PP numbers

PP numbers are prime numbers and palindromes in decimal notation at once. Your task is to find *n*-th PP number in ascending order. Then calculate product of its non-zero digits - let's call it *m* - and find *m*-th prime number in ascending order.

Input

In the first line of input there is one positive integer Z ($1 \leq Z \leq 1000$) which states the number of test cases. Following Z lines contain test cases.

Each test case consists of one positive integer n ($1 \leq n \leq 113$) which states the number of PP number to find.

Output

For each test case print in separate line two numbers: *n*-th PP number and *m*-th prime number.

Example

Input:

```
3
1
5
2
```

Output:

```
2 3
11 2
3 5
```