Problem J

GCD Extreme (II)

Input: Standard Input
Output: Standard Output

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

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

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	Output for Sample Input
10 100 200000 0	67 13015 143295493160

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