

Problem F

Drones

Max no. of test cases: 30

Time limit: 2 seconds

StarLine company established N outpost stations along a long road on the moon. A drone patrols all N outpost stations every day, and the cost to operate the drone increases with the total distance. In fact, if the distance between the two farthest stations is d , then the cost is $10 + d^2$ (i.e. d squared, plus a fixed cost of 10). To cut the cost of drone operation, StarLine company decides to add more drones to patrol the outpost stations. For example, if 3 stations are located at position 0, 1, and 10, the cost to patrol with just one drone is $10 + 10^2$. With two drones (one drone patrols positions 0, 1, and one drone patrols position 10), the total cost will be reduced to $(10 + 1^2) + (10 + 0^2) = 21$. However the cost of patrol with 3 drones will be at least 30 which is higher than the cost with two drones.

Given the positions of N outpost stations, please determine the minimum cost to patrol all stations.

Input File Format

The first line of the input contains one integer denoting the number of test cases to follow. For each test case, the first line of the input contains one integer N , $1 \leq N \leq 1000$, which is the number of the outpost stations. The next line contains N integers in increasing order, which represent the positions of the N outpost stations. The positions are between 0 and 10,000, inclusive.

Output Format

For each test case, output an integer on a single line, which is the optimal (minimum) cost for patrolling all stations.

Sample Input

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1
4
0 2 8 10
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Output for the Sample Input

28