

Bricks Breaking

For her next karate demonstration, Arunima will break some bricks.

Arunima stacked three bricks on top of each other. Initially, their widths (from top to bottom) are W_1, W_2, W_3 .

Arunima strength is S . Whenever she hits a stack of bricks, consider the largest $k \geq 0$ such that the sum of widths of the topmost k bricks does not exceed S ; the topmost k bricks break and are removed from the stack. Before each hit, Arunima may also decide to reverse the current stack of bricks, with no cost.

Find the minimum number of hits Arunima needs in order to break all bricks if she performs the reversals optimally. You are not required to minimize the number of reversals.

Input

The first line of the input contains a single integer T denoting the number of test cases. The description of T test cases follows.

The first and only line of each test case contains four space-separated integers S, W_1, W_2 and W_3 .

Output

For each test case, print a single line containing one integer — the minimum required number of hits.

Sample Input 1

```
3
3 1 2 2
2 1 1 1
3 2 2 1
```

Sample Output 1

```
2
2
2
```

C Program

```
#include <stdio.h>
```

```
int main(void) {
```

```
    int t;
```

```
    scanf("%d",&t);
```

```
    while(t--){
```

```
        int s,a,b,c;
```

```
        scanf("%d %d %d %d",&s,&a,&b,&c);
```

```
        if((a+b+c)<=s){
```

```
            printf("1\n");
```

```
        }
```

```
        else if(a+b<=s || b+c<=s){
```

```
            printf("2\n");
```

```
        }
```

```
        else{
```

```
            printf("3\n");
```

```
        }
```

```
    }
```

```
    return 0;
```

```
}
```

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C++ Program

```
#include <iostream>
using namespace std;
int main() {
    int t;
    int count=0;
    cin>>t;
    while(t--)
    { int count=0;
      int s,a,b,c;
      cin>>s>>a>>b>>c;
      if((a+b+c)<=s)
      {
          count=1;
      }
      else if((a+b)<=s || (c+b)<=s)
      {
          count = 2;
      }
      else
      {
          count=3;
      }
      cout<<count<<endl;
    }
    return 0;
}
```

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Java

```
import java.util.*;
import java.lang.*;
import java.io.*;

class Main
{
    public static void main (String[] args) throws java.lang.Exception
    {
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

        int t = Integer.parseInt(br.readLine().trim());

        while(t-->0){
            String[] input = br.readLine().split(" ");

            int s = Integer.parseInt(input[0]);
            int b1 = Integer.parseInt(input[1]);
            int b2 = Integer.parseInt(input[2]);
            int b3 = Integer.parseInt(input[3]);

            if((b1+b2+b3)<=s){
                System.out.println(1);
            }else if((b1+b2)<=s){
                System.out.println(2);
            }else if((b2+b3)<=s){
                System.out.println(2);
            }else{
                System.out.println(3);
            }
        }
    }
}
```

Python

```
for _ in range(int(input())):  
    s, w1, w2, w3=map(int,input().split())  
    if(w1+w2+w3<=s):  
        print(1)  
    elif(w1+w2<=s or w2+w3<=s):  
        print(2)  
  
else:  
    print(3)
```



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