SPOJ Problem Set (classical)

1754. Divisor Summation (Hard)

Problem code: DIVSUM2

Given a natural number n (1 <= n <= 1e16), 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 500), and that many lines follow, each containing one integer between 1 and 1e16 inclusive.

Output

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

Example

Input:
```
3
2
10
20
```

Output:
```
1
8
22
```

warning: a naive algorithm may not run in time.

Added by: Jin Bin
Date: 2007-08-29
Time limit: 60s
Source limit:50000B
Languages: All except: C99 strict
Resource: own problem