This problem is based on an exercise of David Hilbert, who pedagogically suggested that one study the theory of $4n + 1$ numbers. Here, we do only a bit of that.

An **H**-number is a positive number which is one more than a multiple of four: 1, 5, 9, 13, 17, 21,... are the **H**-numbers. For this problem we pretend that these are the *only* numbers. The **H**-numbers are closed under multiplication.

As with regular integers, we partition the **H**-numbers into units, **H**-primes, and **H**-composites. 1 is the only unit. An **H**-number h is **H**-prime if it is not the unit, and is the product of two **H**-numbers in only one way: $1 \times h$. The rest of the numbers are **H**-composite.

For examples, the first few **H**-composites are: $5 \times 5 = 25$, $5 \times 9 = 45$, $5 \times 13 = 65$, $9 \times 9 = 81$, $5 \times 17 = 85$.

Your task is to count the number of **H**-semi-primes. An **H**-semi-prime is an **H**-number which is the product of exactly two **H**-primes. The two **H**-primes may be equal or different. In the example above, all five numbers are **H**-semi-primes. $125 = 5 \times 5 \times 5$ is not an **H**-semi-prime, because it's the product of three **H**-primes.

Input

Each line of input contains an **H**-number $\leq 1,000,001$. The last line of input contains `0` and this line should not be processed.

Output

For each inputted **H**-number h, print a line stating h and the number of **H**-semi-primes between 1 and h inclusive, separated by one space in the format shown in the sample.

Sample Input

```
21
85
789
0
```

Sample Output

```
21 0
85 5
789 62
```