UVa Online Judge

11426 GCD Extreme (II)

Given the value of N, you will have to find the value of G. The definition of G is given below:

$$G = \sum_{i=1}^{i<N} \sum_{j=i+1}^{j\leq N} GCD(i,j)$$

Here $GCD(i,j)$ means the greatest common divisor of integer i and integer j.

For those who have trouble understanding summation notation, the meaning of G is given in the following code:

```
G=0;
for(i=1;i<N;i++)
for(j=i+1;j<=N;j++)
{
    G+=gcd(i,j);
}
/*Here gcd() is a function that finds
the greatest common divisor of the two
input numbers*/
```

Input

The input file contains at most 100 lines of inputs. Each line contains an integer N ($1 < N < 4000001$). The meaning of N is given in the problem statement. Input is terminated by a line containing a single zero.

Output

For each line of input produce one line of output. This line contains the value of G for the corresponding N. The value of G will fit in a 64-bit signed integer.

Sample Input

```
10
100
200000
0
```

Sample Output

```
67
13015
143295493160
```