

Project Euler #69: Totient maximum

This problem is a programming version of [Problem 69](#) from [projecteuler.net](#)

Euler's Totient function, $\phi(n)$ [sometimes called the phi function], is used to determine the number of numbers less than n which are relatively prime to n . For example, as $1, 2, 4, 5, 7,$ and 8 , are all less than nine and relatively prime to nine, $\phi(9)=6$.

| n | Relatively ~ Prime | $\phi(n)$ | $n/\phi(n)$ |
|-----|--------------------|-----------|-------------|
| 2 | 1 | 1 | 2 |
| 3 | 1, 2 | 2 | 1.5 |
| 4 | 1, 3 | 2 | 2 |
| 5 | 1, 2, 3, 4 | 4 | 1.25 |
| 6 | 1, 5 | 2 | 3 |
| 7 | 1, 2, 3, 4, 5, 6 | 6 | 1.1666... |
| 8 | 1, 3, 5, 7 | 4 | 2 |
| 9 | 1, 2, 4, 5, 7, 8 | 6 | 1.5 |
| 10 | 1, 3, 7, 9 | 4 | 2.5 |

It can be seen that $n=6$ produces a maximum $n / \phi(n)$ for $n \leq 10$. Find the value of $n \leq N$ for which $n/\phi(n)$ is maximum. In case of multiple answers, print the minimum.

Input Format

First line contains T , denoting number of test cases. T lines follow
Each line contains N

Constraints

$1 \leq T \leq 1000$
 $3 \leq N \leq 10^{18}$

Output Format

Print the answer corresponding to each testcase on a new line.

Sample Input

```
2
3
10
```

Sample Output

```
2
6
```