

## 7580 Forever Young

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  $\ell$  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  $\ell$  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  $\ell$  ( $10 \leq \ell \leq y$ ).

### 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
```