HackerRank

Project Euler #72: Counting fractions

This problem is a programming version of Problem 72 from projecteuler.net

Consider the fraction, $\frac{n}{d}$, where n and d are positive integers. If n < d and GCD(n,d) = 1, it is called a reduced proper fraction.

If we list the set of reduced proper fractions for $d \leq 8$ in ascending order of size, we get:

$$\frac{1}{8}, \frac{1}{7}, \frac{1}{6}, \frac{1}{5}, \frac{1}{4}, \frac{2}{7}, \frac{1}{3}, \frac{3}{8}, \frac{2}{5}, \frac{3}{7}, \frac{1}{2}, \frac{4}{7}, \frac{3}{5}, \frac{5}{8}, \frac{2}{3}, \frac{5}{7}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}, \frac{7}{8}$$

It can be seen that there are 21 elements in this set.

How many elements would be contained in the set of reduced proper fractions for $d \leq N$?

Input Format

First line contains T, number of test cases. T lines follow Each line contains 1 integer N

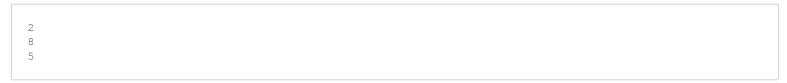
Constraints

$$1 \le T \le 100000 \\ 2 \le N \le 10^6$$

Output Format

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

Sample Input



Sample Output

