Antiprime Numbers

An antiprime number is a number with a lot of divisors. Formally, a positive integer n is antiprime if and only if it has more divisors than any other positive integer smaller than n.

Given q queries where each query i is in the form of a single integer, a_i, find and print the smallest antiprime *not* smaller than a_i on a new line.

Input Format

The first line contains a single integer, q, denoting the number of queries. Each line i of the q subsequent lines contains a query in the form of a single integer, a_i.

Constraints

- $1 \leq q \leq 10^6$
- $1 \leq a_i \leq 10^7$

Output Format

For each of the q queries, print the smallest antiprime *not* smaller than a_i on a new line. This means there will be a total of q lines of output.

Sample Input

```
1
5
```

Sample Output

```
6
```

Explanation

We have one query: $a = 5$. We need to determine the smallest antiprime number ≥ 5. Let's take a look at how many divisors each number has:

- 1 has only one divisor (itself).
- 2 has two divisors (1, 2). Because it has more divisors than any smaller positive integer (i.e., 1), it is antiprime.
- 3 has two divisors (1, 3); this is not more than 2 has, so it is *not* antiprime.
- 4 has three divisors (1, 2, 4). Because it has more divisors than any smaller integer, it is antiprime.
- 5 has two divisors (1, 5); this is less than the number of divisors that 4 has, so it is *not* antiprime.
- 6 has four divisors (1, 2, 3, 6). Because it has more divisors than any smaller integer, it is antiprime.

Based on our analysis above, 6 is the smallest antiprime integer ≥ 5. Thus, we print 6 on a new line.