

My birthday is coming up. Alas, I am getting old and would like to feel young again. Fortunately, I have come up with an excellent way of feeling younger: if I write my age as a number in an appropriately chosen base b , then it appears to be smaller. For instance, suppose my age in base 10 is 32. Written in base 16 it is only 20!

However, I cannot choose an arbitrary base when doing this. If my age written in base b contains digits other than 0 to 9, then it will be obvious that I am cheating, which defeats the purpose. In addition, if my age written in base b is too small then it would again be obvious that I am cheating.

Given my age y and a lower bound ℓ on how small I want my age to appear, find the largest base b such that y written in base b contains only decimal digits, and is at least ℓ when interpreted as a number in base 10.

Input

The input has several test cases. Each of them consists of a single line containing two base 10 integers y ($10 \leq y \leq 10^{18}$ — yes, I am very old) and ℓ ($10 \leq \ell \leq y$).

Output

For each test case, display the largest base b as described above on a line by itself.

Sample Input

```
32 20
2016 100
```

Sample Output

```
16
42
```