Problem E. Colorful Graph

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Having delved into the complex theory of quantum chromodynamics, Little Cyan Fish has become fascinated with the concept of *color charge*. To test your understanding of this theory, he has proposed the following task to you.

Little Cyan Fish presents you with a graph consisting of N vertices. Each vertex is assigned a color, with colors numerically labeled from 1 to n. The number of vertices assigned color i is exactly a_i, such that the total number of vertices is $\sum_{i=1}^{n} a_i = N$. Initially, the graph contains no edges.

Your task is to add edges to this graph under a specific constraint: any two vertices of the same color must have a distance between them that is greater than or equal to d. This constraint is to avoid having vertices of the same color too close to each other. Notably, if there is no path between a pair of vertices, their distance is considered infinite.

Your goal is to maximize the number of edges in the graph while adhering to the above constraint. Determine and output the maximum number of edges that can be added to the graph under these conditions.

Input

There are multiple test cases in a single test file. The first line of the input contains a single integer T ($1 \le T \le 10^5$), indicating the number of test cases.

For each test case, the first line contains two integers n and d ($1 \le n \le 5 \times 10^5$, $1 \le d \le n$).

The next line contains n integers $a_1, \ldots, a_n$ ($1 \le a_i \le 10^9$ for all $1 \le i \le n$; $\sum_{i=1}^{n} a_i \le 10^9$).

It is guaranteed that the sum of n over all test cases will not exceed 5×10^5.

Output

For each test case, output a single line containing a single integer, indicating the answer.

Example

standard input	standard output
4 3 3 2 2 1 3 3 2 3 3 5 2 1 1 1 1 1 1 1 1	4 7 10 0

Note

In the first example, at most 4 edges can be added to the graph. Here is a possible plan.

