

Problem S

Bridging the Gap

Time limit: 4 seconds

A group of walkers arrives at a river in the night. They want to cross a bridge, which can hold a limited number of walkers at a time. The walkers have just one torch, which needs to be used when crossing the bridge. Each walker takes a certain time to cross; a group crossing together must walk at the slowest walker's pace. What is the shortest time it takes for all walkers to cross the bridge?



A bridge with low capacity

For example, Sample Input 1 assumes the bridge can hold 2 walkers at a time and there are 4 walkers with crossing times 1 minute, 2 minutes, 5 minutes and 10 minutes, respectively. The shortest time of 17 minutes can be achieved by the following sequence of crossings.

First, the two fastest walkers cross in 2 minutes. Second, the fastest walker crosses back in 1 minute. Third, the two slowest walkers cross in 10 minutes. Fourth, the second-fastest walker crosses back in 2 minutes. Fifth, the two fastest walkers cross in 2 minutes.

Input

The first line of input contains two integers n and c , where n ($2 \leq n \leq 10^4$) is the number of walkers, and c ($2 \leq c \leq 10^4$) is the number of walkers the bridge can hold at a time.

Then follows a line containing n integers t_1, \dots, t_n ($1 \leq t_i \leq 10^9$ for all i). The i^{th} walker takes time t_i to cross.

Output

Output the minimum total time it takes for the entire group to cross the bridge.

Sample Input 1

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4 2
1 2 10 5
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Sample Output 1

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17
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Sample Input 2

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4 6
1 2 10 5
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Sample Output 2

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10
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