

Lab 6 Sample Test Case

Question 1

```
public static void testShape() {
    Shape s = new Shape(1.2, 3.4);
    System.out.println(s.getX() == 1.2);
    System.out.println(s.getY() == 3.4);
    System.out.println(s.area() == -1.0); // Will print an error message too.
}
```

Question 2

```
public static void testCircle() {
    Circle c = new Circle(1.2, 3.4, 4.0);
    // getX and getY are inherited from Shape.
    // area comes from Circle itself.
    System.out.println(c.getX() == 1.2);
    System.out.println(c.getY() == 3.4);
    System.out.println(c.area() == Math.PI * 16.0);
}
```

Question 3

```
public static void testDot() {
    Dot d = new Dot(1.2, 3.4);
    // getX and getY are inherited from Shape.
    // area comes from Dot itself.
    System.out.println(d.getX() == 1.2);
    System.out.println(d.getY() == 3.4);
    System.out.println(d.area() == 0.0);
}
```

Question 4

```
public static void testRectangle() {
    Rectangle r = new Rectangle(1.2, 3.4, 4.0, 5.0);
    // getX and getY are inherited from Shape.
    // area comes from Rectangle itself.
    System.out.println(r.getX() == 1.2);
    System.out.println(r.getY() == 3.4);
    System.out.println(r.area() == 20.0);
}
```

```
public static void testSquare() {
    Square s = new Square(1.2, 3.4, 5.0);
    // getX and getY are inherited from Shape.
    // area is inherited from Rectangle.
    System.out.println(s.getX() == 1.2);
    System.out.println(s.getY() == 3.4);
    System.out.println(s.area() == 25.0);
}
```

Question 5

```
public static void testManyShapes() {
    ManyShapes m = new ManyShapes();
    m.addShape(new Circle(1.2, 3.4, 4.0)); // Upcast from Circle to Shape.
    m.addShape(new Dot(1.2, 3.4)); // Upcast from Dot to Shape.
    m.addShape(new Rectangle(1.2, 3.4, 4.0, 5.0)); // Upcast from Rectangle to Shape.
    m.addShape(new Shape(1.2, 3.4));
    m.addShape(new Square(1.2, 3.4, 5.0)); // Upcast from Square to Shape.
    m.listAllShapes();
}
```

Question 6

```
public static void testManyShapes() {
    ManyShapes m = new ManyShapes();
    m.addShape(new Circle(1.2, 3.4, 4.0)); // Upcast from Circle to Shape.
    m.addShape(new Dot(1.2, 3.4)); // Upcast from Dot to Shape.
    m.addShape(new Rectangle(1.2, 3.4, 4.0, 5.0)); // Upcast from Rectangle to Shape.
    m.addShape(new Shape(1.2, 3.4));
    m.addShape(new Square(1.2, 3.4, 5.0)); // Upcast from Square to Shape.
    m.listAllShapes();
}
```

Question 7

```
public static void testShape() {
    Shape s = new Shape(1.2, 3.4);
    System.out.println(s.getX() == 1.2);
    System.out.println(s.getY() == 3.4);
    System.out.println(s.area() == -1.0); // Will print an error message too.
    System.out.println(s.toString().equals("Shape area is -1.0"));
}

public static void testCircle() {
    Circle c = new Circle(1.2, 3.4, 4.0);
    // getX and getY are inherited from Shape.
    // area comes from Circle itself.
    System.out.println(c.getX() == 1.2);
    System.out.println(c.getY() == 3.4);
    System.out.println(c.area() == Math.PI * 16.0);
    System.out.println(c.toString().equals("Circle area is " + Math.PI * 16.0));
}

public static void testDot() {
    Dot d = new Dot(1.2, 3.4);
    // getX and getY are inherited from Shape.
    // area comes from Dot itself.
    System.out.println(d.getX() == 1.2);
    System.out.println(d.getY() == 3.4);
    System.out.println(d.area() == 0.0);
    System.out.println(d.toString().equals("Dot area is 0.0"));
}

public static void testRectangle() {
    Rectangle r = new Rectangle(1.2, 3.4, 4.0, 5.0);
    // getX and getY are inherited from Shape.
    // area comes from Rectangle itself.
    System.out.println(r.getX() == 1.2);
    System.out.println(r.getY() == 3.4);
}
```

```

    System.out.println(r.area() == 20.0);
    System.out.println(r.toString().equals("Rectangle area is 20.0"));
}

public static void testSquare() {
    Square s = new Square(1.2, 3.4, 5.0);
    // getX and getY are inherited from Shape.
    // area is inherited from Rectangle.
    System.out.println(s.getX() == 1.2);
    System.out.println(s.getY() == 3.4);
    System.out.println(s.area() == 25.0);
    System.out.println(s.toString().equals("Square area is 25.0"));
}

public static void testManyShapes() {
    ManyShapes m = new ManyShapes();
    m.addShape(new Circle(1.2, 3.4, 4.0)); // Upcast from Circle to Shape.
    m.addShape(new Dot(1.2, 3.4)); // Upcast from Dot to Shape.
    m.addShape(new Rectangle(1.2, 3.4, 4.0, 5.0)); // Upcast from Rectangle to Shape.
    m.addShape(new Shape(1.2, 3.4));
    m.addShape(new Square(1.2, 3.4, 5.0)); // Upcast from Square to Shape.
    m.listAllShapes();
}

```