**Activity 3.4.3 Applying Angle Properties in Regular Polygons**

**Angles in a Regular Polygon Theorem**: In a regular polygon the measure of each interior angle is $\frac{\left(n-2\right)180°}{n}$ and the measure of each exterior angle is $\frac{360°}{n}$.

**Practice Problems**:

1. A trampoline is in the shape of a regular octagon. What is the measure of each interior angle and each exterior angle?



1. The sum of interior angles in a regular polygon is 1080°. How many sides are in this regular polygon?
2. How many sides does a regular polygon have, if its interior angles equal 144°?
3. A dodecagon is a 12-sided polygon. In a regular dodecagon, what is the measure of each interior angle and each exterior angle?
4. The Santiago family is building a gazebo in their backyard as pictured below. The gazebo is in the shape of a regular hexagon. At each interior angle there will be a metal bracket, how many degrees is the does each metal bracket need to be?



1. Each interior angle of a regular polygon measures 135°. How many sides does the polygon have?
2. If each exterior angle measures 40°, how many sides does this polygon have?
3. If each exterior angle measures 50°, how many sides does this polygon have? If the polygon is not possible, then explain why.