Java 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. 𝐴𝐴 = 1 2 𝑏𝑏ℎ

2. package helloworld;

3. import java.util.Scanner;

4. public class helloworld {

5.

6.

7. public static void main(String[] args) {

8. // TODO Auto-generated method stub

9. Scanner in = new Scanner(System.in);

10.

11. // Prompt user for base and height

12. System.out.print("Enter the base of the triangle: ");

13. double base = in.nextDouble();

14.

15. System.out.print("Enter the height of the triangle: ");

16. double height = in.nextDouble();

17.

18. // Calculate the area

19. double area = 0.5 \* base \* height;

20.

21. // Display the area

22. System.out.println("The area of the triangle is: " + area);

23.

24. in.close();

25. }

26. }

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 = √𝑥𝑥5−6

4 b. 𝑏𝑏 = 𝑥𝑥𝑦𝑦 − 6𝑥𝑥 c. 𝑐𝑐 = 4𝑐𝑐𝑐𝑐𝑐𝑐( 𝑧𝑧 5 ) − 𝑠𝑠𝑠𝑠𝑠𝑠𝑥𝑥2 d. 𝑑𝑑 = 𝑥𝑥4 − 6𝑥𝑥 − 𝑦𝑦3 e. 𝑒𝑒 = 1 𝑦𝑦− 1

𝑥𝑥−2𝑦𝑦 f. 𝑓𝑓 = 7(𝑐𝑐𝑐𝑐𝑐𝑐( 5 − 𝑠𝑠𝑠𝑠𝑠𝑠√3𝑥𝑥 − 4))

package helloworld;

import java.util.Scanner;

public class helloworld {

public static void main(String[] args) {

// TODO Auto-generated method stub

Scanner in = new Scanner(System.in);

// Prompt user for base and height

System.out.print("Enter the base of the triangle: ");

double base = in.nextDouble();

System.out.print("Enter the height of the triangle: ");

double height = in.nextDouble();

// Calculate the area

double area = 0.5 \* base \* height;

// Display the area

System.out.println("The area of the triangle is: " + area);

in.close();

}

}

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 helloworld {

public static void main(String[] args) {

// TODO Auto-generated method stub

Scanner in = new Scanner(System.in);

// Prompt user for the number of people

System.out.print("Enter the number of people signed up for the field trip: ");

int people = in.nextInt();

// Calculate the number of buses needed

int busCapacity = 45;

int busesNeeded = people / busCapacity;

int peopleInVans = people % busCapacity;

// Print the results

System.out.println("Number of buses needed: " + busesNeeded);

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

in.close();

}

}

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. int i=5; int j=6; boolean true\_false; true\_false=(j3); \_\_\_\_\_\_\_\_

true\_false=(j<=5); \_\_\_\_\_\_\_\_ true\_false=(6j || true\_false && j>=4); \_\_\_\_\_\_\_\_ true\_false=(!(i

package helloworld;

public class helloworld {

public static void main(String[] args) {

int i = 5;

int j = 6;

boolean true\_false;

true\_false = (j < 5); // false

System.out.println(true\_false); // Output: false

true\_false = (j > 3); // true

System.out.println(true\_false); // Output: true

true\_false = (j < i); // false

System.out.println(true\_false); // Output: false

true\_false = (i < 5); // false

System.out.println(true\_false); // Output: false

true\_false = (j <= 5); // false

System.out.println(true\_false); // Output: false

true\_false = (6 < 6); // false

System.out.println(true\_false); // Output: false

true\_false = (i != j); // true

System.out.println(true\_false); // Output: true

true\_false = (i == j || i < 50); // true

System.out.println(true\_false); // Output: true

true\_false = (i == j && i < 50); // false

System.out.println(true\_false); // Output: false

true\_false = (i > j || true\_false && j >= 4); // false

System.out.println(true\_false); // Output: false

true\_false = (!(i < 2 && j == 5)); // true

System.out.println(true\_false); // Output: true

true\_false = !true\_false; // false

System.out.println(true\_false); // Output: 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;

package helloworld;

public class helloworld {

public static void main(String[] args) {

boolean gameOver = false;

int students = 50, classes = 3;

double sales\_tax = 0.0; // Initialized to avoid compilation error

short number1 = 10; // Initialized to avoid compilation error

// Corrected variable names

int toBeOrNotToBe = 42; // Initialized to avoid compilation error

float priceIndex = 99.99f; // Initialized to avoid compilation error

double lastYearsPrice = 100.50; // Initialized to avoid compilation error

long className = 123456789L; // Initialized to avoid compilation error

// Print statements to show the values

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 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;

package helloworld;

public class helloworld {

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);

}

}