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	$1.1666\ldots$
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 $n < 10$. Find the value of $n < N$ 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
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Sample Output

```
2
6
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