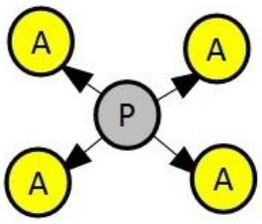
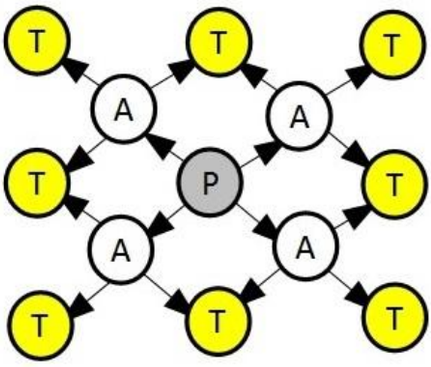
The one who reads a lot and walks a lot,
sees a lot and knows a lot.
Miguel de Cervantes Saavedra

As you should know, a *directed acyclic graph* is a directed graph with no directed cycles. We define a *spray graph* as a directed acyclic graph with the following form:

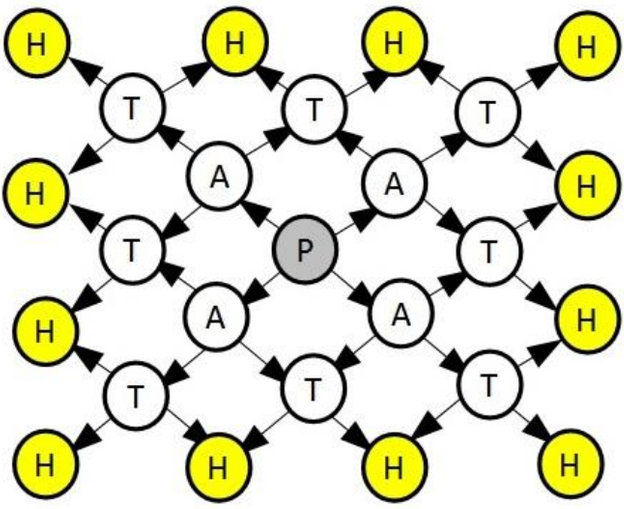
A spray graph of size 1



A spray graph of size 2



A spray graph of size 3



A spray graph of size 4

and so on.

You have to compute the number of different paths from the central node (the gray node, `P`) to any leaf node (yellow ones) in a spray graph of size n.

Input

The first line of the input contains an integer, t, indicating the number of test cases. For each test case, one line appears containing an integer n, $1 \leq n \leq 30$, representing the size of the spray graph.

Output

For each test case the output should contain a single line, indicating the number of different paths from the central node to any leaf node in the corresponding graph.

Sample Input

```
4
1
2
3
4
```

Sample Output

```
1
4
12
28
```