

# Knapsack

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

- $1 \leq T \leq 10$
- $1 \leq n \leq 2000$
- $1 \leq k \leq 2000$
- $1 \leq a_i \leq 2000, where i \in [1, n]$

## 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}.