ACM 2014: Everything in Excess!

The prime factorization of a positive integer n is the list of n's prime factors, together with their multiplicities:

$$n = \prod_{i=1}^{k} p_i^{m_i}$$

where the p_i are the factors (prime numbers) and the m_i are the corresponding multiplicities.

The excess of n is defined as the sum of the multiplicities (m_i) minus the number of factors (k). It describes the number of times that factors get "re-used" in the factorization. For example, the excess of 8 is 2, the excess of 16 is 3, and the excess of 100 is 2.

Given a pair of integers $n_0 \le n_1$, print the integer n that has the largest excess of any integer in the range $n_0..n_1$ (inclusive).

Input Format

The input will consist of one or more test cases.

Each test case will be presented on a single line as a pair of integers, denoting the values n_0 and n_1 as described above.

End of input will be indicated by a line containing "0 0".

Constraints

$2 \le n_0, n_1 \le 10^7$

Output Format

For each test case, print a single integer indicating the value in the range $n_0..n_1$ with the largest excess. If two or more values in the range tie for the largest excess, print the lowest such value.

Sample Input 0

```
2 11
600 700
0 0
```

Sample Output 0

```
8
640
```