

Name:

Date:

Period: 1

Area of Regular Polygons

Learning Objective IWBAT derive and apply formula for area of regular polygons.

The diagram shows a regular polygon inscribed in a circle.

The **center of a regular polygon** is the center of the circumscribed circle (F)

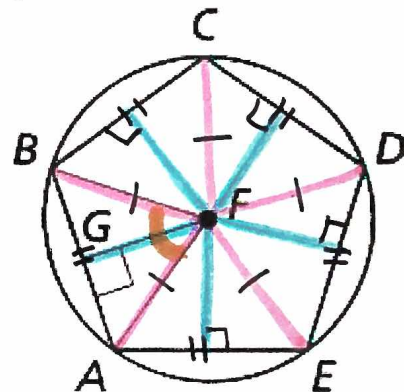
The **radius of a regular polygon** is the radius of the circumscribed circle (FB)

The distance from the center to any side of a regular polygon is called the **apothem**.

→ The apothem is the height to the base of an isosceles triangle that has two radii as legs. (FG)

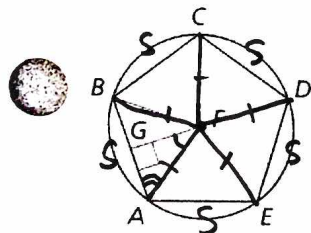
A **central angle of a regular polygon** is an angle formed by two radii drawn to two consecutive vertices of the polygon. ($\angle BFA$)

→ To find the measure of each central angle, divide 360° by the number of sides of the polygon.



Example:

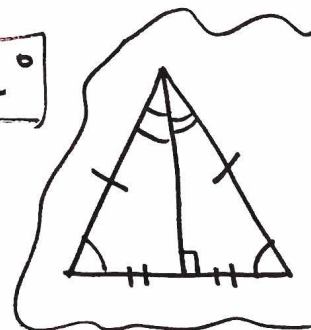
1. Use the diagram to find the following:



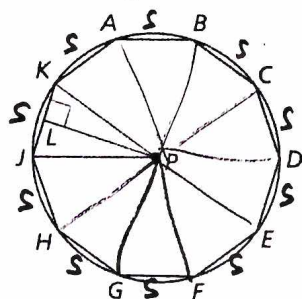
a. $m\angle AFB$ *central $\angle$ $\frac{360}{5} = \boxed{72^\circ}$

b. $m\angle AFG$ 36° *apothem bisects central $\angle$

c. $m\angle GAF$ 54° * Δ sum thm



2. The diagram below is a regular decagon. Find the following:



a. $m\angle KPJ$ $\frac{360}{10} = 36^\circ$

b. $m\angle LPK$ $\frac{36}{2} = 18$

c. $m\angle LJP$ 72° (Δ sum thm)

Finding Areas of Regular Polygons