A very lucky thief found n keys on a street with m houses. He knows that each key opens exactly one door so he wants to know which door is, but he also wants to do the less number of tries in order to avoid the security systems.

Input

The first line contains a single integer, T ($T \leq 100000$) indicating the number of test cases. The following T lines contain two integers n and m, $1 \leq n \leq m \leq 100000$.

Output

Print the minimum number of tries that the thief must perform in order to know what key opens each door with an end of line.

Sample Input

```
3
4 6
1 2
500 900
```

Sample Output

```
14
1
324750
```