

LCM Sum

Given n , calculate the sum $\text{LCM}(1,n) + \text{LCM}(2,n) + \dots + \text{LCM}(n,n)$, where $\text{LCM}(i,n)$ denotes the Least Common Multiple of the integers i and n .

Input

The first line contains T the number of test cases. Each of the next T lines contain an integer n .

Output

Output T lines, one for each test case, containing the required sum.

Example

Sample Input:

```
3
1
2
5
```

Sample Output:

```
1
4
55
```

Constraints

$1 \leq T \leq 300000$
 $1 \leq n \leq 1000000$