A positive integer N can be the **LCM** (Least Common Multiple) of different set of numbers. For example, $LCM(6, 24) = 24$, $LCM(12, 8) = 24$, $LCM(1, 2, 3, 4, 8) = 24$, etc. For a given number N, maximum sum LCM indicates the set of numbers whose LCM is N and summation is maximum. Let, $MSLCM(N)$ denote this maximum sum of numbers. Given the value of N you will have to find the value:

$$\sum_{i=2}^{N} MSLCM(i)$$

Obviously, in a set the same value never comes twice.

Input

Input file contains at most 200 lines. Each line contains a positive integer which denotes the value of N ($1 < N < 20000001$). Input is terminated by a line containing a single zero, which should not be processed.

Output

For each positive number N in the input, produce one line of output. This line contains an integer which denotes the value $\Sigma_{i=2}^{N} MSLCM(i)$

Sample Input

```
10
1000
0
```

Sample Output

```
86
823080
```