

A. CPL auction

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Problems from A to I are **not** sorted based on the order of difficulty

The Spicy auction for the cricket tournament Cosmos Premier League-2023 (CPL) is about to take place. All the players (total n in number) and their initial values (in crores) are listed in a row. The worth of players is known to increase unusually, with a player having a non-zero value increasing the value of surrounding players by 2 crores each day.

For example, if the value of i^{th} player is non-zero, then the value of $(i - 1)^{th}$ player will get incremented by 2 crores as well the value of $(i + 1)^{th}$ player will get incremented by 2 crores(if they exist).

Let's call the initial day of the auction day 0. And after that, each consecutive will be referred to as day 1, day 2, and so on.

Now you have to find the total extra value (in crore) of all players that would have been increased on the day p compared to day 0.

Input

The first line contains a single integer $t(1 \leq t \leq 10^3)$ — the number of test cases.

The first line of each test case contains two integers $n(1 \leq n \leq 10^5)$ and $p(0 \leq p \leq 10^9)$.

The second line contains n integers - the initial value of each player in crore on day 0.

The Sum of n over all test cases does not exceed 10^6

Output

For each case output a single integer - total extra value (in crore) of all players that would have been increased on day p compared to day 0

Example

input

Copy

2
5 2
0 5 0 4 0
1 9
5

output

Copy

24
0

Note

In the first case, the the value distribution of player will be,

-	Player 1	Player 2	Player 3	Player 4	Player 5	Total Value
Day 0	0	5	0	4	0	9
Day 1	2	5	4	4	2	17
Day 2	4	9	8	8	4	33

Note that from day 0 to day 1, for player 3, 2 crores will be increased due to player 2, and 2 crores will be increased due to player 4. Hence total of 4 cores will be added.

Shaastra Programming Contest Prelims

Contest is running

01:39:58

Contestant

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Language: GNU G++17 9.2.0 (64 bit, m: ▼)

Choose file: Choose file No file chosen

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⬆ Hence the total extra value will be $33 - 9 = 24$ crores

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