Weekly Puzzle #4

Your friend has a Commerce assignment due tomorrow and he gives you $60 to 'help' him do it. He needs to minimise cost by prioritising different areas to technologically improve.

You are given an array of numbers A_i which contains positive as well as negative numbers. The cost of the array can be defined as C(X).

$C(x) = |A_1 + T_1| + |A_2 + T_2| + ... + |A_n + T_n|$, where T is the transfer array which contains *N* zeros initially.

You need to minimize this cost. You can transfer value from one array element to another if and only if the distance between them is at most *K*.

Also, transfer value can't be transferred further.

Say array contains 3, −1, −2 and K = 1 (you can only transfer from an element to right next to it).

If we transfer 3 from 1st element to 2nd, the array becomes;

Original value: 3, −1, −2

Transferred value: −3, 3, 0

C(x) = |3 − 3| + |−1 + 3| + ...|−2 + 0| = 4 which is the minimum in this case.

Note

Only positive value can be transferred

It is not necessary to transfer whole value i.e partial transfer is also acceptable. This means that if you have
A[i]=5 (K = infinite)
then you can distribute the value 5 across many other array elements provided that they finally sum to a number less than equal to 5.
For example, 5 can be transferred in chunks of smaller values say 2, 3 but their sum should not exceed 5.

Input

First line contains *N* and *K* separated by space

Second line denotes an array of size *N*

Output

Minimum value of C(X)

Limits

1 ≤ **N, K** ≤ 105
−109 ≤ $\mathbf{A_i}$ ≤ 109

Sample

Input	Output
3 2 3 -1 -2	0

The array contains 3, −1, −2 and K=2

If we transfer 1 from 1st element to 2nd and 2 from 1st element to 3rd, the array becomes

Original Value 3, −1, −2

Transferred value −3, +1, +2

C(x)=|3−3|+|−1+1|+|−2+2|=0 which is minimum in this case