



# Knapsack

by trophies

Problem

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Given a list of  $n$  integers,  $A = \{a_1, a_2, \dots, a_n\}$ , and another integer,  $k$  representing the *expected sum*. Select zero or more numbers from  $A$  such that the sum of these numbers is as near as possible, but not exceeding, to the *expected sum* ( $k$ ).

## Note

- Each element of  $A$  can be selected multiple times.
- If no element is selected then the sum is 0.

## Input Format

The first line contains  $T$  the number of test cases.

Each test case comprises of two lines. First line contains two integers,  $n$   $k$ , representing the length of list  $A$  and *expected sum*, respectively. Second line consists of  $n$  space separated integers,  $a_1, a_2, \dots, a_n$ , representing the elements of list  $A$ .

## Constraints

$$1 \leq T \leq 10$$

$$1 \leq n \leq 2000$$

$$1 \leq k \leq 2000$$

$$1 \leq a_i \leq 2000, \text{ where } i \in [1, n]$$

## Output Format

Output  $T$  lines, the maximum sum for each test case which is as near as possible, but not exceeding, to the expected sum ( $k$ ).

## Sample Input

```
2
3 12
1 6 9
5 9
3 4 4 4 8
```

## Sample Output

```
12
9
```

## Explanation



In the first test case, one can pick {6, 6}. In the second, we can pick {3,3,3}.

[f](#) [t](#) [in](#)
Submissions: [11648](#)

Max Score: 60

Difficulty: Medium

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```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     public static void main(String[] args) {
10         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11     }
12 }
```

Line: 1 Col: 1

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