Problem H. Halfway There

Time limit: 2 seconds
Memory limit: 512 megabytes

Given an integer n, find the median of the list of all integers from 1 to $n-1$ that are coprime with n.

Recall that integers a and b are called *coprime* if their greatest common divisor is 1. The *median* of a list L is defined to be the $\frac{|L|}{2}$-th element of L if $|L|$ is even, and the $\frac{|L|+1}{2}$-th element of L if $|L|$ is odd. Here L is assumed to be sorted in ascending order, $|L|$ denotes the length of L, and indices are 1-based.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 10^3$). Description of the test cases follows.

The only line of each test case contains a single integer n ($2 \le n \le 10^{18}$).

Output

For each test case, print a single integer — the median of the list of integers from 1 to $n-1$ that are coprime with n.

Example

standard input	standard output
3 6 10 19	1 3 9