Encode Integer

Given an integer N **(0 <= N < 10^7)**, find the smallest positive integer M **(M > 0)** such that the product of digits of M equals N.

Input

The first line of input is T **(the total number of test cases)**, followed by T **(T < 10001)** lines, each containing an integer N.

Output

For each integer N, output in a separate line the integer M, or -1 **(if encoding is not possible)**.

Example

Input:
3
24
5
11

Output:
38
5
-1