

## 6506 Padovan Sequence

Consider the spiral of triangles shown in Figure 1. It starts with an *equilateral triangle*, that is, a triangle whose side lengths are the same, of side length 1 and it is extended by adding equilateral triangles repeatedly as follows: An equilateral triangle of side length  $k$  is added to the longest side of a spiral, where  $k$  is the length of the longest side of the spiral.

Then, the *Padovan sequence*  $P(N)$  is the sequence of side lengths of the equilateral triangles in the spiral. The first 10 values  $P(1)$  through  $P(10)$  are 1, 1, 1, 2, 2, 3, 4, 5, 7, 9.

Given a positive integer  $N$ , write a program to compute  $P(N)$ .

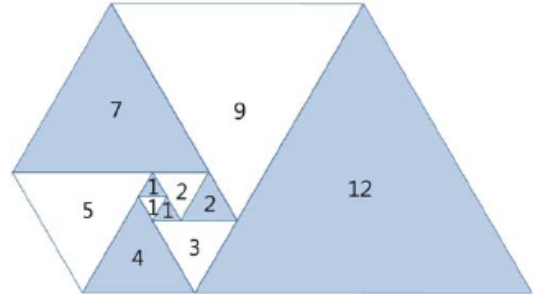


Figure 1. Spiral of equilateral triangles.

### Input

Your program is to read from standard input. The input consists of  $T$  test cases. The number of test cases  $T$  is given in the first line of the input. Each test case consists of one line containing an integer  $N$  ( $1 \leq N \leq 100$ ).

### Output

Your program is to write to standard output. Print exactly one line for each test case. The line should contain  $P(N)$ .

The following shows sample input and output for two test cases.

### Sample Input

```
2
6
12
```

### Sample Output

```
3
16
```