

Chapter 8

Topics List & Study Guide

Things to remember from older chapters:

- How to find the central angle of a polygon: $360/n$
- How to use SOH CAH TOA to solve for missing side lengths
- 30-60-90 and 45-45-90 special right triangle relationships
- Knowing that regular means equilateral and equiangular

Biggest Topics in Chapter 8:

- **Interior and Exterior Angle Formulas:**
 - Sum of Interior angles in a regular or non-regular polygon
 - One interior angle in a regular polygon
 - Sum of Exterior angles in a regular or non-regular polygon = 360
 - One exterior angle in a regular polygon
- **Finding Area and Perimeter of Polygons**
 - From a given radius or a given apothem and # of sides
 - ONLY HEXAGONS break into 6 equilateral triangles which are 60-60-60
 - For example pentagons break into 5 isosceles (not equilateral) triangles, with angles 72-54-54
 - If you do not have a 30-60-90 or a 45-45-90, you need to use trig – SOH CAH TOA
 - Triangle method for area of regular polygon:
 - Use central angle formula to take one triangle from the polygon
 - Cut that triangle in half to form a right triangle (height = apothem)
 - Multiply the area of the triangle or half-triangle by how many of them are in the polygon
 - Formulas for area of regular polygon:
 - $\text{Area} = \frac{1}{2} a P$ where a = apothem and P = perimeter
 - $\text{Area} = \frac{1}{2} n s a$ a =apothem, n =# of sides and s =side length
- **Ratios of Similarity**
 - Know that any scale factor, zoom factor, ratio of side lengths, or ratio of perimeters will all be THE SAME VALUE/RATIO/FRACTION
 - If I want to compare AREAS I can take a linear ratio and SQUARE IT.
 - If I want to compare side lengths or perimeters I can take an area ratio and SQUARE ROOT IT.
 - For example: If all the lengths of a rectangle triple, its area will multiply by nine (three squared).
 - For example: If the area of a circle multiplied by 25, then its radius/diameter (because these are lengths) multiplied by 5 (the square root).
- **Circles**
 - Area =
 - Circumference = or
 - Know that you can find the area of a SECTION / “sector” of the circle by using the following idea:
 - Make a fraction with the amount of degrees in YOUR SECTION over 360.
 - Multiply the total area by that fraction. That will be the area of YOUR SECTION.