**Shape - Area Volume Calculator**

**Grade settings**: Maximum grade: 100  
**Run**: Yes **Evaluate**: Yes  
**Automatic grade**: Yes **Maximum execution time**: 16 s

Create an **abstract** **public class Shape** with the below public abstract methods :

     public double area()

     public double volume()

Create a **public class Rectangle** with private attributes :

       double length

      double width

Write the public getters and setters for these attributes.

**Rectangle class should inherit the Shape class**

      Area of rectangle is **length \* width**

Create a **public class Triangle** with private attributes :

      double base

      double height

Write the public getters and setters for these attributes.

**Triangle class should inherit the Shape class**

      Area of triangle is  **1/2 \* base \* height**

 Create a **public class Cube** with private attributes :

      double length

     double width

     double height

 Write the public getters and setters for these attributes.

**Cube class should inherit the Shape class**

      Area of cube is  **2 \* length \* width + 2 \* length \* height + 2\* width \* height**

      Volume of cube is  **length \* width \* height**

 Create a **public class Sphere** with private attributes :

      double radius

 Write the public getters and setters for these attributes.

**Sphere class should inherit the Shape class**

        Area of  Sphere is  **4  \* PI \* radius2**

        Volume of Sphere is   **( 4  \* PI \* radius3) / 3**

**Note : You should use Math.PI for the value of PI**

For Rectangle and Triangle class the method volume should **return -1**.

Create an **interface Spatial** which is a marker interface. Classes that has proper implementation for volume should implement this interface.

 Create a public Main class which has the main method.

 Create an **array of Shape of size 5**.

 Get the Shape type and the corresponding attributes and store those objects in the array.

  Print the area and volume of the objects created.

  Volume of the array object should be printed **only if it is of Spatial Type**.

**Sample Input :**

**Triangle**

**10**

**20**

**Sphere**

**14**

**Rectangle**

**14**

**15**

**Cube**

**5**

**7**

**9**

**Triangle**

**18**

**24**

**Sample Output**

Area 100.0

Area 2463.0086404143976

Volume 11494.040321933855

Area 210.0

Area 286.0

Volume 315.0

Area 216.0

**Note : Volume is displayed only when the shape is cube or sphere**