# JUnit Testing Exercises

## Exercise 1: Setting Up JUnit

<dependency>  
 <groupId>junit</groupId>  
 <artifactId>junit</artifactId>  
 <version>4.13.2</version>  
 <scope>test</scope>  
</dependency>

## Exercise 2: Writing Basic JUnit Tests

### Calculator.java

public class Calculator {  
 public int add(int a, int b) {  
 return a + b;  
 }  
  
 public int multiply(int a, int b) {  
 return a \* b;  
 }  
}

### CalculatorTest.java

import org.junit.Test;  
import static org.junit.Assert.\*;  
  
public class CalculatorTest {  
 @Test  
 public void testAdd() {  
 Calculator calc = new Calculator();  
 assertEquals(5, calc.add(2, 3));  
 }  
  
 @Test  
 public void testMultiply() {  
 Calculator calc = new Calculator();  
 assertEquals(6, calc.multiply(2, 3));  
 }  
}

## Exercise 3: Assertions in JUnit

### AssertionsTest.java

import org.junit.Test;  
import static org.junit.Assert.\*;  
  
public class AssertionsTest {  
 @Test  
 public void testAssertions() {  
 assertEquals(5, 2 + 3);  
 assertTrue(5 > 3);  
 assertFalse(5 < 3);  
 assertNull(null);  
 assertNotNull(new Object());  
 }  
}

## Exercise 4: AAA Pattern, Setup and Teardown

### Calculator.java

public class Calculator {  
 public int subtract(int a, int b) {  
 return a - b;  
 }  
}

### CalculatorTest.java

import org.junit.Before;  
import org.junit.After;  
import org.junit.Test;  
import static org.junit.Assert.\*;  
  
public class CalculatorTest {  
 private Calculator calc;  
  
 @Before  
 public void setUp() {  
 calc = new Calculator();  
 }  
  
 @After  
 public void tearDown() {  
 calc = null;  
 }  
  
 @Test  
 public void testSubtract() {  
 // Arrange is in setUp  
 // Act  
 int result = calc.subtract(5, 3);  
 // Assert  
 assertEquals(2, result);  
 }  
}