**Q1: Celsius Temperature Table**

The formula for converting a temperature from Fahrenheit to Celsius is

***C = 5 9 ( F − 32 )***

where *F* is the Fahrenheit temperature and *C* is the Celsius temperature. Write a method named **celsius** that accepts a Fahrenheit temperature as an argument. The method should return the temperature, converted to Celsius. Demonstrate the method by calling it in a loop that displays a table of the Fahrenheit temperatures 0 through 20 and their Celsius equivalents.

**Q2:** **Test Average and Grade**

Write a program that asks the user to enter five test scores. The program should display a letter grade for each score and the average test score. Write the following methods in the program:

* calcAverage—This method should accept five test scores as arguments and return the average of the scores.
* determineGrade—This method should accept a test score as an argument and return a letter grade for the score, based on the following grading scale:

**Score Letter Grade**

90–100 A

80–89 B

70–79 C

60–69 D

Below 60 F

**Q3: Conversion Program**

Write a program that asks the user to enter a distance in meters. The program will then pre-sent the following menu of selections:

**1. Convert to kilometers**

**2. Convert to inches**

**3. Convert to feet**

**4. Quit the program**

The program will convert the distance to kilometers, inches, or feet, depending on the user’s selection. Here are the specific requirements:

* Write a void method named showKilometers, which accepts the number of meters as an argument. The method should display the argument converted to kilometers. Convert the meters to kilometers using the following formula:

kilometers = meters \* 0.001

* Write a void method named showInches, which accepts the number of meters as an argument. The method should display the argument converted to inches. Convert the meters to inches using the following formula:

inches = meters \* 39.37

* Write a void method named showFeet, which accepts the number of meters as an argument. The method should display the argument converted to feet. Convert the meters to feet using the following formula:

feet = meters \* 3.281

* Write a void method named menu that displays the menu of selections. This method should not accept any arguments.
* The program should continue to display the menu until the user enters 4 to quit the program.
* The program should not accept negative numbers for the distance in meters.
* If the user selects an invalid choice from the menu, the program should display an error message.

Here is an example session with the program, using console input. The user’s input is shown in bold.

Enter a distance in meters: **500 [Enter]**

1. Convert to kilometers

2. Convert to inches

3. Convert to feet

4. Quit the program

Enter your choice: **1 [Enter]**

500 meters is 0.5 kilometers.

1. Convert to kilometers

2. Convert to inches

3. Convert to feet

4. Quit the program

Enter your choice: **3 [Enter]**

500 meters is 1640.5 feet.

1. Convert to kilometers

2. Convert to inches

3. Convert to feet

4. Quit the program

Enter your choice: **4 [Enter]**

Bye!

**Q4: Present Value**

Suppose you want to deposit a certain amount of money into a savings account, and then leave it alone to draw interest for the next 10 years. At the end of 10 years, you would like to have $10,000 in the account. How much do you need to deposit today to make that happen? You can use the following formula, which is known as the present value formula, to find out:

P = F ( 1 + r ) n

The terms in the formula are as follows:

* *P* is the **present value**, or the amount that you need to deposit today.
* *F* is the **future value** that you want in the account. (In this case, *F* is $10,000.)
* *r* is the **annual interest rate**.
* *n* is the **number of years** that you plan to let the money sit in the account.

Write a method named presentValue that performs this calculation. The method should accept the future value, annual interest rate, and number of years as arguments. It should return the present value, which is the amount that you need to deposit today. Demonstrate the method in a program that lets the user experiment with different values for the formula’s terms.