Problem A. Tower

Input file:	`standard input`
Output file:	`standard output`
Time limit:	6 seconds
Memory limit:	512 megabytes

Prof. Pang built n block towers with different heights. The i-th tower has height a_i.

Prof. Shou doesn't like these towers because of their arbitrary heights. He decides to **first remove exactly m of them**, and then perform some (or none) of the following operations:

- Choose a tower and increase its height a_i by 1.
- Choose a tower and decrease its height a_i by 1.
- Choose a tower and divide its height a_i by 2. If the new height is not an integer, it is rounded down.

Prof. Shou can never choose a removed tower. If after an operation, the height of a tower will become 0, that operation is not allowed. Under these constraints, Prof. Shou can perform an arbitrary number of operations in arbitrary order.

Prof. Shou would like all the towers that are not removed to have the same heights. Please calculate the minimum number of operations to achieve this.

Input

The first line contains one integer T ($1 \le T \le 10$), the number of test cases.

For each test case, the first line contains two integers n, m ($1 \le n \le 500, 0 \le m < n$), the number of towers, and the number of towers Prof. Shou should delete before performing the operations.

The next line contains n integers $a_1, \ldots, a_n$ ($1 \le a_i \le 10^9$), the initial heights of the towers.

Output

For each test case, output the minimum number of operations in one line.

Example

standard input	standard output
3 2 0 2 6 5 0 1 2 3 4 5 5 3 1 2 3 4 5	2 4 1