Shelves and Boxes

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

To thank the olympiad volunteers, Darya ordered an enormous New Year chocolate bar from a chocolate workshop. The bar is 2 squares wide and L squares long. Before it is sent to the university, it will be broken into one or more pieces to be given as gifts. It may only be broken across its width, along the lines between squares, so every piece has dimensions $2 \times x$, where x is an integer. The entire chocolate bar must be used for the gifts. Sergey considers a piece shorter than k squares too small for a proper gift, so every piece must satisfy $x \geq k$.

The chocolate will be transported in boxes. To prevent the pieces from breaking, a piece of size $2 \times x$ may only be placed in a box whose base has dimensions exactly $2 \times x$. However, any number of pieces of the appropriate size may be stacked in the same box.

— Large boxes are expensive, — Amir reminded everyone. — Let's make the area of the largest box's base as small as possible.

Every box is custom-made, and Renata does not want to place unnecessary orders. Therefore, among all ways of breaking the chocolate that minimize this largest base area, the organizers will choose one requiring the fewest boxes.

Help the organizers: output the area of the base of the largest box and the number of boxes they will need.

Input

The only line contains two integers L and k ($1 \leq k \leq L \leq 10^{18}$) — the length of the chocolate bar and the minimum length of a piece (in chocolate squares), respectively.

Output

Output two integers separated by a space: the minimum possible area of the base of the largest box and, among ways achieving that area, the minimum number of boxes required.

Scoring

The tests are divided into six subtasks listed in the table below.

Points for a subtask are awarded only if the solution successfully passes all tests of this subtask and all subtasks listed in the column «Required subtasks».

If the minimum area is determined correctly, but the minimum number of boxes is incorrect, then you will receive half of the points for the subtask.

Subtask	Points	Additional constraints	Required subtasks
1	4	L is divisible by k	—
2	10	$L \leq 10$	—
3	16	$3k \geq L$	—
4	20	$L \leq 10^6$	2
5	14	$L \leq 10^9$	2, 4
6	36	No additional constraints	1–5

Examples

standard input	standard output
17 5	12 2
12 4	8 1
9 5	18 1

Note

In the first sample, $L = 17$ and $k = 5$. According to the problem statement, each piece must have a length of at least 5. The partition $17 = 5 + 5 + 5 + 2$ is invalid because the last piece has a length less than 5. The optimal partition is $17 = 6 + 6 + 5$. The two pieces of length 6 can be stacked in one box, while the piece of length 5 is placed in another box.

It is impossible to reduce the maximum piece length to 5, since 17 is not divisible by 5. Therefore, the minimum possible area of the largest box's base is $2 \cdot 6 = 12$, and the minimum number of boxes required is 2.