

```

1 class Calculator {
2     public int add(int a, int b) {
3         return a + b;
4     }
5
6     public int subtract(int a, int b) {
7         return a - b;
8     }
9
10    public int divide(int a, int b) {
11        if (b == 0) throw new IllegalArgumentException("Cannot divide by zero");
12        return a / b;
13    }
14 }
15
16 public class Main {
17     static Calculator calculator;
18
19     public static void setUp() {
20         System.out.println("[SETUP] Initializing Calculator");
21         calculator = new Calculator();
22     }
23
24     public static void tearDown() {
25         System.out.println("[TEARDOWN] Cleaning up...");
26         calculator = null;
27     }
28
29     public static void testAddition() {
30         setUp();
31         // Arrange
32         int a = 4, b = 5;
33
34         // Act
35         int result = calculator.add(a, b);
36
37         // Assert
38         if (result == 9) {
39             System.out.println("✅ testAddition PASSED");
40         } else {
41             System.out.println("❌ testAddition FAILED");
42         }
43         tearDown();
44     }
45
46     public static void testSubtraction() {
47         setUp();
48         int a = 10, b = 4;
49         int result = calculator.subtract(a, b);
50         if (result == 6) {
51             System.out.println("✅ testSubtraction PASSED");
52         } else {
53             System.out.println("❌ testSubtraction FAILED");
54         }
55         tearDown();
56     }

```

```

58 public static void testDivisionByZero() {
59     setUp();
60     try {
61         calculator.divide(10, 0);
62         System.out.println("✗ testDivisionByZero FAILED");
63     } catch (IllegalArgumentException e) {
64         if ("Cannot divide by zero".equals(e.getMessage())) {
65             System.out.println("✓ testDivisionByZero PASSED");
66         } else {
67             System.out.println("✗ testDivisionByZero FAILED - Wrong Message");
68         }
69     }
70     tearDown();
71 }
72
73 public static void main(String[] args) {
74     testAddition();
75     testSubtraction();
76     testDivisionByZero();
77 }
78 }
79

```

Output:

```

[SETUP] Initializing Calculator
✓ testAddition PASSED
[TEARDOWN] Cleaning up...
[SETUP] Initializing Calculator
✓ testSubtraction PASSED
[TEARDOWN] Cleaning up...
[SETUP] Initializing Calculator
✓ testDivisionByZero PASSED
[TEARDOWN] Cleaning up...

```