1. Demonstrate all arithmetic operators using two integers

```
public class ArithmeticOperators {
    public static void main(String[] args) {
        int a = 15, b = 4;
        System.out.println("a + b = " + (a + b));
        System.out.println("a - b = " + (a - b));
        System.out.println("a * b = " + (a * b));
        System.out.println("a / b = " + (a / b));
        System.out.println("a % b = " + (a % b));
    }
}
```

2. Use relational operators to compare ages

```
import java.util.Scanner;

public class AgeComparison {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter age of Person A: ");
        int ageA = sc.nextInt();
        System.out.print("Enter age of Person B: ");
        int ageB = sc.nextInt();

        System.out.println("A == B: " + (ageA == ageB));
        System.out.println("A != B: " + (ageA != ageB));
        System.out.println("A > B: " + (ageA > ageB));
        System.out.println("A < B: " + (ageA < ageB));
        System.out.println("A >= B: " + (ageA >= ageB));
        System.out.println("A <= B: " + (ageA <= ageB));
    }
}
```

3. Implement a basic calculator using switch and operators

```
import java.util.Scanner;

public class BasicCalculator {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter first number: ");
        double num1 = sc.nextDouble();
        System.out.print("Enter operator (+, -, *, /, %): ");
        char op = sc.next().charAt(0);
        System.out.print("Enter second number: ");
        double num2 = sc.nextDouble();
```

```
        switch (op) {
            case '+': System.out.println("Result = " + (num1 + num2)); break;
            case '-': System.out.println("Result = " + (num1 - num2)); break;
            case '*': System.out.println("Result = " + (num1 * num2)); break;
            case '/':
                if (num2 != 0) System.out.println("Result = " + (num1 / num2));
                else System.out.println("Cannot divide by zero");
                break;
            case '%':
                if (num2 != 0) System.out.println("Result = " + (num1 % num2));
                else System.out.println("Cannot mod by zero");
                break;
            default: System.out.println("Invalid operator");
        }
    }
}
```

4. Use bitwise AND, OR, XOR on two binary values

```
public class BitwiseBinary {
    public static void main(String[] args) {
        int a = 0b1100;
        int b = 0b1010;

        System.out.println("a & b = " + Integer.toBinaryString(a & b));
        System.out.println("a | b = " + Integer.toBinaryString(a | b));
        System.out.println("a ^ b = " + Integer.toBinaryString(a ^ b));
    }
}
```

5. Demonstrate logical operators with Boolean expressions

```
public class LogicalOperatorsDemo {
    public static void main(String[] args) {
        boolean a = true, b = false;

        System.out.println("a && b = " + (a && b));
        System.out.println("a || b = " + (a || b));
        System.out.println("!a = " + (!a));

        int age = 20;
        boolean hasID = true;
        System.out.println("Can enter club: " + (age >= 18 && hasID));
    }
}
```