Change Trees

Time limit: 1 second
Memory: 1024 megabytes

Problem Description

On a clear night sky, with no clouds or stars, the moon hangs high, and my heart is still filled with memories of you. How can I stop thinking about your lips, even for just one second? Despite how long we've been together, you don't realize how much I need to say "I love you," just so that you'd see how much my heart trembles for you. Even if words fade away like the wind, and even if I am not a billionaire or as handsome as Henry Cavill, I, Tăng, am loved by everyone around me, especially the younger ones. I am known for being kind, sweet, and always willing to help when I can.

To demonstrate this, today, I'll share with you an interesting story about how people recognize my goodness and also ask for your help. The story is about my two friends: Cristiano Ronaldo, my "starfruit brother," and Lionel Messi, my "plum brother." One day, Ronaldo challenged Messi with a very difficult problem. Ronaldo mentioned that he had planted N starfruit trees in his "tiny and cute" garden, labeled from 1 to N, with heights $H_1, H_2, ..., H_N$, none exceeding 10^9. However, Ronaldo now feels that too many starfruit trees have become a problem, so he decided to replace some of them with plum trees from Messi's house. But, he didn't want to replace them randomly.

Messi has countless plum trees of various sizes that Ronaldo can take freely. However, Ronaldo wanted to replace the starfruit trees with plum trees of height X such that:

1. X is as small as possible.
2. Only starfruit trees taller than X will be replaced.
3. The total height of all trees in the garden, after replacements, must always be greater than or equal to a specific value K, set by Ronaldo's wife.

Messi found this problem too hard, so he asked me, Tăng, for help. After thinking it over, I finally figured out the solution and wrote it down for Ronaldo. Unfortunately, Ronaldo, thinking the paper was trash, threw it away without realizing it contained the solution. Now, I need your help to recreate that solution, so I can regain my reputation as the kind, helpful person everyone loves!

Input:

- The first line contains two positive integers N and K.
- The second line contains N integers representing the heights of the trees.

Output:

- A single integer X, the smallest height that satisfies all the conditions.

Example:

INPUT	OUTPUT
5 9 1 2 3 4 5	2

The problem has **12** test cases.

- For the first **8** tests, $N, X \leq 10^4$ and $K \leq 10^9$.
- For the last **4** tests, $N \leq 10^6$ and $X \leq K \leq 10^{15}$.