Exploring Regular Polygon Area

*apothem*

*radius*

*side*

*a*

*r*

*s*

**For each of the regular polygons below, find the measure of each numbered angle.**

1. 2. 3.

*a*

*r*

*2*

*1*

*3*

*s*

*a*

*1*

*2*

*3*

*r*

*s*

*r*

*a*

*1*

*2*

*3*

*s*

4. Explain how you could use the triangles made by the radii of a regular polygon to find the area of the polygon.

5. If *a* is the length of the apothem and *s* is the length of the side, then write expressions for the area of each of the polygons in #1-#3.

$Area of Regular Quadrilateral=$

$Area of Regular Hexagon=$

$Area of Regular Triangle=$

6. Can you rewrite your expressions in #5 to write one formula for all regular polygons?

 **Try these: *Find the area of each regular polygon***

1. 2.

*4m*

$6$*m*

3.

*6cm*