Project Euler #176: Rectangular triangles that share a cathetus.

This problem is a programming version of Problem 176 from projecteuler.net

The four rectangular triangles with sides $(9, 12, 15), (12, 16, 20), (5, 12, 13)$ and $(12, 35, 37)$ all have one of the shorter sides catheti equal to 12. It can be shown that no other integer sided rectangular triangle exists with one of the catheti equal to 12.

Find the smallest integer that can be the length of a cathetus of exactly n different integer sided rectangular triangles.

Input Format

The first line of input contains only integer q which is the number of queries. Each of the following q lines contains an integer n.

Constraints

- $1 \leq q \leq 2.5 \times 10^5$
- $1 \leq n \leq 10^6$

Output Format

For each testcase print the only long integer which is the answer for the problem. If answer exceeds 10^{16}, output -1.

Sample Input 0

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1
4
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Sample Output 0

```
12
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Explanation 0

Answer for 4 is 12 as mentioned in the statement.