

Pizzahat has released a new pizza with triangular shaped pieces. This pizza is composed of some equal-sized equilateral triangle. Moreover, all the triangles are connected. Also, if two triangles are directly connected, they must share a common edge.

How many different shapes of this kind of N -pieces pizza are there? **Two patterns are considered as same if they can completely overlap after rotation and shifting (note that flipping is not included).**

Input

There are multiple test cases. The first line of input contains a single integer denoting the number of test cases.

For each test case, there is only one line with only one integer N denoting the number of pieces that can be used. ($1 \leq N \leq 16$)

Output

For each test case, output a single integer denoting the number of possible different shapes of the pizza.

Note: The four possible different shapes for the second sample case are



Sample Input

```
3
2
4
10
```

Sample Output

```
Case #1: 1
Case #2: 4
Case #3: 866
```