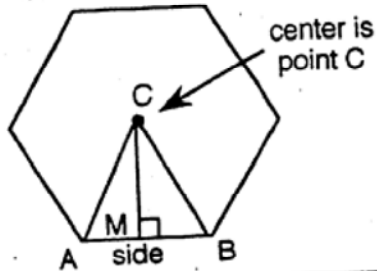


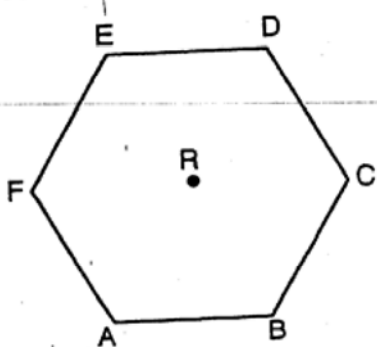
# Area of Regular Polygons

## INTRODUCTION:



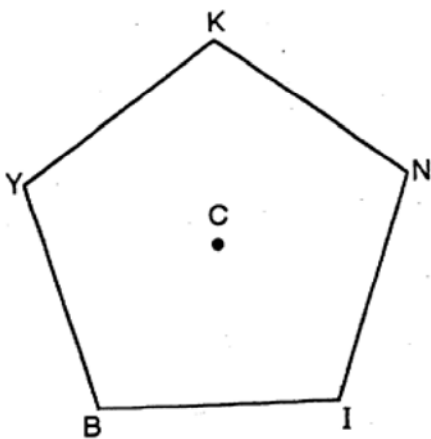
**center** - center of the circumscribed circle ( pt. C )  
**radius** - segment from the center to a vertex of the polygon (  $\overline{CA}$  )  
**side** - any segment joining two consecutive vertices (  $\overline{AB}$  )  
**central angle** - angle formed by two consecutive radii (  $\angle ACB$  )  
**apothem** - segment from the center to a midpoint of a side (  $\overline{CM}$  )

1.



- Connect the center to all vertices.
- Without using a protractor, find the measure of a central angle.
- Connect the center to the midpt. of side  $\overline{AB}$ . Label midpt. M.
- What is this segment called?
- Without using a protractor, find the measure of  $\angle ARM$ .
- If  $\overline{AB}$  is 8 cm long, how long is  $\overline{AM}$ ?
- Use **special triangle** relationship to find the length of  $\overline{MR}$ .
- Find the area of triangle  $\Delta ARB$ .
- Find the area of the regular hexagon.

2.



- Connect the center to all vertices.
- Without using a protractor, find the measure of the central angle.
- Connect the center to the midpt. of  $\overline{IN}$ . Label the midpt. M.
- Without using a protractor, find the measure of  $\angle ICM$ .
- If  $\overline{IN}$  is 10 cm. long, how long is  $\overline{IM}$ ?
- Use **trigonometry** to find the length of  $\overline{CM}$ .
- Find the area of  $\Delta ICN$ .
- Find the area of the pentagon.