

Function σ

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[English version](#)

For given integer n print $\sigma(n)$.

Input

The first line of the standard input contains one integer t ($t < 200$) which is the number of test cases.

In each of the next t lines there is one integer n ($0 < n \leq 10^9$).

Output

For each test, print $\sigma(n)$.

Example

Input:

3
1
6
8

Output:

1
12
15