Geometry Calculations Laboratory

Functions

In this lab you must design a program that performs geometric calculations by implementing functions.

Remember: You must create a prototype for every function.

Task #1 void Function

1. Create a function called printMenu that has no parameter list and **does not** return a value. It will simply print out instructions for the user with a menu of options for the user to choose from.

   The menu should appear to the user as:

```
This is a geometry calculator
Choose what you would like to calculate
1.  Find the area of a circle
2.  Find the area of a rectangle
3.  Find the area of a triangle
4.  Find the circumference of a circle
5.  Find the perimeter of a rectangle
6.  Find the perimeter of a triangle
Enter the number of your choice:
```

   Remember to call the printMenu() function!

Task #2 Value-Returning Functions

1. Write a function called **circleArea** that takes in the radius of the circle and returns the area using the formula $A = \pi r^2$.
2. Write a function called **rectangleArea** that takes in the length and width of the rectangle and returns the area using the formula $A = lw$.
3. Write a function called **triangleArea** that takes in the base and height of the triangle and returns the area using the formula $A = \frac{1}{2}bh$.
4. Write a function called **circleCircumference** that takes in the radius of the circle and returns the circumference using the formula $C = 2\pi r$.
5. Write a function called **rectanglePerimeter** that takes in the length and the width of the rectangle and returns the perimeter of the rectangle using the formula $P = 2l + 2w$.

6. Write a function called **trianglePerimeter** that takes in the lengths of the three sides of the triangle and returns the perimeter of the triangle which is calculated by adding up the three sides.

Task #3 Calling the Functions

1. In the main function you must create a switch case statement that depending on what the user enters will call the indicated function.
2. **Write some sample data and hand calculated results for you to test all 6 menu items.**
3. Compile, debug, and run. Test out the program using your own sample data.

Laboratory #1 - Handover

- You must handover a .cpp file named as follows: ***geometry_calculations.cpp***
- Your program should present the user a menu with the different options available for calculation. Depending on the user's selection the program will calculate and display the results.
- The program must give the user the option to terminate the program or to perform another calculation.