

You are given an integer sequence of length N and another value X . You have to find a contiguous subsequence of the given sequence such that the sum is greater or equal to X . And you have to find that segment with minimal length.

Input

First line of the input file contains T the number of test cases. Each test case starts with a line containing 2 integers N ($1 \leq N \leq 500000$) and X ($-10^9 \leq X \leq 10^9$). Next line contains N integers denoting the elements of the sequence. These integers will be between -10^9 to 10^9 inclusive.

Output

For each test case output the minimum length of the sub array whose sum is greater or equal to X . If there is no such array, output '-1'.

Sample Input

```
3
5 4
1 2 1 2 1
6 -2
-5 -6 -7 -8 -9 -10
5 3
-1 1 1 1 -1
```

Sample Output

```
3
-1
3
```