For a given non-negative integer number N, find the minimal natural Q such that the product of all digits of Q is equal N.

Input

The first line of input contains one positive integer number, which is the number of data sets. Each subsequent line contains one data set which consists of one non-negative integer number N ($0 \leq N \leq 10^9$).

Output

For each data set, write one line containing the corresponding natural number Q or '-1' if Q does not exist.

Sample Input

4

0
1
10
123456789

Sample Output

0
1
25
-1