Given any integer $0 \leq n \leq 10000$ not divisible by 2 or 5, some multiple of n is a number which in decimal notation is a sequence of 1's. How many digits are in the smallest such a multiple of n?

Input

A file of integers at one integer per line.

Output

Each output line gives the smallest integer $x > 0$ such that $p = \sum_{i=0}^{x-1} 1 \times 10^i = a \times b$, where a is the corresponding input integer, and b is an integer greater than zero.

Sample Input

```
3
7
9901
```

Sample Output

```
3
6
12
```