

Task 2: Extend the above JUnit tests to use @Before, @After, @BeforeClass, and @AfterClass annotations to manage test setup and teardown.

```
package test;

import org.junit.After;
import org.junit.AfterClass;
import org.junit.Before;
import org.junit.BeforeClass;
import org.junit.Test;
import static org.junit.Assert.*;

public class MathematicalOperationsTest {

    private static MathematicalOperations mathOps;

    @BeforeClass
    public static void setUpClass() {
        System.out.println("Before Class - Initialize resources...");
        mathOps = new MathematicalOperations();
    }

    @AfterClass
    public static void tearDownClass() {
        System.out.println("After Class - Cleanup resources...");
        mathOps = null;
    }

    @Before
    public void setUp() {
        System.out.println("Before Test - Prepare for test...");
    }

    @After
    public void tearDown() {
        System.out.println("After Test - Clean up after test...");
    }

    @Test
```

```

public void testAdd() {
    assertEquals(5,mathOps.add(2, 3));
    assertEquals(-1,mathOps.add(-2, 1));
    assertEquals(0,mathOps.add(0, 0));
}

@Test
public void testSubtract() {
    assertEquals(1,mathOps.subtract(3,2));
    assertEquals(-3,mathOps.subtract(0,3));
    assertEquals(5,mathOps.subtract(10,5));
}

@Test
public void testMultiply() {
    assertEquals(6,mathOps.multiply(2,3));
    assertEquals(0,mathOps.multiply(0,3));
    assertEquals(-15,mathOps.multiply(3,-5));
}

@Test
public void testDivide() {
    assertEquals(2, mathOps.divide(6, 3));
    assertEquals(-2, mathOps.divide(10, -5));
}

@Test(expected = IllegalArgumentException.class)
public void testDivideByZero() {
    mathOps.divide(5, 0);
}
}

```