Problem No.: 01

Problem Link: http://codeforces.com/problemset/problem/160/A

Problem Descriptions:

Imagine that you have a twin brother or sister. Having another person that looks exactly like you seems very unusual. It's hard to say if having something of an alter ego is good or bad. And if you do have a twin, then you very well know what it's like.

Now let's imagine a typical morning in your family. You haven't woken up yet, and Mom is already going to work. She has been so hasty that she has nearly forgotten to leave the two of her darling children some money to buy lunches in the school cafeteria. She fished in the purse and found some number of coins, or to be exact, n coins of arbitrary values $a_1, a_2, ..., a_n$. But as Mom was running out of time, she didn't split the coins for you two. So she scribbled a note asking you to split the money equally.

As you woke up, you found Mom's coins and read her note. "But why split the money equally?" — you thought. After all, your twin is sleeping and he won't know anything. So you decided to act like that: pick for yourself some subset of coins so that the sum of values of your coins is strictly larger than the sum of values of the remaining coins that your twin will have. However, you correctly thought that if you take too many coins, the twin will suspect the deception. So, you've decided to stick to the following strategy to avoid suspicions: you take the minimum number of coins, whose sum of values is strictly more than the sum of values of the remaining coins. On this basis, determine what minimum number of coins you need to take to divide them in the described manner.

Input

The first line contains integer n ($1 \le n \le 100$) — the number of coins. The second line contains a sequence of n integers a_1, a_2, ..., a_n ($1 \le a_i \le 100$) — the coins' values. All numbers are separated with spaces.

Output

In the single line print the single number — the minimum number of coins.

Sample Input:

Case 1:
2
3 3
Case 2:
3
2 1 2
Case 3:
7
1 10 1 2 1 1 1
Case 4:
20
35 26 41 40 45 46 22 26 39 23 11 15 47 42 18 15 27 10 45 40

Sample Output:

Case 1: 1
Case 2: 2
Case 3: 1
Case 4: 8

Code:

```cpp
#include<iostream>
using namespace std;

int main(void)
{
    //variable declaration
    int n;
    int arr[100];
    int i,j;
    int sum=0,temp,ans=0,total=0;
    //input
    cin>>n;
    for(i=0;i<n;i++)
    {
        cin>>arr[i];
        sum+=arr[i];
    }
    //sorting the array
    for(i=0;i<n;i++)
        for(j=i;j<n;j++)
            if(arr[i]>arr[j])
            {
                temp=arr[j];
                arr[j]=arr[i];
                arr[i]=temp;
            }
    //looking for answer
    for(i=n-1;i>=0&& total<=sum/2;i--)
    {
        total+=arr[i];
        ans++;
    }
    //output
    cout<<ans;
    return 0;
}
```

Analysis:

1. Input number of coins, n.
2. Input values of coins.
3. Add all the values in the variable sum.
4. Sort the array.
5. Add the values from last index to the variable total.
6. Increase the value of the variable ans by one.

7. If the of the variable total is less or equal to half of the variable sum then,
   - repeat from step 5.
   - else move next.
8. Print the value of the variable ans.

Complexity:

1. Line 10: O(1).
2. Line 12: O(1).
3. Line 14-17: O(n)
4. Line 19-26: O(n²)
5. Line 28-32: O(n)
6. line 34: O(1)

So, total complexity is O(n²).