

# 11424 GCD Extreme (I)

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 20000 lines of inputs. Each line contains an integer  $N$  ( $1 < N < 200001$ ). 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
20000
0
```

### Sample Output

```
67
13015
1153104356
```