```
1  //for decimal formatting
2  import java.text.*;
3  /**
4   * Tests Shape class and all children classes of Shape class.
5   *
6   * @author (Kurt Mueller & Dennis Pavlyuk)
7   * @version (9/12/2019)
8   */
9  public class ShapeTester {
10     public static void main(String[] args) {
11          AbstractShape[] myShapes = new AbstractShape[16];
12
13          //Create 16 Shape objects and fill them into the array
14          myShapes[0] = new Rectangle(10, 5);
15          myShapes[1] = new Rectangle(20, 30);
16          myShapes[2] = new Rectangle(50, 10);
17          myShapes[3] = new Rectangle(-10, -20);
18          myShapes[4] = new Circle(20);
19          myShapes[5] = new Circle(10);
20          myShapes[6] = new Circle(30);
21          myShapes[7] = new Circle(-20);
22          myShapes[8] = new Cuboid(20, 10, 6);
23          myShapes[9] = new Cuboid(40, 5, 50);
24          myShapes[10] = new Cuboid(30, 20, 20);
25          myShapes[11] = new Cuboid(-20, 30, -10);
26          myShapes[12] = new Sphere(15);
27          myShapes[13] = new Sphere(25);
28          myShapes[14] = new Sphere(12);
29          myShapes[15] = new Sphere (-10);
30
31          DecimalFormat df = new DecimalFormat();
32          df.setMaximumFractionDigits(2);
33
34          for (int count = 0; count < 16; count++) {
35              System.out.println("The area of this " +
    myShapes[count].getClass().getName() + " [" + count + "] is " +
    df.format(myShapes[count].area()));
36              System.out.println("The perimeter of this " +
    myShapes[count].getClass().getName() + " [" + count + "] is " +
    df.format(myShapes[count].perimeter()));
37              System.out.println("The volume of this " +
    myShapes[count].getClass().getName() + " [" + count + "] is " +
    df.format(myShapes[count].volume()));
38              System.out.print("\n");
39             }
40          System.out.println("Total number of Rectangle objects = " +
    Rectangle.numRectanglesCreated);
41          System.out.println("Total number of Circle objects = " +
    Circle.numCirclesCreated);
```

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42          System.out.println("Total number of Cuboid objects = " +
    Cuboid.numCuboidsCreated);
43          System.out.println("Total number of Sphere objects = " +
    Sphere.numSpheresCreated);
44          System.out.println("Total number of Shape objects = " +
    AbstractShape.numShapesCreated);
45          }
46      }
```