NOI '15 P3 - Sushi Dinner

Time limit: 1.0s **Memory limit:** 512M

Compute the number of ways to choose two subsets $X, Y \subseteq \{2, 3, \ldots, n\}$ such that there does not exist $x \in X, y \in Y$ such that x and y are not relatively prime. The sets X, Y may be empty. Output the number of ways modulo p.

Input Specification

The input contains the integer n and the modulo p separated by a space.

Output Specification

Output the number of ways to choose the subsets $X, Y \subseteq \{2, 3, \ldots, n\}$ satisfying the condition above.

Sample Input 1

```
3 10000
```

Sample Output 1

```
9
```

Sample Input 2

```
4 10000
```

Sample Output 2

```
21
```

Sample Input 3

```
100 100000000
```

Sample Output 3

```
3107203
```

Constraints

Test Case	n	Additional Constraints
1	$2 \leq n \leq 30$	$0 < p \leq 1\,000\,000\,000$
2		
3		
4	$2 \leq n \leq 100$	
5		
6	$2 \leq n \leq 200$	
7		
8	$2 \leq n \leq 500$	
9		
10		