

The Matrix Resurrections

Hope you all remember the famous scene of "The Matrix" the Neo's decision on choosing a blue pill versus a red pill. Instead, this time Morpheus decided to give a much easier task to Neo to find the "truth". Can you help Neo to solve the task?

Neo has a sequence with N integers A_1, A_2, \dots, A_N and he wants to choose set $S \subset \{1, 2, \dots, N\}$ such that size of S at least K , more specifically $|S| \geq K$, and cost of chosen set minimized.

The cost of the set S defined as $\sum_{i \in S} \sum_{j \in S} \text{mx}(i, j)$ and here is how $\text{mx}(l, r)$ function is calculated:

- If $l \leq r$, then $\text{mx}(l, r)$ is the maximum of A_l, A_{l+1}, \dots, A_r
- Otherwise, $\text{mx}(l, r)$ is 0.

Input Format

The first line of the input contains a single integer T denoting the number of test cases and following T of each test case given two integers N and K . Following line for each test case contains N space-separated integers A_1, A_2, \dots, A_N .

Constraint

$$1 \leq T \leq 1000$$

$$1 \leq K \leq N \leq 5000$$

$$1 \leq A_i \leq 10^9$$

It is guaranteed the sum of N over all test cases does not exceed 10^4 .

Output Format

For each test case, print a single line containing one integer - the minimum possible value of cost function for some subset of $\{1, 2, \dots, N\}$.

Sample Input:

```
1
5 3
1 2 3 4 5
```

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Sample Output:

```
14
```

Copy

Submit Solution

✓ **Points:** 1

⌚ **Time limit:** 2.0s

Java 8: 5.0s

Python: 8.0s

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