Question 1:- (Class and Object imaginary and complex)

import java.util.Scanner;

class Complex {
    int real, imaginary;

    public Complex(int r, int i) {
        this.real = r;
        this.imaginary = i;
    }

    public void show() {
        System.out.print(this.real + " + i" + this.imaginary);
    }

    public static Complex add(Complex n1, Complex n2) {
        return new Complex(n1.real + n2.real, n1.imaginary + n2.imaginary);
    }

    public static Complex subtract(Complex n1, Complex n2) {
        return new Complex(n1.real - n2.real, n1.imaginary - n2.imaginary);
    }

    public static Complex multiply(Complex n1, Complex n2) {
        int realPart = n1.real * n2.real - n1.imaginary * n2.imaginary;
        int imaginaryPart = n1.real * n2.imaginary + n1.imaginary * n2.real;
        return new Complex(realPart, imaginaryPart);
    }

    public static Complex divide(Complex n1, Complex n2) {

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        int denominator = n2.real * n2.real + n2.imaginary * n2.imaginary;

        int realPart = (n1.real * n2.real + n1.imaginary * n2.imaginary) / denominator;

        int imaginaryPart = (n1.imaginary * n2.real - n1.real * n2.imaginary) / denominator;

        return new Complex(realPart, imaginaryPart);

    }


public static void main(String arg[]) {

    Scanner scanner = new Scanner(System.in);


    System.out.print("Enter real part of the first Complex number: ");

    int real1 = scanner.nextInt();

    System.out.print("Enter imaginary part of the first Complex number: ");

    int imaginary1 = scanner.nextInt();

    Complex c1 = new Complex(real1, imaginary1);


    System.out.print("Enter real part of the second Complex number: ");

    int real2 = scanner.nextInt();

    System.out.print("Enter imaginary part of the second Complex number: ");

    int imaginary2 = scanner.nextInt();

    Complex c2 = new Complex(real2, imaginary2);


    System.out.print("Enter the arithmetic operation (+, -, *, /): ");

    char operation = scanner.next().charAt(0);


    Complex result = null;

    switch (operation) {

        case '+':

            result = add(c1, c2);

            break;

        case '-':

            result = subtract(c1, c2);
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                break;
            case '*':
                result = multiply(c1, c2);
                break;
            case '/':
                result = divide(c1, c2);
                break;
            default:
                System.out.println("Invalid operation");
                break;
        }


        if (result != null) {
            System.out.println("\nResult of the operation:");
            c1.show();
            System.out.print(" " + operation + " ");
            c2.show();
            System.out.print(" = ");
            result.show();
        }


        scanner.close();
    }
}
```