LCMSUM - LCM Sum

Given n, calculate the sum LCM(1,n) + LCM(2,n) + .. + LCM(n,n), where 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 <= T <= 300000
1 <= n <= 1000000