Stick

Michael the explorer is exploring a deserted ruin in the land of Hyrule, a country consisting of many islands. Deep inside the ruins, he found a mysterious door with an empty slot. This empty slot has length **X**. To open this door, Michael is given a set of sticks. He needs to somehow join the sticks together to form a new stick so that the total combined length of the sticks is exactly the same as the length of the empty slot on the mysterious door. However, to use one stick, Michael must pay a certain amount of fee. Hence, Michael wants to minimize the number of sticks he uses to solve this mysterious puzzle. You are also not allowed to cut a given stick. These sticks are unbreakable.

Wilson the brave, one of Michael's most trusted ally, offers to help Michael solve this problem. He will tell Michael whether this quest is worth pursuing or not. More precisely, Wilson must be able to tell Michael whether it is possible to combine the sticks together so that the combined length is **X** and the exact amount of sticks that is needed to solve this problem.

Your job is to play the role of Wilson the brave: Help Michael solve this problem so that Michael the explorer and his team can continue their quest and return with the treasure hidden deep inside the ruins. Who knows, if Michael and his team succeed in their mission, you might receive your share as well.

Input

The first line of the input consists of two integers **N** (1 <= **N** <= 15), denoting the number of sticks that Michael has and **X** (1 <= **X** <= 20), denoting the length of the empty slot on the door, separated by a single space. The next line contains **N** integers, with the i^{th} integer denoting the length of the i^{th} stick.

Output

Print the minimum number of sticks required to achieve the desired length. If it is impossible to do so, print -1.

Sample Input 1

```
3 5
1 2 6
```

Sample Output 1

```
-1
```

Sample Input 2

```
6 5
1 1 1 1 1 3
```

Sample Output 2

```
3
```

Explanation

In the first sample, you are unable to get a new stick of length 5 by combining the existing sticks.

In the second sample, there are two ways to combine the sticks together into a stick of length 5 so that it can fit the hole perfectly. The first one is to combine all the sticks with length 1 together. However, we can also achieve the same by using one stick with length 3 and two sticks with length 1. This way, we would just be using 3 sticks and this is what we want (minimizing the number of sticks used).

Skeleton

You are given the skeleton file `Stick.java`.

```
/**
 * Name          :
 * Matric No.    :
 */

import java.util.*;

public class Stick {
    public static void main(String[] args) {
        // define your main method here
    }
}
```

Notes

1. You must use **recursion** to solve this problem.