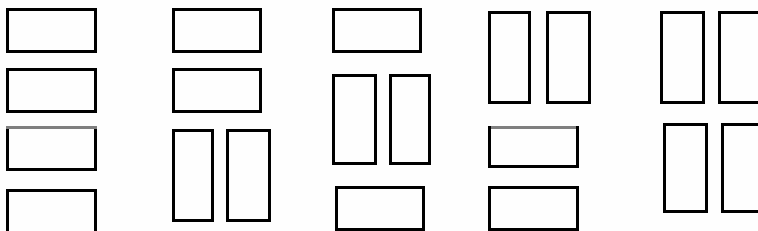


Tiling a Grid with Dominoes

Source: <http://www.spoj.com/problems/GNY07H/>

We wish to tile a grid 4 units high and N units long with rectangles (dominoes) 2 units by one unit (in either orientation). For example, the figure shows the five different ways that a grid 4 units high and 2 units wide may be tiled.



Write a program that takes as input the width, W , of the grid, and outputs the number of different ways to tile a 4-by- W grid.

Input

The first line of input contains a single integer N ($1 \leq N \leq 1000$), the number of data sets. Each dataset contains a single decimal integer, the width W of the grid for this problem instance.

Output

For each problem instance, there is one line of output: The problem instance number as a decimal integer (start counting at one), a single space and the number of tilings of a 4-by- W grid. The values of W will be chosen so the count fits within a 32-bit integer.

Sample Input

```
3
2
3
7
```

Sample Output

```
1 5
2 11
3 781
```