The city of Songpa is now carrying out a project to build a bicycle transportation system called green Songpa. By the end of this year, citizens and visitors alike will be able to pick up and drop off bicycles throughout the city. Recently, it was decided to attach a number tag to each bicycle for management use. The bicycles will be under control of the citys traffic system.

The number tag contains a tile code of length n, which consists of 1×2, 2×1, and 2×2 tiles placed on a $2 \times n$ rectangular plate in a way that every cell of the plate is covered by exactly one tile. The plate is divided into $2n$ cells of size 1×1. Of course, no two tiles are allowed to overlap each other. The 2×5 plate and a tile code of length 5 are shown in Figures 1 and 2, respectively. The code will always be read from left to right. However, there is no distinction between the top side and the bottom side of the code. The code may be turned upside down. The code shown in Figure 3 is essentially the same code as in Figure 2.
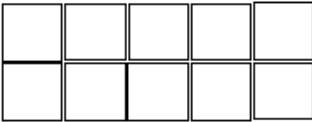

Figure 1   Figure 2   Figure 3

Given a positive integer n, the project director Dr. Yang wants to know how many tile codes of length n there are, that is, the number of ways to place the three kinds of tiles into a $2 \times n$ rectangular plate subject to the above conditions. Write a program that can help him.

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 is given in a single line, which contains a positive integer n, $3 \le n \le 30$.

Output

Your program is to write to standard output. Print exactly one line for each test case. The line should contain the number of tile codes of length n.

Sample Input

2
3
4

Sample Output

3
8