Perfect numbers are the numbers whose sum of divisors are twice the number itself. For example 28 is a perfect number because the summation of the divisors of 28 is $(1+2+4+7+14+28) = 56 = 2*28$. Like perfect persons perfect numbers are also rare. The first few even perfect numbers are 6, 28, 496, 8128, 33550336, 8589869056, 137438691328 and 2305843008139952128. The sign σ is used to denote the function, the sum of all divisors. So we can write $\sigma(28) = 56$. If n is a perfect number then $\sigma(n) - 2n = 0$. If an even number has only one odd divisor (other than one) then that number is called almost odd prime. For example 6, 24 are almost odd prime numbers. Let X denote the set of all almost odd prime numbers. Then the abundance function $abun()$ is defined as

$$abun(n) = \sum_{a_i \in X,\ a_i \leq n} \sigma(a_i) - 2a_i$$

for any positive number n. Given the value of n your job is to find the value of $abun(n)$.

Input

The input file contains at most 1001 lines of inputs. Each line contains an integer n ($1 \leq n \leq 10000000$), which denotes the value of n. Input is terminated by a line where the value of n is zero. This line should not be processed.

Output

For each line of input produce one line of output. This line contains two integers separated by a single space. The first integer is the input number n and the second integer is the value of $abun(n)$.

Sample Input

```
10
20
1000000
0
```

Sample Output

```
10 -2
20 0
1000000 -13478901222
```