In China, people use a pair of chopsticks to get food on the table, but Mr. L is a bit different. He us a set of three chopsticks – one pair, plus an EXTRA long chopstick to get some big food by pierci it through the food. As you may guess, the length of the two shorter chopsticks should be as close possible, but the length of the extra one is not important, as long as it's the longest. To make thin clearer, for the set of chopsticks with lengths $A$, $B$, $C$ ($A \leq B \leq C$), $(A - B)^2$ is called the "*badnes* of the set.

It's December 2nd, Mr.L's birthday! He invited $K$ people to join his birthday party, and would li to introduce his way of using chopsticks. So, he should prepare $K + 8$ sets of chopsticks(for himse his wife, his little son, little daughter, his mother, father, mother-in-law, father-in-law, and $K$ oth guests). But Mr.L suddenly discovered that his chopsticks are of quite different lengths! He should fi a way of composing the $K + 8$ sets, so that the total *badness* of all the sets is minimized.

## Input

The first line in the input contains a single integer $T$, indicating the number of test cases ($1 \leq T \leq 2$ Each test case begins with two integers $K$, $N$ ($0 \leq K \leq 1000$, $3K + 24 \leq N \leq 5000$), the number guests and the number of chopsticks.

There are $N$ positive integers $L_i$ on the next line in non–decreasing order indicating the lengths the chopsticks ($1 \leq L_i \leq 32000$).

## Output

For each test case in the input, print a line containing the minimal total badness of all the sets.

**Note:** For the sample input, a possible collection of the 9 sets is:
8,10,16; 19,22,27; 61,63,75; 71,72,88; 81,81,84; 96,98,103; 128,129,148; 134,134,139; 157,157,160

## Sample Input

```
1
1 40
1 8 10 16 19 22 27 33 36 40 47 52 56 61 63 71 72 75 81 81 84 88 96 98
103 110 113 118 124 128 129 134 134 139 148 157 157 160 162 164
```

## Sample Output

```
23
```