Chopsticks

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

There are n kinds of chopsticks in the sterilizer.these n kinds of chopsticks are numbered from 1 to n.The i-th kind has a_i chopsticks.Two different chopsticks can form a pair if and only if they have the same kind.Each single chopstick can only belong to one pair of chopsticks at most.Please find out the minimum number of chopsticks to take out from the sterilizer so that they can form at least m pairs anyway.

Input

The first line contains a single integer $T(1 \leq T \leq 10^6)$ - the number of test cases in the input.Then T test cases descriptions follow.

For each test case,the first line contains two integer n, m - the number of different kinds of chopsticks and the number of pairs should be formed.It is guaranteed that $1 \leq n \leq 10^6, 1 \leq m \leq 10^{15}, \sum n \leq 10^6$

The second line contains n integers $a_1, a_2, \cdots, a_n$,where a_i represents the number of the i-th kind of chopsticks$(1 \leq a_i \leq 10^9)$.

Output

For each test case,output a single integer,represents the minimum number of chopsticks to take out.If the minimum number doesn't exist,output -1.

Example

standard input	standard output
3 3 4 6 2 3 3 114514 6 2 3 3 3 6 2 3	10 -1 8

Note

Let's denote b_i as the number of chopsticks to take out from the sterilizer in the i-th kind.

In the first sample,if $(b_1, b_2, b_3) = (5, 1, 3)$,then the sum of chopsticks is 9 ,but in this situation it can only form 3 pairs.So the answer must greater than 9 ,and it can be proved that the answer is 10.