**Q:-1**

**Aggressive Cows Problem**

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Farmer John has built a new long barn, with N (2 <= N <= 100,000) stalls. The stalls are located along a straight line at positions x1,...,xN (0 <= xi <= 1,000,000,000).

His C (2 <= C <= N) cows don't like this barn layout and become aggressive towards each other once put into a stall. To prevent the cows from hurting each other, FJ wants to assign the cows to the stalls, such that the minimum distance between any two of them is as large as possible. What is the largest minimum distance?

**Input**

t – the number of test cases, then t test cases follows.

\* Line 1: Two space-separated integers: N and C

\* Lines 2..N+1: Line i+1 contains an integer stall location, xi

**Output**

For each test case output one integer: the largest minimum distance.

**Sample Input :**

1

5 3

1

2

8

4

9

**Sample Output:**

3

**Output details:**

FJ can put his 3 cows in the stalls at positions 1, 4 and 8,

resulting in a minimum distance of 3.

**Q:-2**

**Inversion Count**

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Let A[0 ... n-1] be an array of n distinct positive integers. If i < j and A[i] > A[j] then the pair (i, j) is called an inversion of A (where i and j are indexes of A). Given an integer array A, your task is to find the number of inversions in A.

**Input format :**

Line 1 : n, array size

Line 2 : Array elements (separated by space).

**Output format :**

Count of inversions

**Constraints :**

***1 <= n <= 10^5***

***1 <= A[i] <= 10^9***

**Sample Input 1 :**

3

3 2 1

**Sample Output 1 :**

3

**Sample Input 2 :**

5

2 5 1 3 4

**Sample Output 1 :**

4

**Q:-3**

**Murder**

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Once detective Saikat was solving a murder case. While going to the crime scene he took the stairs and saw that a number is written on every stair. He found it suspicious and decides to remember all the numbers that he has seen till now. While remembering the numbers he found that he can find some pattern in those numbers. So he decides that for each number on the stairs he will note down the sum of all the numbers previously seen on the stairs which are smaller than the present number. Calculate the sum of all the numbers written on his notes diary.

Answer may not fit in integer . You have to take long.

**Input**

First line gives T, number of test cases.

2T lines follow.

First line gives you the number of stairs N

Next line gives you N numbers written on the stairs.

**Output**

For each test case output one line giving the final sum for each test case.

**Constraints**

T<=10

1<=N<=10^5

All numbers will be between 0 and 10^6.

**Sample Input:**

1

5

1 5 3 6 4

**Sample Output:**

15

**Explanation:**

For the first number, the contribution to the sum is 0.

For the second number, the contribution to the sum is 1.

For the third number, the contribution to the sum is 1.

For the fourth number, the contribution to the sum is 9 (1+5+3).

For the fifth number, the contribution to the sum is 4 (1+3).

Hence the sum is 15 (0+1+1+9+4).