Contest Duration: 2019-07-21(Sun) 20:00 (http://www.timeanddate.com/worldclock/fixedtime.html?iso=20190721T2100&p1=248) ~ 2019-07-21(Sun) 22:40 (http://www.timeanddate.com/worldclock/fixedtime.html?iso=20190721T2340&p1=248) (local time) (160 minutes) Back to Home (/home)

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# F - Square Constraints

Editorial (/contests/agc036/tasks/agc036_f/editorial)

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Time Limit: 4 sec / Memory Limit: 1024 MB

Score : $1800$ points

## Problem Statement

Given is an integer $N$. How many permutations $(P_0, P_1, \cdots, P_{2N-1})$ of $(0, 1, \cdots, 2N-1)$ satisfy the following condition?

- For each $i$ $(0 \leq i \leq 2N-1)$, $N^2 \leq i^2 + P_i^2 \leq (2N)^2$ holds.

Since the number can be enormous, compute it modulo $M$.

## Constraints

- $1 \leq N \leq 250$
- $2 \leq M \leq 10^9$
- All values in input are integers.

## Input

Input is given from Standard Input in the following format:

```
N M
```

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## Output

Print the number of permutations that satisfy the condition, modulo $M$.

## Sample Input 1 Copy

```
2 998244353
```

Copy

## Sample Output 1 Copy

```
4
```

Copy

Four permutations satisfy the condition:

- $(2, 3, 0, 1)$
- $(2, 3, 1, 0)$
- $(3, 2, 0, 1)$
- $(3, 2, 1, 0)$

## Sample Input 2 Copy

```
10 998244353
```

Copy

## Sample Output 2 Copy

```
53999264
```

Copy

## Sample Input 3 Copy

```
200 998244353
```

Copy

## Sample Output 3 Copy

```
112633322
```

Copy

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