~Lab19: Polymorphisms of Shape objects

Final variables are just like variables with the 1 added rule that it can only be assigned one time. If you try to assign it a second time, you'll get an error. By convention, final variables should be all upper case with underscores "_" separating each word.

Part 1: Circles, Rectangles, and Triangles are all Shapes. Create a parent class called Shape which has a private final variable (or constant) called NUMBER_OF_SIDES. Shapes should also have a method called area() and perimeter(). Because Shape is too general and we don't know how to calculate area and perimeters of all shapes with 1 formula, we can't complete these methods. Simply make the methods return a value of 0. Use appropriate data types!

Part 2: Circle, Rectangle, and Triangle classes should all inherit from Shape. Circles should have a radius and Point center. Rectangles should have length and width. Triangles should have side a, side b, side c, base, and height. Each class should have a toStr() method that returns a String in the following format: "Circle with 1 side, radius = 5 and center = (1,2)", "Rectangle with 4 sides, length = 12.1 and width = 13.9", and "Triangle with 3 sides, side lengths = 3,4,5, base = 3, height = 4"

Part 3: Create 2 constructors (1 empty, 1 full) for each class. Create getters and setters for each class.

Part 4: OVERLOAD / OVERRIDE (highlight the correct term) the Shape's perimeter() and area() methods.

Part 5: In main(), ask the user for 3 Shapes by first asking for:

1. the number of sides (Notify the user of what legal values are and what they correspond to, then you may assume the user will follow your rules)
2. the center/radius, length/width, a/b/c/base/height depending on which shape they choose.

Save the 3 shapes into a 3 element Shape array.

Part 6: Still in main(), create a for loop that goes through each shape and prints out its perimeter and area after each shape's toStr(). Example of what should print out: "Triangle with 3 sides, side lengths = 3,4,5, base = 3, height = 4, perimeter = 12, area = 7.5"
Note, this is a problem that actually requires some thought. Please describe:

Conflict: Resolution: