3135 - Factorials

Description

The factorial of an integer n, written n!, is the product of all the integers from 1 through n inclusive. The factorial quickly becomes very large: 13! is too large to store in a 32-bit integer on most computers, and 70! is too large for most floating-point variables. Your task is to find the rightmost non-zero digit of n!. For example, 5! = 1 * 2 * 3 * 4 * 5 = 120, so the rightmost non-zero digit of 5! is 2. Also, 7! = 1 * 2 * 3 * 4 * 5 * 6 * 7 = 5040, so the rightmost non-zero digit of 7! is 4.

Input specification

The first line of input is the integer T, which is the number of test cases (1 <= T <= 100).T lines follow, with each line containing An integer n, between 1 and 5000 inclusive.

Output specification

For each test case, output the rightmost non-zero digit of n!

Sample input

```
3
5
10
1000
```

Sample output

```
2
8
2
```

Hint(s)

Source	[Yosvany Leyva Pizarroza]
Added by	**ypizarroza**
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