

RETO 4 MARATON 10

Given a natural number n ($1 \leq n \leq 500000$), please output the summation of all its proper divisors. Definition: A proper divisor of a natural number is the divisor that is strictly less than the number.

e.g. number 20 has 5 proper divisors: 1, 2, 4, 5, 10, and the divisor summation is: $1 + 2 + 4 + 5 + 10 = 22$.

Input

An integer stating the number of test cases (equal to about 200000), and that many lines follow, each containing one integer between 1 and 500000 inclusive.

Output

One integer each line: the divisor summation of the integer given respectively.

Example

Input:

3

2

10

20

Output:

1

1

8

22