Problem A
Multiplying Pairs

ACM-ICPC Thailand
Central Group B
Programming Contest 2013

Given an integer K (1 <= K <= 100,000), find the smallest integer no less than K which is a product of exactly two different prime numbers.

Input

The first line of the input specifies an integer T (1 <= T <= 20), the number of test cases. Then T lines follow, each line containing one test case. Each test case specifies one integer K.

Output

The output has T lines, each for each test case. Each line should specify the smallest integer no less than K which is a product of exactly two different prime numbers.

Example

Input	**Output**
5 1 3 10 300 100000	6 6 10 301 100001

Additional example explanations

In the first example where K=1, the answer is 6 because 6 = 2 x 3 and it is the smallest integer which is a product of exactly two different prime numbers. Note that 4 is not the answer because 4 = 2 x 2.

In the third example where K=10, the answer is 10 because 10 is a product of 2 and 5, both of which are prime numbers and 2 and 5 are different.

In the last example where K=100000, the answer is 100001 because 100001 is a product of 11 and 9091, both of which are prime numbers and 2 and 5 are different.