STOCK

0.5s

Recently, when Crazy Dave was learning how to buy stocks, he received inside information: Company V's shares would skyrocket. The daily price of a stock is known to be a positive integer and, for objective reasons, can only have a maximum price of N. During the K spike days, Dave observed: the stock price of each day except the first day is higher than the previous day, and the difference (that is, the difference between the current day's stock price and the previous day's stock price) will not exceed M, with M being a positive integer. And these parameters satisfy $M(K-1) < N$.

Crazy Dave forgot the specific stock price of K on these days, and now he wants to know how many configurations there are for the stock price on these K days. Two configurations are considered different if on some day, the stock price according to them are different.

INPUT

A single line contains 4 numbers N, K, M, P ($N \leq 10^{18}$; M, K, P $\leq 10^9$). P is not necessarily a prime number.

OUTPUT

Print a single integer representing the answer.

Sample Input	Sample Output
7 3 2 1024	16
3001 400 6 9901	8669

EXPLANATION

In the first sample, all possible price configurations are {1,2,3},{1,2,4},{1,3,4},{1,3,5}, {2,3,4}, {2,3,5},{2,4,5}, {2,4,6} ,{3,4,5},{3,4,6},{3,5,6},{3,5,7},{4,5,6},{4,5,7},{4,6,7},{5,6,7}. There are 16 of them in total.