

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

```
XXXX
XXXX
XXXX
```

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

```
100
15
195
0
```

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