Barista Schedule

A busy coffee shop has just received a batch of N drink orders. Order i takes exactly t_i seconds to prepare. The shop has K identical baristas who work in parallel and are completely interchangeable.

Each order must be assigned to exactly one barista, and that barista prepares its assigned orders one at a time (no two orders are made simultaneously by the same barista). Once a barista starts an order it works on it without interruption until it is finished—orders cannot be paused and resumed later. All baristas are available at time 0.

The **completion time** of an order is the moment its preparation finishes, measured from time 0 when the baristas begin working. For example, if a single barista prepares orders of length 4 and then 3, the first order completes at time 4 and the second at time $4+3=7$. The **total completion time** of a schedule is the sum of all order completion times, so the total completion time in this example is $4+7=11$.

The manager may freely assign the orders to baristas and choose the order in which each barista works. Her goal is to minimize the total completion time.



Figure 1: Identical baristas prepare their assigned orders in parallel before sending completed drinks to the shared pickup counter.

Compute the minimum possible total completion time.

Input

The first line contains two integers N and K ($1 \le N \le 200\,000$, $1 \le K \le N$): the number of orders and the number of baristas.

The second line contains N integers $t_1, t_2, \ldots, t_N$ ($1 \le t_i \le 10^8$), where t_i is the preparation time of order i. The minimum possible total completion time is at most $2^{31}-1$.

Output

Output a single integer: the minimum possible sum of the completion times of all orders.

Sample Input 1

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4 2
1 2 3 4
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Sample Output 1

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13
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Sample Input 2

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3 1
5 1 3
```

Sample Output 2

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14
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Sample explanation

In the first sample there are 4 orders with times $1, 2, 3, 4$ and $K = 2$ baristas. An optimal plan gives one barista the orders $\{1, 3\}$ (made in the order 1 then 3) and the other barista the orders $\{2, 4\}$ (made in the order 2 then 4). The completion times are $1, 1{+}3{=}4$ on the first barista and $2, 2{+}4{=}6$ on the second, for a total of $1 + 4 + 2 + 6 = 13$. No assignment does better.