(Geometric shapes)

Step 1: Import the math library.

Step 2: Define a class named Shape.

- Define the method calculate_area() with no implementation.

- Define the method calculate_perimeter() with no implementation.

Step 3: Define a class named Circle that inherits from Shape.

- Define the __init__() method that takes a parameter 'radius'.

  - Set the instance variable self.radius to the value of 'radius'.

- Define the calculate_area() method:

  - Return the value of math.pi multiplied by self.radius squared.

- Define the calculate_perimeter() method:

  - Return the value of 2 multiplied by math.pi multiplied by self.radius.

Step 4: Define a class named Triangle that inherits from Shape.

- Define the __init__() method that takes parameters 'side1', 'side2', and 'side3'.

  - Set the instance variables self.side1, self.side2, and self.side3 to the respective values.

- Define the calculate_area() method:

  - Calculate the value of 's' by adding self.side1, self.side2, and self.side3, and dividing it by 2.

  - Return the square root of 's' multiplied by 's' minus self.side1 multiplied by 's' minus self.side2 multiplied by 's' minus self.side3.

- Define the calculate_perimeter() method:

  - Return the sum of self.side1, self.side2, and self.side3.

Step 5: Define a class named Rectangle that inherits from Shape.

   - Define the __init__() method that takes parameters 'length' and 'width'.

      - Set the instance variables self.length and self.width to the respective values.

   - Define the calculate_area() method:

      - Return the product of self.length and self.width.

   - Define the calculate_perimeter() method:

      - Return the sum of 2 multiplied by self.length and 2 multiplied by self.width.

Step 6: Prompt the user to enter the type of geometric shape ('Circle', 'Triangle', 'Rectangle') and store it in a variable 'shape_type'.

Step 7: If 'shape_type' is equal to 'Circle', then:

   - Prompt the user to enter the radius of the circle and store it in a variable 'radius'.

   - Create an instance of the Circle class called 'circle' with 'radius' as the argument.

   - Print "Area of the circle:" followed by the result of calling the calculate_area() method on the 'circle' object.

   - Print "Perimeter of the circle:" followed by the result of calling the calculate_perimeter() method on the 'circle' object.

Step 8: Else, if 'shape_type' is equal to 'Triangle', then:

   - Prompt the user to enter the lengths of the three sides of the triangle and store them in variables 'side1', 'side2', and 'side3'.

   - Create an instance of the Triangle class called 'triangle' with 'side1', 'side2', and 'side3' as the arguments.

- Print "Area of the triangle:" followed by the result of calling the calculate_area() method on the 'triangle' object.

- Print "Perimeter of the triangle:" followed by the result of calling the calculate_perimeter() method on the 'triangle' object.

Step 9: Else, if 'shape_type' is equal to 'Rectangle', then:

- Prompt the user to enter the length and width of the rectangle and store them in variables 'length' and 'width'.

- Create an instance of the Rectangle class called 'rectangle' with 'length' and 'width' as the arguments.

- Print "Area of the rectangle:" followed by the result of calling the calculate_area() method on the 'rectangle' object.

- Print "Perimeter of the rectangle:" followed by the result of calling the calculate_perimeter() method on the 'rectangle' object.

Step 10: Else:

- Print "Invalid geometric shape!"

Step 11: End