



## A Bug's Life

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**Time limit for each test: 2000 milliseconds**  
**Memory limit: 32 megabytes**

Ants have many hardships in their life. They collect food in hot seasons and keep it in their nest for cold seasons.

This year, due to growth of population and higher demand of food, ants are running out of space in their nest. Their food store consists of  $n$  columns one after the other in a row. Now, in the  $i^{\text{th}}$  column, there is a pack of wheat which weighs  $a_i$  grams. Ants can move a pack of wheat from one column to one of its adjacent columns (left or right column upon existence). The queen has ordered that the ants must move the packs in the minimum amount of time such that at most  $k$  columns of the store finally contain packs (i.e. at least  $n - k$  columns must be free). Moving an  $x$  grams weighed pack from one column to its adjacent column takes  $x$  seconds of time. Furthermore, they can move at most one pack at a time (they cannot move two packs simultaneously). Ants cannot divide a pack into smaller packs. For example, if a 3 grams weighted pack is moved to an adjacent column which already has a 5 grams weighted pack, then we will have only an 8 grams weighted pack, and the 3 grams of wheat cannot be separated from the 5 grams weighted pack any more. From now on, ants can move all the 8 grams of wheat together.

### Problem

Write a program that

- Reads the numbers  $n$ ,  $k$  and the weight of the pack in each column from *Standard Input*.
- Computes the minimum amount of time needed to collect the packs in  $k$  columns.
- Writes the computed value in *Standard Output*.

### Input Sepcification

The first line of input contains  $n$  and  $k$ .

The second line contains  $n$  space-separated numbers. The  $i$ th number indicates  $a_i$ , the weight of the  $i$ th pack of wheat.

### Output Specification

In the only line of output, write the minimum required time (in seconds) to move all packs to at most  $k$  columns.

### Restrictions

- $1 \leq n \leq 1200$ .
- $1 \leq k \leq 100$ .
- The weight of all packs of wheat are positive integers not more than 1000.
- In 30% of the test cases,  $n \leq 50$  and  $k \leq 10$ .

**Example**

Standard Input	Standard Output
4 2 4 7 8 6	10