Order of Prime in Factorial



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For a given prime p, define $\operatorname{ord}_p(k)$ as the multiplicity of p in k, i.e. the number of times p appears in the prime factorization of k.

For a given p (prime) and L, let F(p,L) be the number of integers n such that $1 \le n \le L$ and $\operatorname{ord}_p(n!)$ is divisible by p. Here n! denotes the factorial of n.

Your job is to calculate F(p, L) given p and L.

Input Format

The first line contains the number of test cases T.

Each of the next T lines contains two integers p and L separated by a space.

Output Format

For each test case, output one line containing F(p,L).

Constraints

 $1 \le T \le 100000$

 $2 \le p \le 10^{18}$

 $1 \le L \le 10^{18}$

p is prime

Sample input

2 2 6 3 6

Sample Output

2 2

Explanation

Here are the first 6 factorials: 1, 2, 6, 24, 120, 720.

The multiplicities of 2 in these numbers are: 0, 1, 1, 3, 3, 4.

Exactly two of these are divisible by 2 (0 and 4), so F(2,6)=2.

The multiplicities of 3 in these numbers are: 0, 0, 1, 1, 1, 2.

Exactly two of these are divisible by 3 (0 and 0), so F(3,6) = 2.