rabbitbars

Time Limit: 1 seconds
Memory Limit: 256 MB

1 Problem Description

While inspecting the ongoing construction for the new technology park in Bunnyland, Whiterabbit came across some metal bars. There are N bars, the i^{th} one being of length L_i. After some discussion with the supervisor, Whiterabbit discovered that the bars were delivered wrongly and are of many different lengths.

The bars are supposed to be used as reinforcement for some support beams in the building. The bars used in each beam must be of the same length, otherwise the beam would be structurally unsound. Since the bars have already been delivered, Whiterabbit thinks that it is a waste of time to call for another N bars, and thus decides that it is best to adjust the length of the N given bars such that the number of distinct lengths across all N bars is at most K.

As welding more or cutting away metal parts takes time, Whiterabbit estimates that the time needed for him to change a bar of length X to a bar of length Y is $|X-Y|$ seconds, where $|a|$ is the absolute value of a. As Whiterabbit has many other construction sites to inspect, he wants you to determine the minimum amount of time needed for him to adjust the N bars such that the number of distinct lengths is at most K

2 Input Format

The input format is as follows:

- The first line of input will contain 2 spaced integers, N and K respectively.
- The next line will contain N spaced integers, with the i^{th} one representing L_i.

3 Output Format

The output format is as follows:

- The first and only line of output should contain 1 integer, the minimum amount of time needed for the lengths of the bars to be adjusted such that the number of distinct lengths is at most K.

4 Subtasks

Subtask	Score	N	K	Additional Constraints
1	4	$2 \leq N \leq 20$	$K = N$	
2	9	$2 \leq N \leq 200$	$K = N - 1$	
3	16	$2 \leq N \leq 5000$	$K = 1$	
4	17	$2 \leq N \leq 5000$	$1 \leq K \leq 4$	$L_i \leq 10$
5	12	$2 \leq N \leq 70$	$1 \leq K \leq 70$	
6	15	$2 \leq N \leq 200$	$1 \leq K \leq 200$	
7	10	$2 \leq N \leq 5000$	$1 \leq K \leq 10$	
8	17	$2 \leq N \leq 5000$	$1 \leq K \leq 200$	
9	0	Sample Testcases		
For all subtasks: $2 \leq N \leq 5000$, $1 \leq K \leq 200$, $1 \leq L_i \leq 10^9$				

5 Examples

standard input	standard output
6 1 1 2 3 4 5 6	9
10 3 3 2 6 5 7 8 1 2 9 6	5
6 6 3 4 4 5 6 10	0

Explanation for sample 2: Whiterabbit can adjust the lengths from {3,2,6,5,7,8,1,2,9,6} to {2,2,6,6,8,8,2,2,8,6} in 5 seconds, which is the minimum possible. Note that other solutions may also exist, such as {2,2,6,6,6,9,2,2,9,6}, which can also be achieved in 5 seconds.