Problem 11

\*\*Problem: The Planet Explorer\*\*

You are a scientist at a space research center. The center is currently researching various

planets and their properties. One of the properties they are interested in is the surface area of

these planets. Considering that a planet can be approximated as a sphere, your task is to create

a method that calculates the surface area of a sphere given its radius.

\*\*Hint:\*\* The formula to calculate the surface area of a sphere is:

A = 4πr^2

Where:

- A is the surface area of the sphere

- r is the radius of the sphere

\*\*Class Definition:\*\*

public class PlanetExplorer {

public double calculateSurfaceArea(double radius);

}

\*\*Inputs:\*\*

The method calculateSurfaceArea(double radius) will receive one parameter:

- radius : a double representing the radius of the sphere (planet).

\*\*Outputs:\*\*

The method will return a double - the surface area of the sphere.

\*\*Example:\*\*

\*\*Sample Input:\*\*

PlanetExplorer explorer = new PlanetExplorer();

explorer.calculateSurfaceArea(3.0);

\*\*Sample Output:\*\*

113.10

\*\*Note:\*\*

In the sample input, the radius of the planet (sphere) is 3.0 units. The surface area is 4π\*3^2 =

113.10, so the method returns 113.10 as the output. Your method will be essential in helping

the scientists at the space research center in understanding the properties of various planets.

Good luck, scientist!

Program >>>>>>>

public class PlanetExplorer {

public double calculateSurfaceArea(double radius)

{

return 4\*3.14\*radius\*radius;

}

}

import java.util.\*;

public class ExplorerApp {

public static void main(String[] args) {

Scanner sc=new Scanner(System.in);

double radius=sc.nextDouble();

sc.close();

PlanetExplorer explorer=new PlanetExplorer();

System.out.printf("%.2f",explorer.calculateSurfaceArea(radius));

}

}

Problem 12

\*\*Problem: The Height Converter\*\*

You are part of a sports data management team. The team is developing a new feature for their

application where the heights of players, currently recorded in inches, need to be displayed in

feet for an international audience. Your task is to create a method that takes a height given in

inches and converts it into feet.

\*\*Hint:\*\* The conversion factor from inches to feet is 1 foot = 12 inches.

\*\*Class Definition:\*\*

public class HeightConverter {

public double convertInchesToFeet(double inches);

}

\*\*Inputs:\*\*

The method convertInchesToFeet(double inches) will receive one parameter:

- inches (0 ≤ inches ≤ 10^9): a double representing the height in inches.

\*\*Outputs:\*\*

The method will return a double - the height converted to feet.

\*\*Example:\*\*

\*\*Sample Input:\*\*

HeightConverter converter = new HeightConverter();

converter.convertInchesToFeet(72.0);

\*\*Sample Output:\*\*

6.00

\*\*Note:\*\*

In the sample input, the height of the player is 72.0 inches. The height in feet is 72/12 = 6.00, so

the method returns 6.00 as the output. Your method will be crucial in helping the sports data

management team present the data in a format familiar to the international audience. Good

luck, data manager!

Program>>>>>

public class HeightConverter {

public double convertInchesToFeet(double inches)

{

double feet=inches/12;

return feet;

}

}

import java.util.\*;

public class Converter {

public static void main(String[] args) {

Scanner sc=new Scanner(System.in);

double inches=sc.nextDouble();

sc.close();

HeightConverter converter=new HeightConverter();

System.out.printf("%.2f", converter.convertInchesToFeet(inches));

}

}

Problem 13

\*\*Problem: The Finance Calculator\*\*

You are a software developer at a financial technology company. The company is building a new

feature in their app that calculates the simple interest for users wanting to take out loans. Your

task is to create a method that calculates the simple interest given the principal amount, rate of

interest, and time.

\*\*Hint:\*\* The formula to calculate simple interest is:

I = P \* R \* T

Where:

- I is the simple interest

- P is the principal amount

- R is the rate of interest (in decimal)

- T is the time (in years)

\*\*Class Definition:\*\*

public class FinanceCalculator {

public double calculateSimpleInterest(double principal, double rate, double time);

}

\*\*Inputs:\*\*

The method calculateSimpleInterest(double principal, double rate, double time) will receive

three parameters:

- principal (1 ≤ principal ≤ 10^9): a double representing the principal amount.

- rate (0 ≤ rate ≤ 1): a double representing the rate of interest in decimal.

- time (1 ≤ time ≤ 10^5): a double representing the time in years.

\*\*Outputs:\*\*

The method will return a double - the simple interest.

\*\*Example:\*\*

\*\*Sample Input:\*\*

FinanceCalculator calculator = new FinanceCalculator();

calculator.calculateSimpleInterest(1000.0, 0.05, 2.0);

\*\*Sample Output:\*\*

100.00

\*\*Note:\*\*

In the sample input, the principal amount is 1000.0 units, the rate of interest is 0.05, and the

time is 2.0 years. The simple interest is 1000.0 \* 0.05 \* 2.0 = 100.00, so the method returns

100.00 as the output. Your method will be crucial in helping users plan their finances. Good

luck, developer!

Program>>>>>

public class FinanceCalculator {

public double calculateSimpleInterest(double principal, double rate, double time)

{

double interest=principal\*rate\*time;

return interest;

}

}

import java.util.Scanner;

public class Calculator {

public static void main(String[] args) {

System.out.println("enter : principal amt , rate , time");

Scanner sc=new Scanner(System.in);

double principal=sc.nextDouble();

double rate=sc.nextDouble();

double time=sc.nextDouble();

sc.close();

FinanceCalculator calculator=new FinanceCalculator();

System.out.printf("%.2f",calculator.calculateSimpleInterest(principal,rate,time));

}

}

Problem 14

\*\*Problem: Time Converter\*\*

You are developing a time tracking application for a company. The employees log their time in

minutes. The management wants to see these durations in hours for better understanding.

Your task is to write a function that can convert minutes into hours.

\*\*Function:\*\*

public static double convertToHours(int minutes);

\*\*Inputs:\*\*

The function convertToHours(int minutes) will receive one parameter:

- minutes (1 ≤ minutes ≤ 10^6): an integer which represents the number of minutes to be

converted.

\*\*Outputs:\*\*

The function will return a double - the equivalent number of hours.

\*\*Example:\*\*

\*\*Sample Input:\*\*

convertToHours(90);

\*\*Sample Output:\*\*

1.5

\*\*Note:\*\*

In the sample input, the number of minutes given to the function is 90. The equivalent in hours

is 90/60=1.5, so the function returns 1.5 as the output. Your function should work accurately to

provide correct information to the management.

Program>>>>

import java.util.\*;

public class TimeConverter {

public static void main(String[] args) {

System.out.println("enter minutes");

Scanner sc=new Scanner(System.in);

int minutes=sc.nextInt();

sc.close();

double x=convertToHours(minutes);

System.out.printf("%.1f",x+"hours");

}

public static double convertToHours(int minutes)

{

double res= minutes/60.0;

return res;

}

}

Problem 15

You are helping a friend in developing a financial app. The app has a feature where it calculates

half of the entered amount for splitting bills. Your task is to write a function that takes a

number and returns its half.

\*\*Function:\*\*

public static double halveTheNumber(double num);

\*\*Inputs:\*\*

The function halveTheNumber(double num) will receive one parameter:

- num (0 ≤ num ≤ 10^9): a double which represents the amount entered by the user to be

halved.

\*\*Outputs:\*\*

The function will return a double - the result of halving the num.

\*\*Example:\*\*

\*\*Sample Input:

halveTheNumber(150.00);

Sample Output:

75.00

Note:

In the sample input, the number given to the function is 150.00. The half of this number is

150.00/2=75.00, so the function returns 75.00 as the output. Make sure your function works

correctly to split the bills accurately

program>>>>

import java.util.\*;

public class HalveIt {

public static void main(String[] args) {

System.out.println("enter a number");

Scanner sc=new Scanner(System.in);

double num=sc.nextDouble();

sc.close();

System.out.printf("%.2f",halveTheNumber(num));

}

public static double halveTheNumber(double num)

{

return num/2.00;

}

}