

Rational Number

Given a number N , find the number of positive irreducible rational numbers less than 1 such that when expressed as P/Q , both P, Q are less than or equal to N .

Input

The first line contain a single integer T , the number of test cases. Following T (≤ 1000) lines will contain a test case, a single number N (≤ 1000000).

Output

For each test case print the output on a single line.

Example

Input:

3
1
2
3

Output:

0
1
3