

Non-Square Free Numbers

A positive integer k is called squarefree if k is not divisible by d^2 for any $d > 1$

Input

The input contains one integer t denoting the number of test cases. Each of the following t lines contain a single integer n , $1 \leq n \leq 10^{10}$

Output

Your program should output one integer per test case, the n -th non-squarefree number.

Example

Input:

1
10

Output:

27