

**Problem E:****Faculty Dividing Powers**

Fred Faculty and Paul Power love big numbers. Day after day Fred chooses a random integer  $n$  and he computes  $n!$ . His friend Paul amuses himself by computing several powers of his randomly chosen integer  $k$  like  $k^2$ ,  $k^3$ , ... and so on. On a hot summer day, Fred and Paul got really, really bored, so they decided to play a joke on their buddy Dave Divider. Fred chooses a random integer  $n$  while Paul chooses a random integer  $k$ . They want Dave to find the biggest integer  $i$  such that  $k^i$  divides  $n!$  without a remainder, otherwise they will throw a cake in Dave's face. Because Dave does not like cakes in his face, he wants you to help him finding that integer  $i$ .

**Input**

The first line contains the number of test cases  $t$  ( $1 \leq t \leq 100$ ). Each of the following  $t$  lines contains the two numbers  $n, k$  ( $2 \leq n \leq 10^{18}, 2 \leq k \leq 10^{12}$ ) separated by one space.

**Output**

For each test case, print the maximum integer  $i$  on a separate line.

**Sample Input**

```
2
5 2
10 10
```

**Sample Output**

```
3
2
```