Spacewalk

This is the year 2060, the year when Dr. Stone decided to go for a space trip again and guess who she found floating around, yes, its Kowalski. This could be one of her hallucinations yet again! But we do not care about that. Phew! What we do care about is that she wants to let him in.

At any moment their distance of separation is given by k. Having dealt with fractional numbers her whole life, Dr. Stone is an expert in raising fractions to any given power and because of the blabberer that Kowalski is, she knows that Kowalski is equally good.

The spacecraft uses a special locking system where, an entrant and the system both decide upon a positive fraction, and if the *k*th power of the fractions sum up to 1 then the door opens. If the denominator is bounded by x, then how close do they need to get in the worst case to gain entry?

Input
First line - n (number of test cases)
Second line - x

Output
Maximum possible k for which unlock is possible

Example
input :
1
7
output :
2

Constraints
1<=n<=10^6
1<x<=10^18

Time Limit: 2 sec

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