Rikka with Random Tree

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

Generating tests is always a boring and error-prone task for problem setters.

Recently, Rikka set a problem on trees, and now, she wants to generate some tests for this problem. At this time, Rikka tries an unusual way to generate trees. To generate a tree of size n:

1. Rikka sets vertex 1 as the root;
2. For the i-th ($i > 1$) vertex, let $a_1, \ldots, a_k$ be all factors of i where $a_1 = 1, a_k = i$. Rikka uniformly randoms an integer j from $[1, k-1]$, and sets vertex a_j as the father of vertex i.

Clearly, the result of this process must be a valid tree.

Now, Rikka wants to verify whether the generated tests are strong enough. For a tree T of size n, she defines its complexity $c(T)$ as :

$$c(T) = \sum_{i=1}^{n} \sum_{j=1}^{n} \mathrm{dis}(T, i, j)$$

where $\mathrm{dis}(T, i, j)$ is the number of edges in the path from vertex i to vertex j on tree T.

Rikka wants you to calculate the expectation of $c(T)$.

Input

The first line contains two integers n, p ($1 \le n \le 3 \times 10^5, 10^8 \le p \le 10^9$).

The input guarantees that p is a prime number.

Output

Output a single line with a single integer, the answer module p. Formally, if the simplest fraction representation of the answer is $\frac{x}{y}$, you need to output $x \times y^{p-2} \bmod p$.

Examples

standard input	standard output
3 998244353	8
4 998244353	19
100 998244353	928958194

Note

For the first sample, there is only one possible result, of which the complexity is equal to 8.

For the second sample, there are two possible results, corresponding to the cases when the father of vertex 4 is vertex 1 or vertex 2. The complexities of these two cases are 18 and 20 respectively.