Problem A

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	Sample Output
2 5 2 10 10	3 2

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