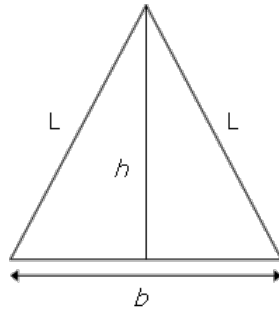


Project Euler #138: Special isosceles triangles



This problem is a programming version of [Problem 138](#) from [projecteuler.net](#)

Consider the isosceles triangle with base length, $b = 16$, and legs, $L = 17$.



By using the Pythagorean theorem it can be seen that the height of the triangle, $h = \sqrt{17^2 - 8^2} = 15$, which is one less than the base length.

With $b = 272$ and $L = 305$, $h = 273$, which is one more than the base length, and this is the second smallest isosceles triangle with the property that $h = b \pm 1$.

Given N , find $\sum L$ for the N smallest isosceles triangles for which $h = b \pm 1$, L are positive integers. Since this sum can be very large, output it modulo $10^9 + 7$.

Input Format

The first line of input contains T , the number of test cases.

Each test case consists of a single line containing a single integer, N .

Constraints

$$1 \leq T \leq 10^5$$

In the first test case: $1 \leq N \leq 12$

In the second test case: $1 \leq N \leq 10^6$

In the third test case: $1 \leq N \leq 10^{18}$

Output Format

For each test case, output a single line containing a single integer, the answer for that test case.

Sample Input

```
2
1
2
```

Sample Output

```
17
322
```