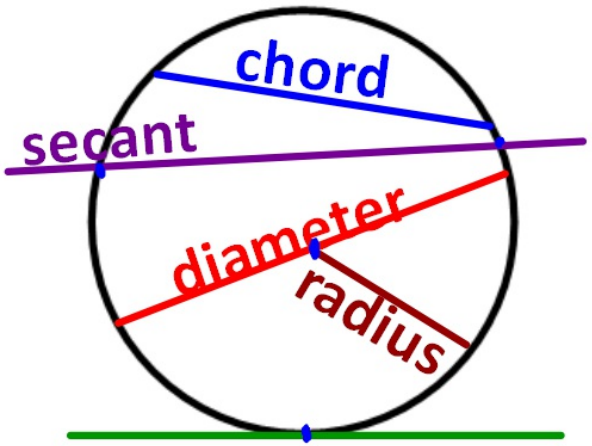
CHAPTER 12: CIRCLES

SECTION 12.1: BASIC TERMS

Standards:

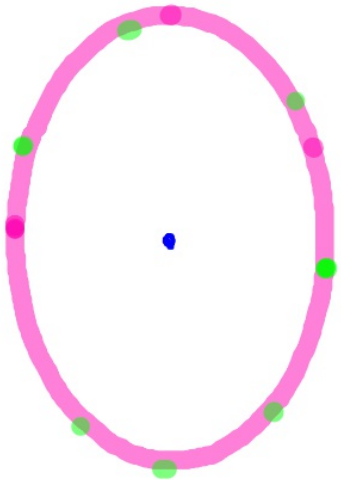
7.0 - Students prove and use theorems involving the properties of parallel lines cut by a transversal, the properties of quadrilaterals, and the properties of circles.



CIRCLE

A circle is the set of all points in a plane at a given distance from a given point in that plane.

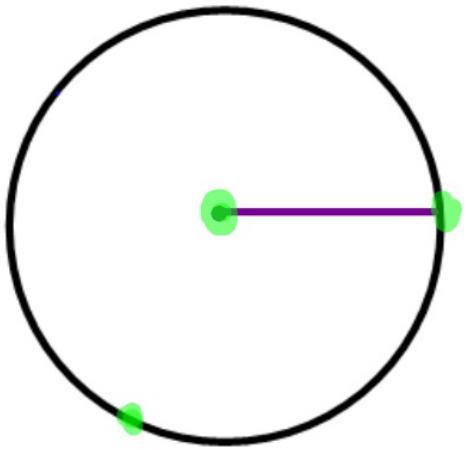
The given point is the center and the given distance is the radius.



RADIUS

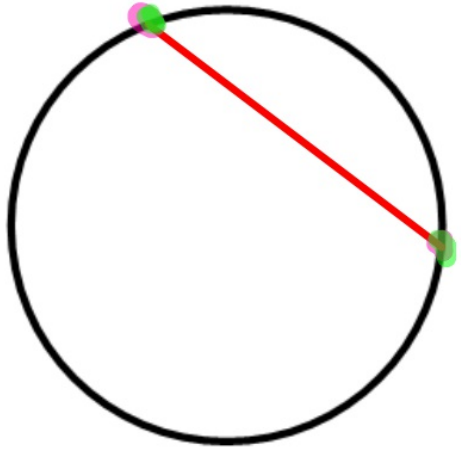
Any segment that joins the center to a point on the circle.

All radii are ≅



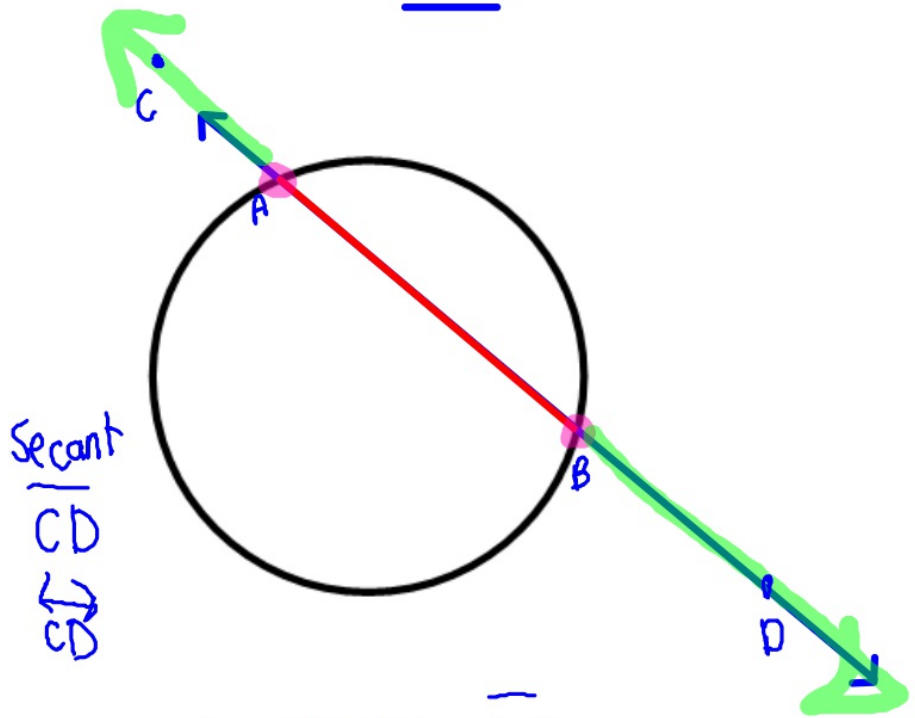
CHORD

A segment whose endpoints lie on a circle



SECANT

A LINE that contains a chord.

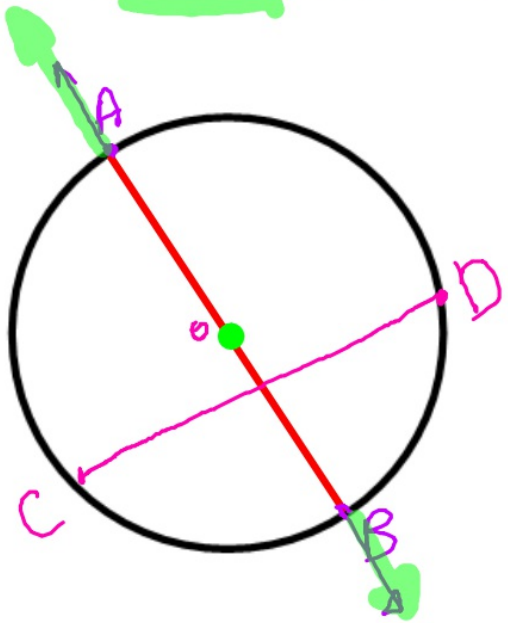


∴ CHORD $\overline{AB}$

Secant $\overleftrightarrow{AB}$

DIAMETER

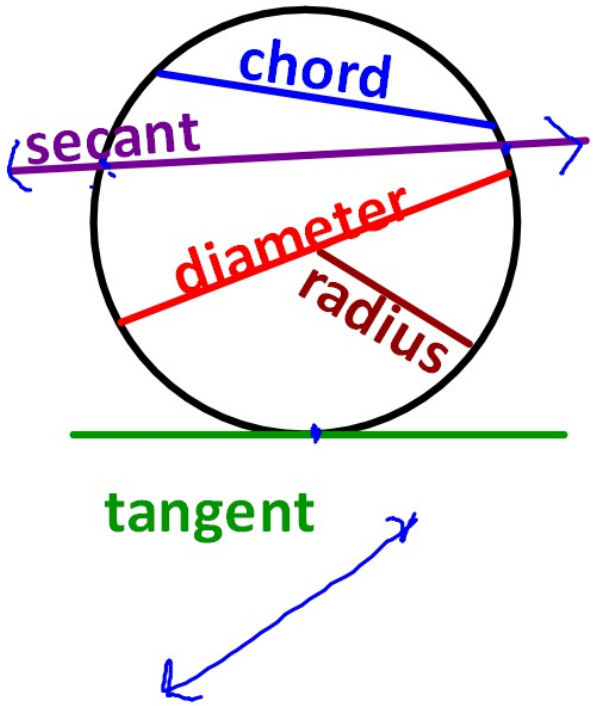
A chord that contains the center of a circle.



THE Diameter is the longest chord of a circle

$\overline{AB} > \overline{CD}$

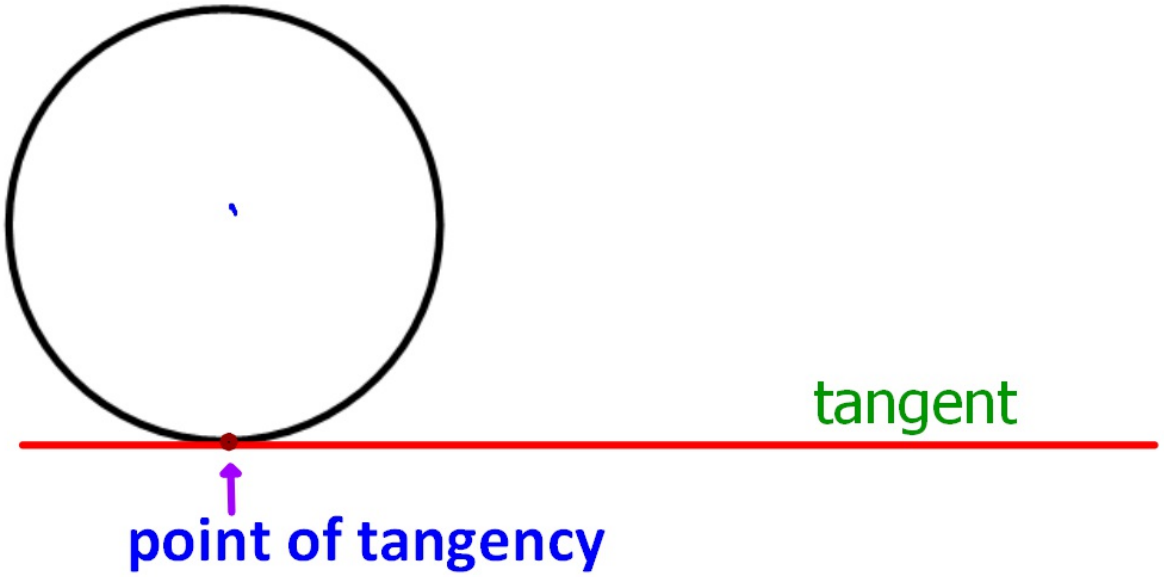
Diam. CHORD

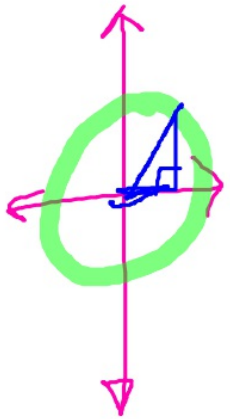


Can you guess the definition of a tangent?

TANGENT

A line in the plane of a circle that intersects the circle in exactly one point, called the point of tangency.

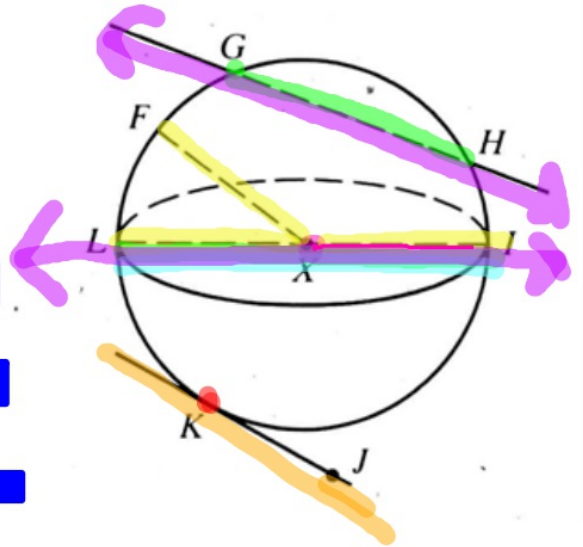




SPHERE

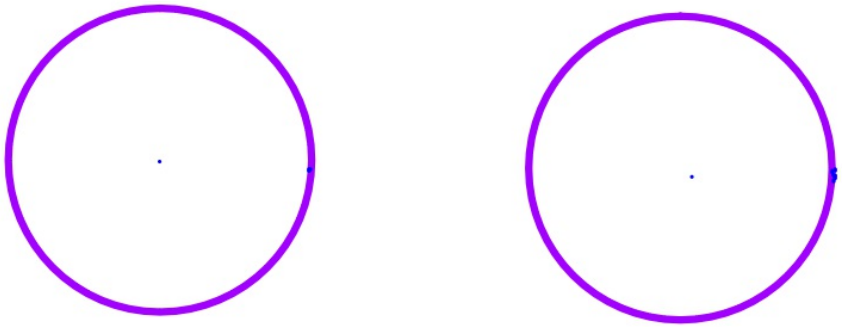
A sphere with center O and radius r is the set of all points in space at a distance r from point O

center:
radii:
chords:
diameter:
secants:
tangent:
point of tangency:



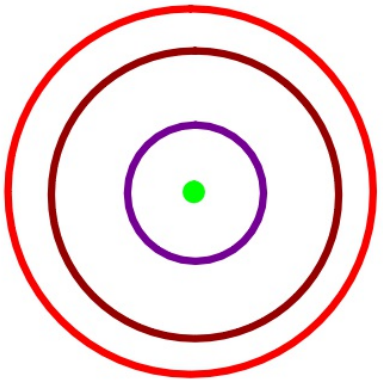
CONGRUENT CIRCLES/SPHERES

have ≅ radii



CONCENTRIC CIRCLES

circles that lie in the same plane and have the same center

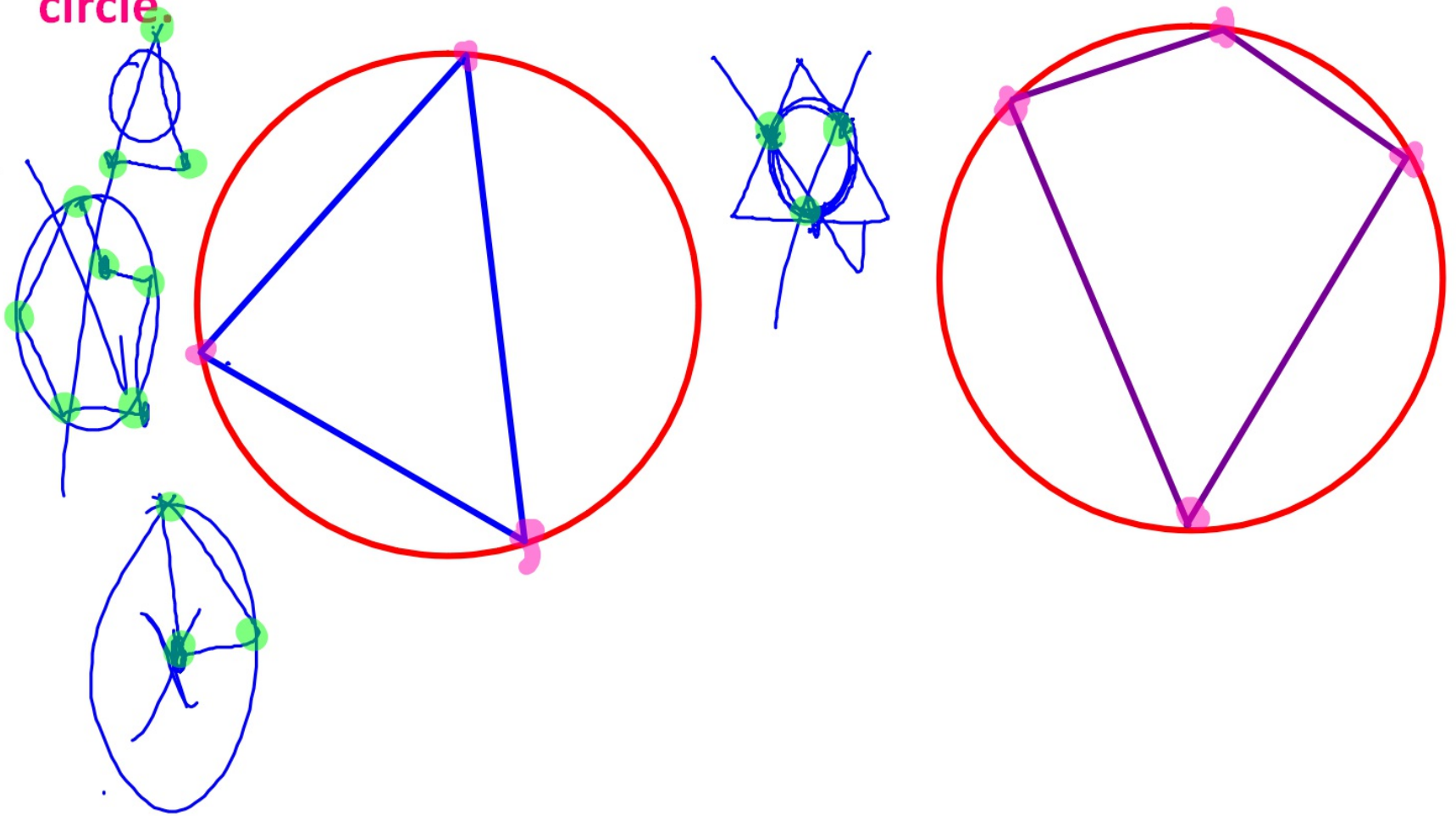


CONCENTRIC SPHERES

have the same center

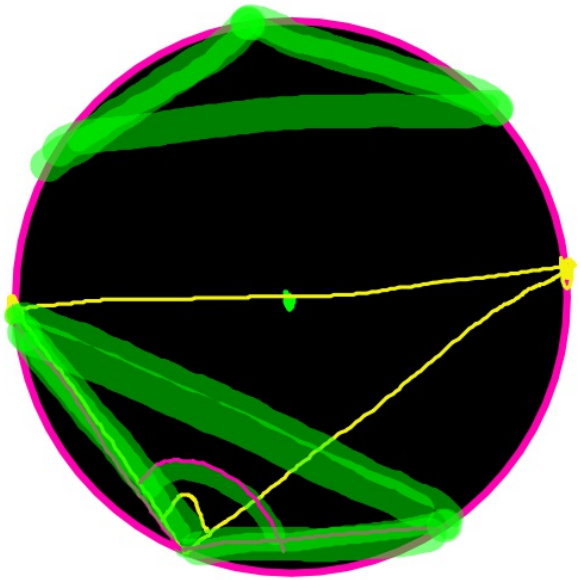
INSCRIBED POLYGON/CIRCUMSCRIBED CIRCLE

A polygon is inscribed in a circle and the circle is circumscribed about the polygon when each vertex of the polygon lies on the circle.

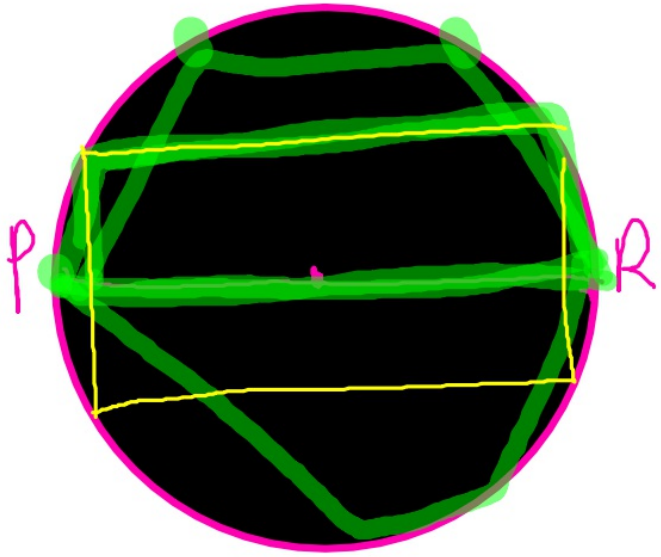


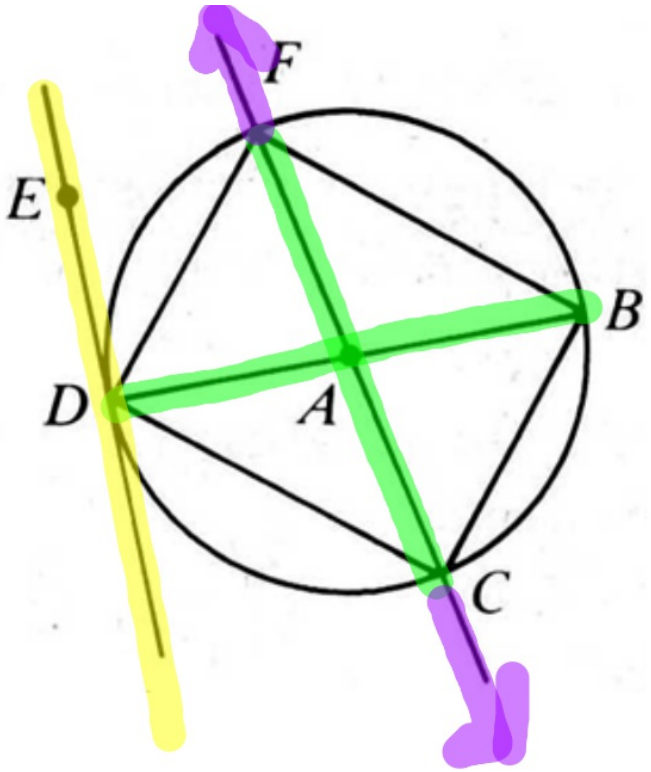
Draw these figures (if possible):

an obtuse triangle
inscribed in a circle



a paralellogram
inscribed in a circle





In $\odot A$, name:

1. the center point A
2. two diameters $\overline{FC}$ $\overline{DB}$
3. a point of tangency point D
4. four radii $\overline{AE}$ $\overline{AB}$ $\overline{AC}$ $\overline{AD}$
5. a tangent $\overleftrightarrow{ED}$
6. a secant $\overleftrightarrow{FC}$ or $\overleftrightarrow{FA}$
7. six chords $\overline{DF}$ $\overline{FB}$ $\overline{BC}$ $\overline{CD}$ $\overline{FC}$ $\overline{DB}$
8. Why is $\overline{AC}$ not a chord of $\odot A$? $\overline{AC}$ does not have endpoints on the circle
9. Why is $\overleftrightarrow{BD}$ not a chord of $\odot A$? $\overleftrightarrow{\ }$ is a line that does not have endpoints

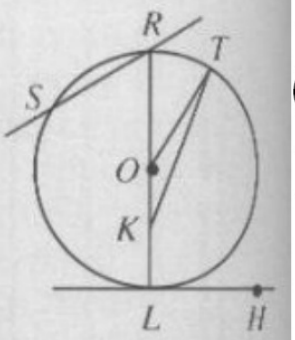
(Segment) $\overline{BD}$ is a chord

HOMEWORK

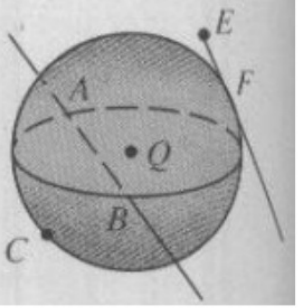
HW 9.1

- Pg. 330 (CE): # 1- 11
- Pg. 330 (WE): # 6 - 11

Classroom Exercises



1. Name three radii of $\odot O$.
2. Name a diameter.
3. Consider $\overline{RS}$ and $\overleftrightarrow{RS}$. Which is a chord and which is a secant?
4. Why is $\overline{TK}$ not a chord?
5. Name a tangent to $\odot O$.
6. What name is given to point L?
7. Name a line tangent to sphere Q.
8. Name a secant of the sphere and a chord of the sphere.
9. Name 4 radii. (None are drawn in the diagram.)
10. What is the diameter of a circle with radius 8? 5.2? $4\sqrt{3}$? j?
11. What is the radius of a sphere with diameter 14? 13? 5.6? $6n$?



HW 12.1 ORANGE BOOK

- Pg. 330 (CE):# 1- 11
- Pg. 330 (WE):# 6 - 11

For each exercise draw a circle and inscribe the polygon in the circle.

6. A rectangle
7. A trapezoid
8. An obtuse triangle
9. A parallelogram
10. An acute isosceles triangle
11. A quadrilateral $PQRS$, with $\overline{PR}$ a diameter