

Angry Children 2



Problem Statement

Bill Gates is on one of his philanthropic journeys to a village in Utopia. He has **N** packets of candies and would like to distribute one packet to each of the **K** children in the village (each packet may contain different number of candies). To avoid a fight between the children, he would like to pick **K** out of **N** packets such that the unfairness is minimized.

Suppose the **K** packets have $(x_1, x_2, x_3, \dots, x_k)$ candies in them, where x_i denotes the number of candies in the i^{th} packet, then we define *unfairness* as

$$\sum_{1 \leq i < j \leq k} |X_i - X_j|$$

where $|a|$ denotes the absolute value of a .

Input Format

The first line contains an integer **N**.

The second line contains an integer **K**.

N lines follow each integer containing the candy in the i^{th} packet.

Output Format

A single integer which will be minimum unfairness.

Constraints

$2 \leq N \leq 10^5$

$2 \leq K \leq N$

$0 \leq \text{number of candies in each packet} \leq 10^9$

Sample Input #00

```
7
3
10
100
300
200
1000
20
30
```

Sample Output #00

```
40
```

Explanation #00

Bill Gates will choose packets having 10, 20 and 30 candies. So unfairness will be $|10-20| + |20-30| + |10-30| = 40$. We can verify that it will be minimum in this way.

Sample Input #01

```
10
4
1
```

2
3
4
10
20
30
40
100
200

Sample Output #01

10

Explanation #01

Bill Gates will choose 4 packets having 1,2,3 and 4 candies. So, unfairness will be $|1-2| + |1-3| + |1-4| + |2-3| + |2-4| + |3-4| = 10$