Number Selection

Time Limit: 1 Second
Memory Limit: 2048 MB

Given two integers n and k, compute the number of ways (mod by 998244353) to select k numbers from the set $\{1, 2, \ldots, n\}$ under different constraints.

Input

The input consists of multiple test cases. The first line contains an integer T, the number of test cases, it is guaranteed that $T \leq 1000$.

Each test case consists of a single line with two integers n and k.

Constraints: $1 \leq k \leq n \leq 2 \times 10^6$

Output

For each test case, output four space-separated integers representing the count of valid selections under the following rules:

1. Unique numbers, order matters.
2. Unique numbers, order does not matter.
3. Numbers may be repeated, order matters.
4. Numbers may be repeated, order does not matter.

Sample Inputs

```
2
5 3
4 2
```

Sample Outputs

```
60 10 125 35
12 6 16 10
```