Kangokutou Exodus

After a long battle, the last Nightmare of the divine prison tower is down, and the way for the Blood Maidens and their friends to escape its underground jail is laid bare.

And with everyone fully packed up, it's time to go. Known as the one with the best agility of them all, Cinderella is tasked to spearhead the exodus of the tower that she and her friends had just cleared.

Now malformed, the divine prison tower consists of n corridors, linked together as a chain; that is, for $1 < i < n$, the i-th corridor only touches the $(i-1)$-th and the $(i+1)$-th one. The i-th corridor is a_i units long, and any two adjacent corridors are **perpendicular**. At the end of the last corridor, there is an exit.

To move as fast as possible — not just for her but everyone else — Cinderella has a fast sprinting ability that was once called "Twelve Dash", but through years of training, it's now a customizable ability named "m-dash", characterized by a positive integer m. This ability functions as follows.

- For each second, Cinderella and her friends sprint for m units of length.
- If in any second, Cinderella reaches the end of a corridor without sprinting exactly m units of length, she stops at the end of the corridor and suffers an extra second of delay, as the bump onto the wall or the exit will cause everyone to be in slight disorder, and they will take that delay second to reorganize.
- Whenever reaching the end of a corridor and not being stunned (or fully recovered from being stunned), Cinderella and her friends turn to the direction of the next corridor and prepare to sprint again, or escape the maze if they reached the exit. This action takes 0 seconds.

The value m cannot be changed when she starts running, but she can choose m at will before that. With that in mind, she wonders how fast she could escape this maze, but her focus is too drifted towards her glass pendant that complex calculations are not in the cards at the moment. Will you help her with that?

Input

The first line contains a single integer t ($1 \le t \le 10^4$) — the number of test cases. The description of the test cases is as follows.

- The first line of each test case contains an integer n ($1 \le n \le 10^6$) — the number of corridors in the maze.
- The second line of each test case contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^9$) — the lengths of the corridors.

It is guaranteed that the sum of n over all test cases does not exceed 10^6.

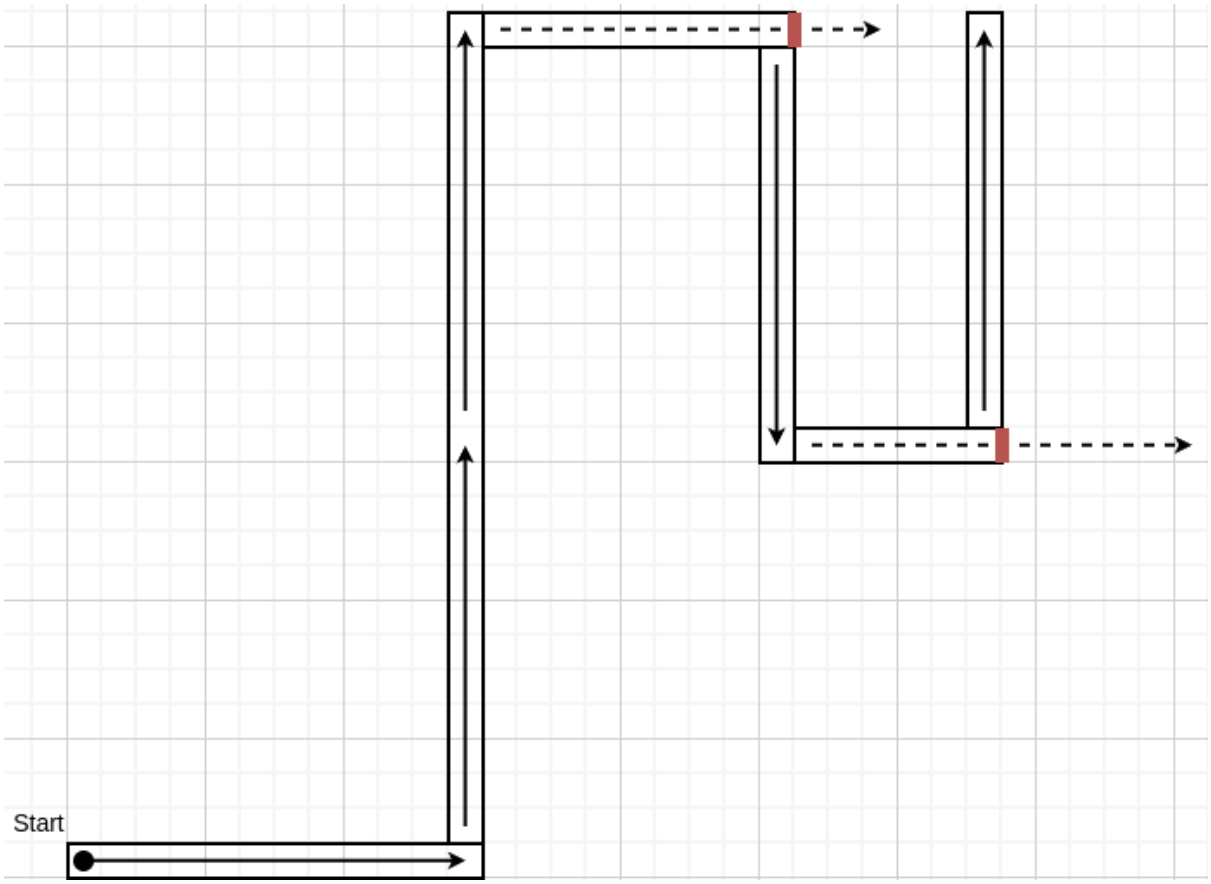
Output

For each test case, output a single integer — the minimum time (in seconds) that Cinderella and her friends would take to escape the maze, given she could choose any value m before starting.

Sample Input 1	Sample Output 1
2 6 12 24 9 12 6 12 4 27 12 38 36	9 7

Sample Explanation

In the first test case, the best possible m is 12. The illustration below shows how Cinderella and her friends dashes through the corridors. Each arrow represents one sprint of length $m = 12$. The dashed arrow represents a dash with one extra second delay when bumping into the wall.



There are 7 sprints, with 2 delays, the total time to escape the tower is $7 + 2 = 9$ seconds.