

## Mana (mana)

Dario is addicted to card games and loves to optimize every play he makes. Today, he discovered a new game. You are given a deck of  $N$  cards, numbered from 0 to  $N - 1$  starting from the top of the deck. To play a card, you must pay its mana cost: playing card  $i$  costs  $C_i$  mana.



Figure 1: Some of the cards used in the game.

At the beginning of the game, you draw 2 cards from the **top** of the deck. Then, you can play cards using the following procedure: play one of the 2 cards in your hand (paying its mana cost) and place it at the **bottom** of the deck, then draw a card from the **top** of the deck.

Dario's goal is to play  $K$  cards while spending the smallest amount of mana possible. What is the minimum amount of mana Dario needs to spend?

📎 Among the attachments of this task you may find a template file `mana.*` with a sample incomplete implementation.

## Input

The input file consists of:

- a line containing integers  $N, K$ .
- a line containing the  $N$  integers  $C_0, \dots, C_{N-1}$ .

## Output

The output file must contain a single line consisting of an integer: the minimum amount of mana you need to spend to play  $K$  cards.






## Constraints

- $2 \leq N \leq 100\,000$ .
- $1 \leq K \leq 1\,000\,000\,000$ .

- $1 \leq C_i \leq 1\,000\,000\,000$  for each  $i = 0 \dots N - 1$ .

## Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

- **Subtask 1** (0 points)      Examples.  

- **Subtask 2** (12 points)       $N \leq 2$ .  

- **Subtask 3** (21 points)       $N \leq 1000, K \leq 1000$ .  

- **Subtask 4** (22 points)       $K \leq 100\,000$ .  

- **Subtask 5** (45 points)      No additional limitations.  


## Examples

input	output
3 4 3 7 5	16
8 5 3 1 2 5 4 8 7 6	15
5 6 4 3 2 1 5	15

## Explanation

In the **first sample case**, Dario can do as follows:

- At the start, he draws the cards that cost 3 and 7 mana, respectively.
- He plays the card that costs 3 and places it at the bottom of the deck, then draws the one that costs 5 from the top.
- He plays the card that costs 5 and places it at the bottom of the deck, then draws the one that costs 3 from the top.
- He plays the card that costs 3 and places it at the bottom of the deck, then draws the one that costs 5 from the top.
- He plays the card that costs 5 and places it at the bottom of the deck, then draws the one that costs 3 from the top.

Dario spends 16 mana in total by doing this, and it can be proven that he cannot pay less to play 4 cards.