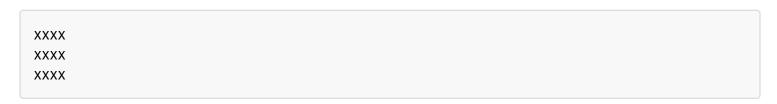
## CCC '03 J2 - Picture Perfect

## Canadian Computing Competition: 2003 Stage 1, Junior #2

Roy has a stack of student yearbook photos. He wants to lay the pictures on a flat surface edge-to-edge to form a filled rectangle with minimum perimeter. All photos must be fully visible. Each picture is a square with dimensions 1 unit by 1 unit.

For example, he would place 12 photos in the following configuration, where each photo is indicated with an X



Of course, he could orient them in the other direction, such as

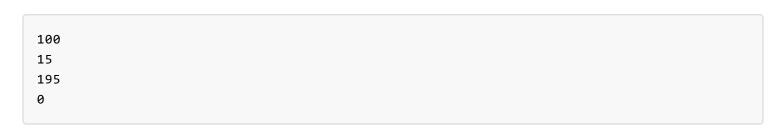
```
XXX
XXX
XXX
XXX
```

which would have the same perimeter, 14 units.

Your program should repeatedly read a positive integer C, the number of pictures to be laid out. For each input, it should print the smallest possible perimeter for a filled rectangle that is formed by laying all the pictures edge-to-edge. Also print the dimensions of this rectangle.

You may assume that there are less than  $65\,000$  photos. An input value of C=0 indicates that the program should terminate.

## **Sample Input**



## **Sample Output**

Minimum perimeter is 40 with dimensions 10 x 10 Minimum perimeter is 16 with dimensions 3 x 5 Minimum perimeter is 56 with dimensions 13 x 15