given N , K , and C , determine how many valid SwarOSKI necklace configurations can be formed.

Input

Input begins with 3 integers: N K C ($1 \leq N \leq 1,000$; $1 \leq K \leq 20$; $2 \leq C \leq 10$) denoting the number of beads of the necklace, K as in the problem statement, and the number of colors, respectively. The next line contains C integers: A_i ($1 \leq A_i \leq 100$) denoting the beads' color in order. You may safely assume that all colors are different.

Output

Output in a line an integer representing the output for the given input in scientific notation, i.e.

$A.BCD \times 10^E$

where $A \in \{1-9\}$; $B, C, D \in \{0-9\}$; $E \geq 0$; A, B, C, D, E are integers. The output should be rounded to the nearest integer.

Examples

input

Example #1

10 3 2

2 5

output

1.000 x 10¹

explanation

There are 10 possibilities:

2 2 5 5 2 2 2 2 5 5
2 2 5 5 2 2 2 5 5 5
2 2 5 5 2 2 5 5 5 5
2 2 2 5 5 2 2 2 5 5
2 2 2 5 5 2 2 5 5 5
2 2 5 5 5 2 2 2 5 5
2 2 5 5 5 2 2 5 5 5
2 2 2 2 5 5 2 2 5 5
2 2 2 5 5 5 2 2 5 5
2 2 5 5 5 5 2 2 5 5

Each of those is a SwarOSKI necklace with N = 10, K = 3, and C = 2 with the ordering be (2, 5).

End of Problem