

Problem G. Mountain Trek Route

Input file: `g.in`
Output file: `g.out`
Time limit: 2 seconds
Memory limit: 64 megabytes

In Almaty countryside a mountain cycle trek route (a route with a start and finish at one point) has been constructed. We will simulate the route in a way of stairs (not hills) of one and the same width each, each step i is horizontal and is marked by the sea level a_i meters. Heights of neighbor stairs may be equal. The *difficulty* of the route is a sum of *ups* and *downs*. More formally,

$$\text{difficulty} = |a_1 - a_2| + |a_2 - a_3| + \dots + |a_{n-1} - a_n| + |a_n - a_1|.$$

The first constructed trek route appeared to be too challenging for tourists. To decrease the route difficulty we can use k blocks. The block's width equals stair's width and the block's height equals one meter. We may put any block on any stair or on another block or does't use it at all.

Define the maximum possible decrease of the trek route difficulty.

Input

In the first input file line there are the following numbers N ($2 \leq N \leq 10^6$) and k ($1 \leq k \leq 10^9$). In the next line there are n non-negative integers which are the height of each of the stairs.

Output

Output one number, which is maximum possible decrease of the trek route difficulty.

Examples

<code>g.in</code>	<code>g.out</code>
4 5 4 3 2 1	4
3 2 1 2 1	2
7 1000 4 3 3 2 3 2 1	8

Note

In the first test case the difficulty of the trek was equal to 6 (3 *downs* at height one and one *up* at height 3 taking into account the cycle feature of the trek). If we put one block on the third stair and two blocks on the last stair we will decrease the difficulty of the trek at 4. We can use all 5 blocks to produce the same answer, but it's impossible to make any changes to simplify the route more.

In 30% of testcases $N \leq 100$, $k \leq 1000$.

In 60% of testcases $N \leq 100\,000$.