# 11182   Zeroes III

The factorial $n!$ of a number $n$ is defined as $n! = 1 * 2 * 3 * \ldots * n$.

The function $F_1(n) = 1! * 2! * 3! * \ldots * n!$

And the function $F_2(n) = F_1(1) * F_1(2) * F_1(3) * \ldots * F_1(n)$

Given two numbers $n$ and $b$ your job is to find the number of trailing zeroes in $F_2(n)$ when expressed in base $b$.

## Input

The input file contains around 2000 lines of inputs. Each line contains two integers $n$ ($1 \leq n \leq 1000000$) and $b$ ($2 \leq b \leq 10000$). Input is terminated by a line containing two zeroes.

## Output

For each line of input produce one line of output which contains an integer $Z$, which denotes the number of trailing zeroes in $F_2(n)$, when expressed in base $b$.

## Sample Input

```
10 3
4 2
0 0
```

## Sample Output

```
57
8
```