## Another Mathematical Problem

Given two numbers $n\left(1<=n<10^{100}\right)$ and $k(1<=k<=100)$, you are to determine whether there exists a positive integer $T$ which satisfies that for every positive integer $a, n^{a+T}-n^{a}$ is divisible by $10^{k}$.

## Input

Multiple test cases. Each test case contains two space-separated integers $n$ and k. Input terminate by EOF.

The number of test cases will not more than 20.

## Output

For each test case, you should output the smallest positive integer number T which satisfies the condition above, or -1 if it doesn't exist.

## Example

Input:
322
Output:
4

