1. **Room Temperature**

In a high school, the number of students that can be accommodated in a classroom is limited by the room temperature. You are given a list of AC temperature in particular classroom, find the average room temperature. For every X student, the room temperature increases by 2 degrees Celsius. So you can have only certain number of students such that the room temperature is less than or equal to a given threshold temperature.

Given a initial set of AC temperatures, X and the threshold temperature, find the number of students who can be accommodated in that room.

Assume: The room temperature increases only in steps of 2. There won’t be any partial increase in temperature.

Input Format

The first line of the input is N i.e. the number AC temperatures

The second line consists of N space separated integers indicating AC temperatures

The third line is the threshold temperature T

The fourth line is the X no. of students who can be accommodated.

Sample Input1

5

21 22 23 24 25

40

5

Sample Output1

44

Explanation

Initial room temperature (21+22+23+24+25)/5 = 23

Threshold Temperature: 40

The temperature raises by 2 for every 5 students. So to reach 39, the number of students = {(39-23)/2) \*5 = 40

The room temperature reaches 41 only if next 5 students come. so additional 4 students can be accommodated which brings the total sum as 44.

1. **Gift Wrapper**

Dave has a rectangular gift wrapper of certain length and breadth. He wants to wrap a gift of a certain radius and height (only on the cylindrical part and not on top and bottom) using the wrapper, but he wants to do it without cutting it. Given the length and breadth of the wrapper and also the radius and height of the gift. Find if Dave can wrap the gift without having to cut the wrapper. If he can wrap the wrapper, display the excess in length and breadth of the wrapper. If he cannot wrap the wrapper, print the scarce length and breadth.

Note: There may be excess in length or width, in case he cannot wrap the wrapper also.

Assumptions:

1. If it is possible to wrap the gift in both the ways i.e. length-wise as well as beadth-wise take length-wise as the solution.
2. If it is not possible to wrap the gift in both the ways take length-wise as the solution, and find the excess/scarce.
3. Value of PI is 3.14.

Input Format:

The first line of input consists of two space separated integers R and H, which represents the radius and height of the gift respectively.

The second line of input consists of two space separated integers L and B, which represents the length and breadth of the wrappers respectively.

Output Format:

Print Yes if the wrapper can be wrapped around the gift without cutting, else print No.

Print the corresponding excess/scarce in length and breadth in the wrapper.

Note : Round off to 2 decimal places

Sample Input1:

40 8

31.4 10

Sample Output1:

Yes

Excess Length = 62.80

Excess Breadth =2.00

Sample Input2:

50 20

100 14

Sample Output2:

No

Source Length = 214

Scarce Breadth =6.00

1. **Spike Heights**

Harry is an electrician who has decided to keep track of voltage spikes of a particular current source. He wants to measure the heights of all the spikes (only positive spikes) from a list of voltage spikes expressed as integer values.

The height of spike = peak point = start point of the spike.

You are given a list of voltage readings, calculate the heights for every spikes in the voltage value list.

Input format

The first line of the input consists of an integer that corresponds to N - the number of voltage readings

The next lines consists of N space separated integers that correspond to the voltage readings.

Output Format

The output consists of integer(s) separated by new line where each integer is the height of a spike in the voltage reading list

Sample Input1

12

1 2 3 4 2 1 -1 0 2 7 5 4

Sample Output1:

3

8

Sample Input2

8

3 4 5 7 8 9 4 3

Sample Output2

6

1. **Dice Game 1**

Each player will be allowed to throw a dice 2 times. The points for each player will be calculated as follows

if the values thrown are different, the points scored is equal to the sum of the 2 values.

If the values thrown are same the points scored is equal to double the sum of the 2 values.

Write a program to calculate the points scored by a player.

Input and Output Format:

Input consists of 2 integers. The valid range of inputs is from 0 to 6. [Both 0 and 6 inclusive]

Output the points scored. In case of invalid inputs Print "Invalid Input"

Refer sample input and output for formatting specifications.

Sample Input and Output1:

Enter Value1:

5

Enter Value2:

6

The points scored is 11

Sample Input and Output2:

Enter Value1:

5

Enter Value2:

5

The points scored is 20

Sample Input and Output3:

Enter Value1:

8

Enter Value2:

6

Invalid Input

1. **Perfect Rectangle**

A binary image is 2D array consisting of only 1's and 0's. Each entry in (1,j)th position in the @D array represents the pixel for that position in the image. You are given a binary image and you have to find whether the image has a valid rectangle or not. If its a valid rectangle, print the top-left and bottom-right coordinates.

A binary image is said to have valid rectangle, if it has only one recatangle(with all the pixels inside the rectangle set to 1) and all other pixels set to 0.

Assume that the rectangle is not tilted in the image.

Input format:

The first line of the input consists of 2 space sepearted integers M,N where Mand N represent the number of rows and columns in the image.

Next M lines consists of N space seperated integers representing the pixel values of the image.

Output Format:

Print Yes if the binary image has valid rectangle. Also print the top-left and bottom-right coordinates .

Print No otherwise.

Sample Input1:

6 6

0 0 0 0 0 0

0 1 1 1 0 0

0 1 1 1 0 0

0 1 1 1 0 0

0 1 1 1 0 0

0 0 0 0 0 0

Sample Output1:

Yes

1 1

4 3

Sample Input2:

3 4

0 1 1 0

0 1 1 0

0 1 1 1

Sample output2:

No