Problem F - The Final Requirement

Finally, you've defeated the Elite Four! Everyone gathered in a circle to celebrate your victory. Choosing this moment, the Champion asks you two questions:

There are **2N** trainers currently in this circle. If the **2N** trainers were to pair up and walk towards each other to battle:

1. How many ways are there to pair up without anyone walking between any other pair?

2. How many ways are there to pair up if people are allowed to cross?

It turns out this was actually the last trial before you can fight the Champion - in order to be the very best, you have to prove your intelligence.

Can you calculate the right answers?

Input

The first line contains the integer **T**, then **T** test cases follow.
Each test case contains a single integer **N**, $1 \leq N \leq 1000$.

Output

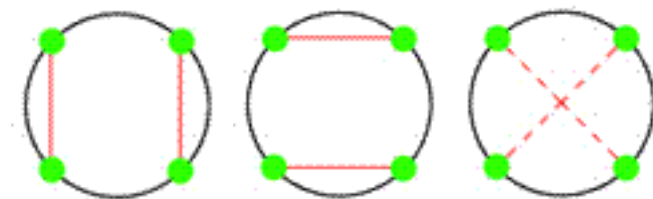Output the two numbers in the given order with each number mod **20140927**.

Sample Input

```
3
1
2
1000
```

Sample Output

```
1 1
2 3
12193104 2504983
```

Here are the possible battles for the **N=2** case:

The first two are allowed under condition 1, but the last one is only allowed under condition 2.