Regular Polygons - Central, Interior, and Exterior Angles

1. A **Regular Polygon** is _____. Several Regular Polygons are given in this module. Use these figures along with your protractor to perform the following investigations.

2. Explore the relationship of the number of sides of a regular polygon and the **Central Angles**. Fill in the following table and make a generalization about Regular N-gons.

Name	# of Sides	Measure of a Central Angle	Sum of the Measure of the Central Angles
Equilateral Triangle			
Square			
Regular Pentagon			
Regular Hexagon			
Regular Octagon			
Regular Decagon			
Regular Dodecagon			
⋮			
Regular N-gon			

3. Write a conjecture about the **Central Angles** of a Regular Polygon. _____

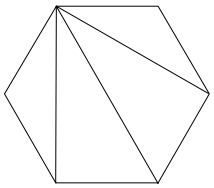
_____

4. Explore the relationship of the number of sides of a regular polygon and the **Interior Angles**. Fill in the following table and make a generalization about Regular N-gons.

Name	# of Sides	Measure of an Interior Angle	Sum of the Measure of the Interior Angles
Equilateral Triangle			
Square			
Regular Pentagon			
Regular Hexagon			
Regular Octagon			
Regular Decagon			
Regular Dodecagon			
⋮			
Regular N-gon			

5. Write a conjecture about **Interior Angles** of a Regular Polygon. Think about breaking apart the polygon into triangles as shown below. _____

_____



Notice there are ____ triangles and the sum of the measures of the angles of each triangle is ___.

6. Explore the relationship of the number of sides of a regular polygon and the **Exterior Angles**. Fill in the following table and make a generalization about Regular N-gons.

Name	# of Sides	Measure of an Exterior Angle	Sum of the Measure of the Exterior Angles
Equilateral Triangle			
Square			
Regular Pentagon			
Regular Hexagon			
Regular Octagon			
Regular Decagon			
Regular Dodecagon			
⋮			
Regular N-gon			

7. Write a **conjecture** about Exterior Angles of a Regular Polygons. _____

_____

_____

8. **EXTENSION:** What is the area of a regular n-gon?