Repetitive K-Sums



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 $\{A[1], A[2], ..., A[N]\}$ and **K** be some positive integer that both Alice and Bob know. Alice gives Bob the set of all possible values that can be genereated by this - $A[i_1] + A[i_2] + ... + A[i_K]$, where $1 \le i_1 \le i_2 \le ... \le i_K \le N$. 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 \mathbf{T} denoting the number of test cases.

The description of \mathbf{T} test cases follows.

The first line of each test case contains two space separated integers \mathbf{N} and \mathbf{K} .

The second line contains the sequence \mathbf{S}_i of all \mathbf{K} -sums with repetitions of the sequence Alice initially thought of.

Constraints

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

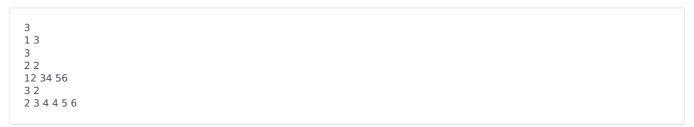
Note

The total number of elements in any input sequence does not exceed $\mathbf{10^5}$ Each element of each input sequence is non-negative integer not exceeding $\mathbf{10^{18}}$. 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



Sample Output 0

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1
6 28
1 2 3
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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.