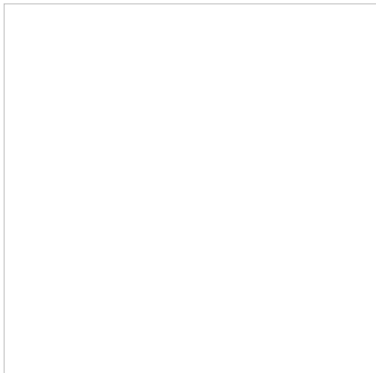


# Project Euler #138: Special isosceles triangles

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
```

