

## 10049 Self-describing Sequence

Solomon Golomb's *self-describing sequence*  $\langle f(1), f(2), f(3), \dots \rangle$  is the only nondecreasing sequence of positive integers with the property that it contains exactly  $f(k)$  occurrences of  $k$  for each  $k$ . A few moments thought reveals that the sequence must begin as follows:

$n$	1	2	3	4	5	6	7	8	9	10	11	12
$f(n)$	1	2	2	3	3	4	4	4	5	5	5	6

In this problem you are expected to write a program that calculates the value of  $f(n)$  given the value of  $n$ .

### Input

The input may contain multiple test cases. Each test case occupies a separate line and contains an integer  $n$  ( $1 \leq n \leq 2,000,000,000$ ). The input terminates with a test case containing a value 0 for  $n$  and this case must not be processed.

### Output

For each test case in the input output the value of  $f(n)$  on a separate line.

### Sample Input

```
100
9999
123456
1000000000
0
```

### Sample Output

```
21
356
1684
438744
```