The 37th Annual ACM
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Nationwide Internet Competition

Problem B
Canoe Racer

International Canoe Sprint Championship (ICSC) will be held near future. The official boats recognized in the ICSC are the following: C1, C2, and C4, where the number indicates the number of paddlers and "C" stands for canoe. Canoe racing takes place on a straight course divided in lanes, on calm water. The distances recognized in the ICSC for international races are 200m, 500m, and 1000m.

Korea Sports School (KSS) will participate in ICSC for C4 1000m game. KSS has 4 classes of the same number of students, and one student in each class will be selected as the racer of the canoe game. KSS has many C4 type racing boats each of which gives the best performance when the total weight of racers is closest to a specific value. For example, suppose the specific value of a boat is 300 and the weights of students in four classes are as in the following:

Class-1: 60, 52, 80, 40
Class-2: 75, 68, 88, 63
Class-3: 48, 93, 48, 54
Class-4: 56, 73, 49, 75

The four students of weights 60, 75, 93, and 73 in the four classes are the most suitable racers for the boat because their weight sum 301 is closest to 300. In some cases, there can be two different closest weight sums. For example, suppose the specific value of a boat is 200 and there are two closest weight sums 198 and 202. In such case the smaller sum is preferred for the canoe game. So, four students having weight sum 198 should be selected.

Given a specific value of a boat and the weights of students, you are to select four racers satisfying the above condition.

Input
Your program is to read from standard input. The input consists of T test cases. The number of test cases T is given in the first line of the input. Each test case starts with two integers $\boldsymbol{k}$ and $\boldsymbol{n}$. $\boldsymbol{k}$ is the specific value of a boat and $\boldsymbol{n}$ is the number of students in each class of KSS, where $\mathbf{1} \leq \boldsymbol{k} \leq \mathbf{40,000,000}$ and $\mathbf{1} \leq \boldsymbol{n} \leq \mathbf{1,000}$. Each of the following four lines contains $\boldsymbol{n}$ integers representing the weights of students in each class of KSS. Each weight is between $\mathbf{1}$ and $\mathbf{10,000,000}$, inclusively.

Output
Your program is to write to standard output. Print exactly one line for each test case. The line should contain an integer representing the weight sum of students who are selected as canoe racers.

The following shows sample input and output for three test cases.

Sample Input	Output for the Sample Input
3 300 4 60 52 80 40 75 68 88 63 48 93 48 54 56 73 49 75 8 3 1 2 3 1 2 3 1 2 3 1 2 3 32 2 2 5 9 4 10 20 4 2	301 8 31