Problem in Heritage

Story And Question

Number of M shareholders unite their shares in a poll at different dates. Assume share values are x1, x2, x3... xM at initial. After N years a shareholders share becomes $\sqrt{x^2 + N}$.
Share holders number of years that in the poll and polls current total value are known, can you find the smallest integer value that total initial share values can get? (x1+x2+..xM)

Input Format:

First line contains an integer Q, denoting number of queries.
Next Q subsequent lines:
First line contains an integer M, denoting number of shareholders.
Next M subsequent lines contain an integer denoting a shareholders N.
Next line contains an integer denoting current total value of poll.

Constraints:

1<Q<5000
1<M<10000
1<N<10000

Output Format:

For each query, output the smallest integer value that total of x1+x2+x3...xM can get.

Input:

```
1
3
1
4
9
10
```

Output:

```
8
```