Collatz

Let N be a positive integer, Consider the following recurrence: f(1) = N and f(K) = (0.5 + 2.5 * (f(K-1) mod 2)) * f(K-1) + (f(K-1) mod 2) if K>1. For a given N you have to compute the smallest L for which f(L)=1 (such an L always exists for N's in the input).

Input

Each line contains a positive integer N in decimal notation. You can be sure that N and all intermediate results are not bigger than 10^1888. Input terminated by EOF.

Output

For each number N in the input print one line with the value of L in decimal notation.

Example

Input:
1
2
321
1111111111111
1111111111111111111111111111111111111111111111111111111111111111111111

Output:
1
2
25
261
1296