**Computer Programming - Shapes Assignment**

In this assignment, you are going to create 5 different programs, each of which requires you to use different formulae to calculate various values for each shape type. All variables used should be declared as *Double*, which will give us the ability to use floating point values (numbers with decimals).

 \*In all formulas, we want to have the output rounded off to three decimal places before being outputted.



**Program # 1 - Rectangle** - 6 Points

 L is the length of rectangle and W is the width.

Perimeter = 2W +2L

Area = L \* W



**Program # 2 - Circle** - 6 Points

r is the radius of the circle

Circumference = 2 $π$r

Area of Circle = $πr^{2}$

**Program # 3 - Pythagorean** - 10 Points

a2 + b2 = c2

where *a* and *b* are the two shorter sides

of a right triangle and c is the hypotenuse.

**Program # 4 - Sphere** - 8 Points

r is the radius of the sphere

Volume of Sphere = $\frac{4}{3} $πr3

Surface Area of Sphere = 4πr2

**Program # 5 - Polygon** - 15 Points

s is the side length

n is the number of sides

Area = $\frac{s^{2}\*n}{4\*Tan(\frac{180}{n} \*\frac{π}{180})} $

Number of Diagonals = $\frac{n(n-3)}{2}$



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