Problem B. Expected length of the minimum cycle

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	256 mebibytes

You are given a positive integer N, find the expected length of the minimum cycle in permutation of integers from 1 to N. All permutations are equiprobable.

Consider the answer is an irreducible fraction $\frac{A}{B}$. Output $A \cdot B^{-1} \mod P$, where P is a given prime number. It is guaranteed that $gcd(B, P) = 1$.

Input

The only line of input contains two integers N and P ($1 \le N \le 10^4$, $10^4 < P \le 10^9 + 33$). It's guaranteed that P is a prime number.

Output

Output the answer to the problem in a single line.

Examples

standard input	standard output
2 1000000007	500000005
3 1000000007	666666673