

# 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,  $\phi(9) = 6$ .

$n$	<i>Relatively Prime</i>	$\phi(n)$	$n/\phi(n)$
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  $n < 10$ . 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
```

### Sample Output

```
2
6
```

