Amoebae

An amoeba of generation 1 is a living being having four cells: one central cell and three cells which are connected directly to the *central* cell, called *extreme* cells. An amoeba of generation *n* is constructed from an amoeba of generation *n*-1, by connecting some amoebae of generation 1 to it, as follows. For every two cells a and b at distance 2 from each other in the amoeba of generation $n-1$, such that at least one of the cells a and b is an extreme cell in the amoeba of generation $n-1$, we attach a generation 1 amoeba to them, such that two of the extreme cells of the generation 1 amoeba are overlapped (coincide) with the cells a and b. No amoeba of generation 1 will be connected to the same two cells a and b of the amoeba of generation $n-1$. The *extreme* cells of the new amoeba (the amoeba of generation n) will be the cells which are connected to exactly one cell. The *central* cell of the new amoeba will be the *central* cell of the starting amoeba. The figure below shows the amoebae of generations 1, 2 and 3, the central cell being labeled with „C" and the extreme cells with „E".
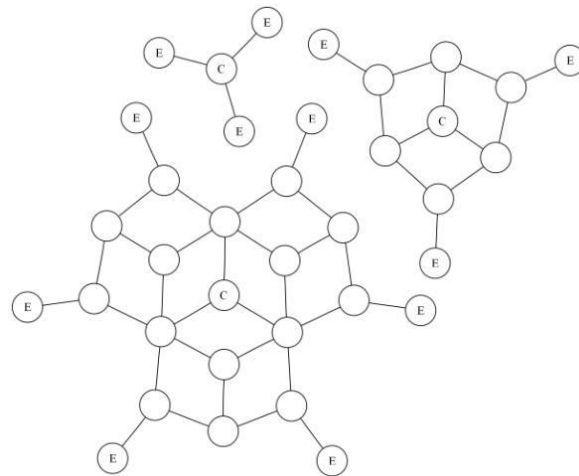
From the rules above it results that an amoeba of generation *n* (≥2) will have $3 \cdot 2^n$ -2 cells out of which $3 \cdot 2^{(n-2)}$ are *extreme* cells.

Given the generation of the amoeba find the minimum distances from the *extreme* cells to the *central* cell. Group the cells by these distances and count the number of cells in each group.

Input Data

The first line of input contains the number T of test cases which are described next. The next T lines contain one number each: N (1≤N≤20), representing the generation of the amoeba.

Output Data

For each test case output two numbers separated by a single blank: the minimal distance of the extreme cells in the group from the central cell and the number of edges in the amoebae. You should leave an empty line after the solution of each test case.

Example

Standard Input	Standard Output
3	1 3
1	
2	3 12
3	
	3 30