A k-multiple free set is a set of integers where there is no pair of integers where one is equal to another integer multiplied by k. For example for $k = 2$, $\{1,3,4\}$ is a valid set, but not $\{2,4,5\}$, as 4 is double of 2.

You will be given n and k. you have to determine the largest k-multiple free subset of the integers from 1 to n.

Input

First line of the input contains T $(1 \leq T \leq 1000)$ the number of test case. Then following lines contains T test cases. Each case contains a line containing 2 integers n $(1 \leq n \leq 1000000000)$ and k $(2 \leq k \leq 100)$.

Output

For each test case output contains 1 integer the size of the largest k-multiple free subset of the integers from 1 to n.

Sample Input

```
3
10 2
100 2
1000 2
```

Sample Output

```
6
67
666
```