Set A

This Set Contains TWO Questions. Students must attempt ALL TWO questions.
Each question carries 2.5 marks.

Q1] Write a class **Sphere** with variable **radius** which includes functions that calculate and return the volume and surface's area. Implement **accessor** to show the length of radius the user has input and **mutator** to set the value the user has input in your program.
Your program should **ask the user to input the side of radius** and **validate** the side the user has input(implement loop).

Sample output:
Enter the radius of sphere : -10
Invalid input! Please input again.
Enter the radius of sphere : 2
Following are the details of the sphere:
The length of radius is : 2
Sphere Volume : 33.51
Sphere Area : 50.27

Formula:
Cube's Surface Area = 4 x π x radius x radius = 4 π r^2
Cube's Volume = 4/3 x π x radius x radius x radius = 4/3 π r^3

Q2] Write a program to find the **greatest** of three numbers of an array and find out whether that number is **even or odd**. Your program should **validate** the input sent in array. Use functions
1) to input the items in array and 2) find the largest element in array

Sample output:
Enter three numbers:
10
20
30
30 is the largest
30 is even

Set B

This Set Contains TWO Questions. Students must attempt ALL TWO questions.
Each question carries 2.5 marks.

Q1] Write a class **Cuboid** with variable **length, breadth and height** which includes functions that calculate and return the volume and surface's area. Implement **accessor** to show the length of side the user has input and **mutator** to set the value the user has input in your program. Your program should **ask the user to input the sides of Cuboid** and **validate** the side the user has input(implement loop).

Sample output:

Enter the sides of Cuboid :
Length: -10
Breadth: -10
Height: -10
Invalid input! Please input again.
Enter the sides of Cuboid :
Length: 2
Breadth: 2
Height: 2
Following are the details of the cube:
Length: 2
Breadth: 2
Height: 2
Cuboid volume : 8
Cuboid Area : 24

Formula:
Cuboid Surface Area = 2(lb+bh+lh)
CuboidVolume = lbh

Q2] Write a program by including pointer implementation of array and use following functions

1) which asks user to input sales figures for 3 days
2) which calculates and shows the total sales and average for 3 days.

Also implement **Dynamic memory allocation** and **deallocation** using **pointers**

Set A

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Q1] Write a class **Cube** with variable **side** which includes functions that calculate and return the volume and surface's area. Implement **accessor** to show the length of side the user has input and **mutator** to set the value the user has input in your program.
Your program should **ask the user to input the side of cube** and **validate** the side the user has input(implement loop).

Sample output:
Enter the side of cube : -10
Invalid input! Please input again.
Enter the side of cube : 2
Following are the details of the cube:
The length of side is : 2
Cube volume : 8
Cube Area : 24

Formula:
Cube's Surface Area = 6 x side x side = $6a^2$
Cube's Volume = side x side x side = a^3

Q2] Write a program to **swap two numbers** using **pass by value AND pass by reference** using pointers.
Your program should include two functions calls, one for pass by reference and another for pass by value.

Set B

This Set Contains TWO Questions. Students must attempt ALL TWO questions.
Each question carries 2.5 marks.

Q1] Write a class **Cylinder** with variable **radius, height** which includes functions that calculate and return the volume and surface's area. Implement **accessor** to show the length of radius the user has input and **mutator** to set the value the user has input in your program.
Your program should **ask the user to input the side of radius, height** and **validate** the side the user has input(implement loop).

Sample output:

Enter the radius of cylinder : -10
Enter the height of cylinder : -10
Invalid input! Please input again.
Enter the radius of cylinder : 2
Enter the height of cylinder : 2

Following are the details of the sphere:
The length of radius is : 2
Height of the cylinder is : 2
Sphere Volume : 25.3
Sphere Area : 50.27

Formula:
Cube's Surface Area = 2 x π x radius(height +radius) = 2 π r (h + r)
Cube's Volume = π x radius x radius x height = π r^2 h

Q2] Write a program to find the smallest of three numbers of an array and find out whether that number is **prime or not**. Your program should validate the input sent in array. Use **functions** 1) to input the items in array and 2) find the smallest element in array

Sample output:

Enter three numbers:
7
20
30
7 is the smallest
7 is prime