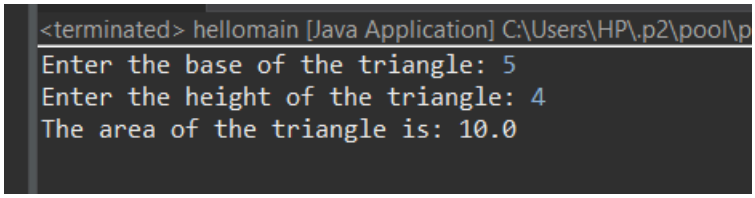
CSA0961 – JAVA

PRACTISE 4_ 3

1.Write a program that will take in the base and height of a triangle and calculate and display the area of the triangle using the formula below. $A = 1\ 2\ bbh$

```
package helloworld;


import java.util.Scanner;


public class hellomain {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      double base;
      double height;
      double area;
      System.out.print("Enter the base of the triangle: ");
      base = scanner.nextDouble();
      System.out.print("Enter the height of the triangle: ");
      height = scanner.nextDouble();
      area = 0.5 * base * height;
      System.out.println("The area of the triangle is: " + area);
      scanner.close();
   }
}
```

OUTPUT :



2. Write the following math formulas in Java. You will need to use methods from the Math class as well as nesting of methods and parentheses to force the order of operations to correctly

calculate the answer. Assume that all the variables in the formulas have already been declared and initialized.

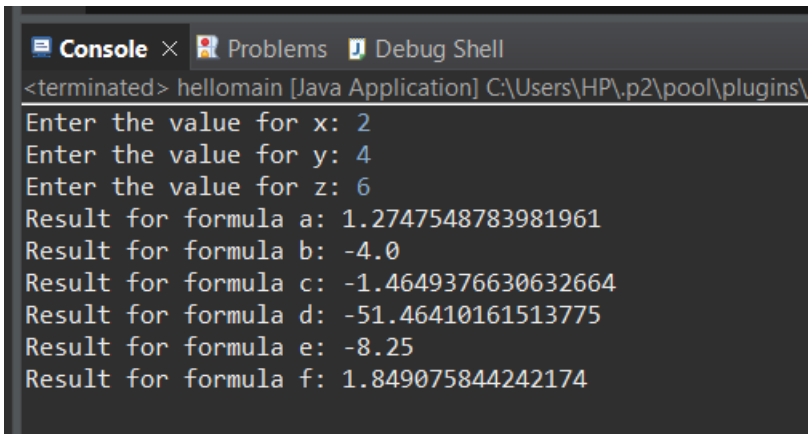
a. $aa=\sqrt{xx}5-6$ **4 b.** $bb=xxyy-6xx$ **c. d.** $c=4ccccccc(zz\ 5)-ccssssxx2$ $d=xx4-6xx-yy3$ **e. f.** $e=1\ yy-1\ x\ x-2yy$ $f\ f=7(cccccc(5-ccssss\sqrt{3}xx-4))$

ANSWER :

```
package helloworld;


import java.util.Scanner;


public class hellomain {

   public static void main(String[] args) {

      Scanner scanner = new Scanner(System.in);


      double x, y, z;

      double a, b, c, d, e, f;

      System.out.print("Enter the value for x: ");

      x = scanner.nextDouble();

      System.out.print("Enter the value for y: ");

      y = scanner.nextDouble();

      System.out.print("Enter the value for z: ");

      z = scanner.nextDouble();

      a = Math.sqrt(Math.pow(x, 5) - 6) / 4;

      b = x * y - 6 * x;

      c = 4 * Math.sin(Math.pow(z, 5)) - Math.cos(Math.pow(x, 2));

      d = (Math.pow(x, 4) - Math.sqrt(6 * x) - Math.pow(y, 3)) / 1;

      e = (1 / y) - (1 / x) - 2 * y;

      f = 7 * Math.cos((5 - Math.cos(Math.sqrt(3 * x) - 4)) / 1);

      System.out.println("Result for formula a: " + a);

      System.out.println("Result for formula b: " + b);

      System.out.println("Result for formula c: " + c);

      System.out.println("Result for formula d: " + d);

      System.out.println("Result for formula e: " + e);

      System.out.println("Result for formula f: " + f);
```

```
        scanner.close();
    }
}
```

OUTPUT :

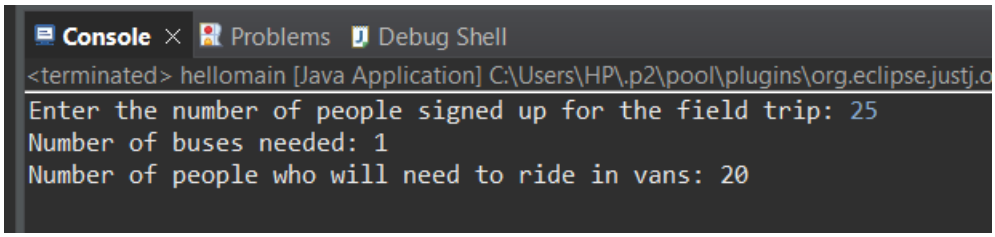


3. A bus holds 45 people. The school will only use a bus if they can fill it completely. The rest of the people will ride in vans. Write a program that will take in the number of people that are signed up to go on a field trip. Have the program print the number of busses necessary and then total number of people that will need to ride in vans.

```
package helloworld;


import java.util.Scanner;


public class hellomain {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);


        final int BUS_CAPACITY = 45;


        int totalPeople;
        int busesNeeded;
        int peopleInVans;


        System.out.print("Enter the number of people signed up for the field trip: ");
        totalPeople = scanner.nextInt();
```

```
        busesNeeded = (totalPeople + BUS_CAPACITY - 1) / BUS_CAPACITY;

        int totalBusCapacity = busesNeeded * BUS_CAPACITY;
        peopleInVans = totalBusCapacity - totalPeople;

        System.out.println("Number of buses needed: " + busesNeeded);
        System.out.println("Number of people who will need to ride in vans: " + peopleInVans);

        scanner.close();
    }
}
```

OUTPUT :



4. Write true or false on the blanks in the program below to show the value of the boolean variable true_false as the program executes. 1 Write true or false on the blanks in the program below to show the value of the boolean variable true_false as the program executes.

int i=5;

int j=6;

1. boolean true_false; true_false=(j<5); _____

2. true_false=(j>3); _____

3.true_false=(j<i); _____

4. true_false=(i<5); _____

5.8true_false=(j<=5); _____

6.true_false=(6<6); _____

7.true_false=(i!=j); _____

8.true_false=(i==j || i<50); _____

9.true_false=(i==j && i<50); _____

10.true_false=(i>j || true_false && j>=4); _____

11. true_false=(!(i<2 && j==5)); _____

12.true_false=!true_false; _____

ANSWERS :

1. `false`
2. `true`
3. `false`
4. `false`
5. `false`
6. `false`
7. `true`
8. `true`
9. `false`
10. `false`
11. `true`
12. `false`

5. Explain why each of the declarations in the second list are wrong.

boolean gameOver = false; int students=50,classes=3; double sales_tax; short number1;

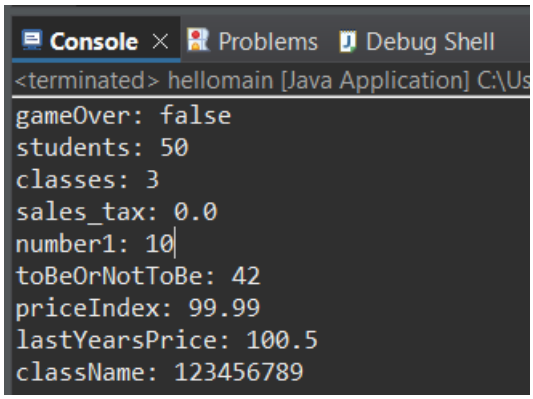
int 2beOrNot2be; float price index; double lastYear'sPrice; long class;

ANSWER :

```
package helloworld;
public class hellomain
{
 public static void main(String[] args)
 {
 boolean gameOver = false;
 int students = 50, classes = 3;
 double sales_tax = 0.0;
 short number1 = 10;
 int toBeOrNotToBe = 42;
 float priceIndex = 99.99f;
```

```
double lastYearsPrice = 100.50;
long className = 123456789L;

System.out.println("gameOver: " + gameOver);
System.out.println("students: " + students);
System.out.println("classes: " + classes);
System.out.println("sales_tax: " + sales_tax);
System.out.println("number1: " + number1);
System.out.println("toBeOrNotToBe: " + toBeOrNotToBe);
System.out.println("priceIndex: " + priceIndex);
System.out.println("lastYearsPrice: " + lastYearsPrice);
System.out.println("className: " + className);
}
}
```

OUTPUT :



6. Explain why each of the declarations in the second list do not follow conventions for variable names.

int 2beOrNot2be; float price index; double lastYear'sPrice; long class; int cadence=3, speed=55, gear=4; final double SALES_TAX=.06; double gearRatio=.5; int currentGear=5;

int c=3,s=55,g=4; final double salesTax=.06; double gearratio=.05,Gear=4; int current_gear;

ANSWER :

```
package helloworld;

public class hellomain {
 public static void main(String[] args) {
 int cadence = 3, speed = 55, gear = 4;
 final double SALES_TAX = 0.06;
```

```
double gearRatio = 0.5;
int currentGear = 5;
// Print statements to show the values
System.out.println("cadence: " + cadence);
System.out.println("speed: " + speed);
System.out.println("gear: " + gear);
System.out.println("SALES_TAX: " + SALES_TAX);
System.out.println("gearRatio: " + gearRatio);
System.out.println("currentGear: " + currentGear);
}
}
```

OUTPUT :