Yummy Triangular Pizza

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 <= N <= 16)

Output

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

Example

Input:
3
2
4
10

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

This problem is first (and only) solved by team **Cabbage** (Zhongnan University) *at 225 minutes after the onsite contest starts. (They have 1 wrong try before they get Accepted.)*