

Lesson Notes: 10/02/2026

Abstract Class Exercise

Your task is to create a Circle and a Square that extend public abstract class Shape.

Shape should have two methods

- calculateArea() which should be abstract and return a double
- toString() which overrides the toString() method of the base Object class to return the result of calculateArea().

Both Circle and Square should extend Shape and include the following

- Circle
 - Accept a value for a radius (double) in its constructor
 - Implement calculateArea() ($\text{PI} * \text{radius} * \text{radius}$)
- Square
 - Accept a value for a side (double) in its constructor
 - Implement calculateArea ($\text{side} * \text{side}$)

The main method of App should contain the following code to test Circle and Square.

```
Circle c = new Circle(12.0);  
Square sq = new Square(8.0);
```

```
System.out.println(c);    // outputs This shape has an area of 452.3893421169302  
System.out.println(sq);   // outputs This shape has an area of 64.0
```