



# Repetitive K-Sums

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Alice thinks of a non-decreasing sequence of non-negative integers and wants Bob to guess it by providing him the set of all its **K**-sums with repetitions.

What is this? Let the sequence be  $\{A[1], A[2], \dots, A[N]\}$  and **K** be some positive integer that both Alice and Bob know. Alice gives Bob the set of all possible values that can be generated by this -  $A[i_1] + A[i_2] + \dots + A[i_K]$ , where  $1 \leq i_1 \leq i_2 \leq \dots \leq i_K \leq N$ . She can provide the values generated in any order she wishes to. Bob's task is to restore the initial sequence.

Consider an example. Let **N** = 3 and **K** = 2. The sequence is  $\{A[1], A[2], A[3]\}$ . The sequence of its 2-sums with repetitions is  $\{A[1] + A[1], A[1] + A[2], A[1] + A[3], A[2] + A[2], A[2] + A[3], A[3] + A[3]\}$ . But its elements could be provided in any order. For example any permutation of **{2, 3, 4, 4, 5, 6}** corresponds to the sequence **{1, 2, 3}**.

## Input Format

The first line of the input contains an integer **T** denoting the number of test cases.

The description of **T** test cases follows.

The first line of each test case contains two space separated integers **N** and **K**.

The second line contains the sequence **S<sub>i</sub>** of all **K**-sums with repetitions of the sequence Alice initially thought of.

## Constraints

- $1 \leq T \leq 10^5$
- $1 \leq N \leq 10^5$
- $1 \leq K \leq 10^9$
- $2 \leq S_i \leq 10^{18}$

## Note

The total number of elements in any input sequence does not exceed  $10^5$

Each element of each input sequence is non-negative integer not exceeding  $10^{18}$ .

Each input sequence is a correct sequence of all **K**-sums with repetitions of some non-decreasing sequence of non-negative integers.

## Output Format

For each test case, output a single line containing the space separated list of elements of the non-decreasing sequence Alice thinks of. If there are several possible outputs you can output any of them.

## Sample Input 0

```
3
1 3
3
2 2
12 34 56
3 2
2 3 4 4 5 6
```

## Sample Output 0

```
1
6 28
1 2 3
```

### Explanation 0

Sample case #00: When  $N = 1$  and  $K = 3$  the only  $K$ -sum is  $S[1] = 3 * A[1]$ . Hence  $A[1] = S[1] / 3 = 3 / 3 = 1$ .

Sample case #01: Since  $6 + 6 = 12$ ,  $6 + 28 = 34$ ,  $28 + 28 = 56$ , then Alice indeed could think of the sequence  $\{6, 28\}$ .

Sample case #02: It corresponds to the example in the problem statement.

[f](#) [t](#) [in](#)

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Max Score: 150

Difficulty: Advanced

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Java 7  

```
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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