

Yet Another Equation

Consider the equation

$$x^2 - ny^2 = 1$$

where n is some integer.

Find the smallest strictly positive integer solutions (x, y) for a given n .

Input

The number of test cases t (around 30), followed by a list of t values of n ($2 \leq n \leq 1000$). You can assume that the equation can be solved for all values of n in the input set.

Output

For every test case, the values of x and y separated by a space character, on separate lines.

Example

Input:

```
3
2
6
61
```

Output:

```
3 2
5 2
1766319049 226153980
```