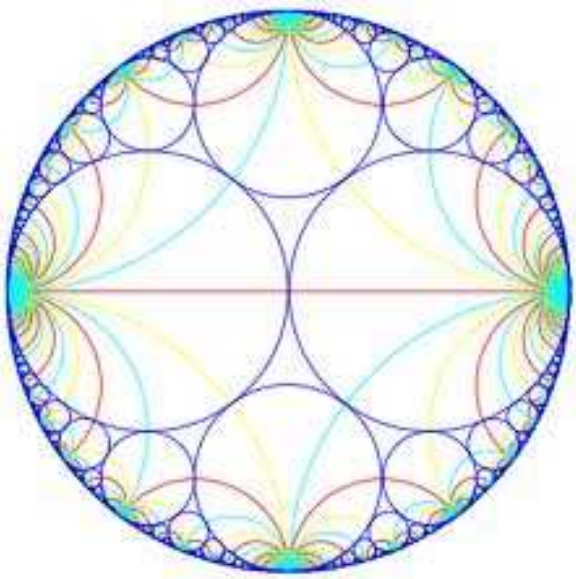
Unit 10 – Geometry
Circles



NAME _____

Period _____

Geometry

Chapter 10 – Circles

******In order to get full credit for your assignments they must me done on time and you must SHOW ALL WORK. ******

1.____ (10-1) Circles and Circumference – Day 1- Pages 526-527 16-20, 32-54 even

2. ____ (10-2) Angles and Arcs – Day 1- Pages 533-535 14 – 31, 32 -42 even, 58

3. ____ (10-2) Angles and Arcs – Day 2- 10-2 Practice WS

4. ____ (10-3) Arcs and Chords– Day 1- Pages 540- 11-20 and 23-35 odd

5. ____ (10-3) Arcs and Chords– Day 2- 10-3 Practice WS

6. ____ (10-4) Inscribed Angles – Day 1- Pages 549-550 8-10, 13-16, 22, 25

7. ____ (10-4) Inscribed Angles – Day 2- 10-4 Practice WS

8. ____ (10-5) Tangents– Day 1 – Pages 556-557 8-18, 23

9. ____ (10-5) Tangents– Day 2 – 10-5 Practice WS

10.____ (10-6) Secants, Tangents, and Angle Measures – Day 1– Pages 564-565 12-32 even

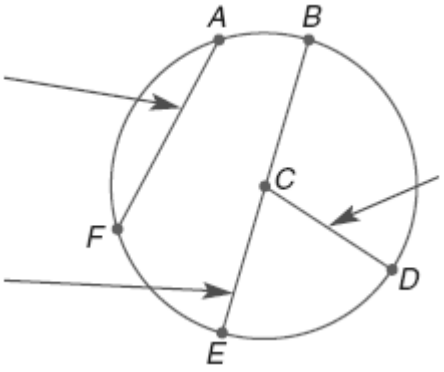
11.____ (10-6) Secants, Tangents, and Angle Measures – Day 2– 10-6 Practice WS

12. _____ Chapter 10 Review

Section 10 – 1: Circles and Circumference

Notes

Circle – a set of _____ equidistant from a given point called the _____ of the circle



- **Chord:** any _____ with endpoints that are on the _____

  Ex:

- **Diameter:**

  Ex:

- **Radius:**

  Ex:

Circumference:

Example #1:

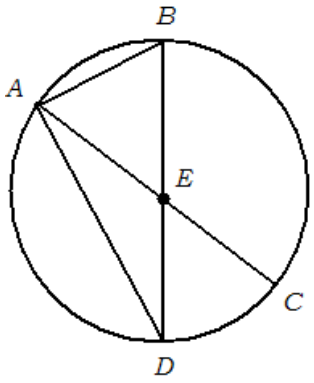
a.) Name the circle.

b.) Name a radius of the circle.

c.) Name a chord of the circle.

d.) Name a diameter of the circle.

e.) If $AC = 18$, find EC.



f.) If $DE = 3$, find AE.

Example #2:

a.) Find C if $r = 13$ inches.

b.) Find C if $d = 6$ millimeters.

b.) Find d and r to the nearest hundredth if $C = 65.4$ feet.

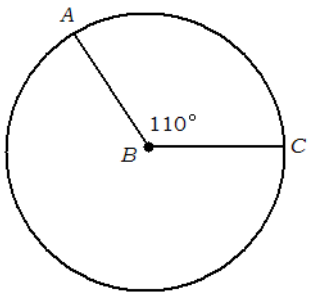
Section 10 – 2: Angles and Arcs
Notes

Angles and Arcs

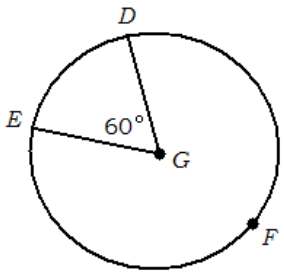
- ✓ A _____ _____ has the center of the circle as its _____, and its sides contain two _____ of the circle.

Arcs of a Circle

- ✓ **Minor Arc**
  - Arc degree measure equals the measure of the _____ angle and is _____ than _____.
  - **Ex:**

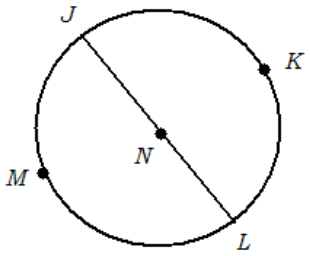


- ✓ **Major Arc**
  - Arc degree measure equals 360 _____ the measure of the _____ arc and is _____ than 180.
  - **Ex:**

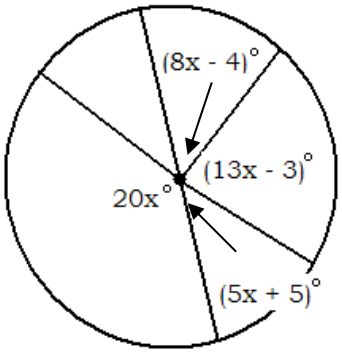


✓ **Semicircle**

- Arc degree measure equals _____ or _____.
- **Ex:**



Example #1: Refer to circle *T*.

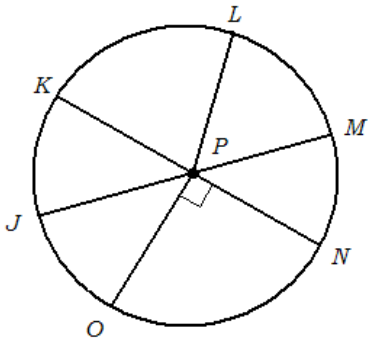


a.) Find $m\angle RTS$.

b.) Find $m\angle QTR$.

Example #2: In circle *P*, $m\angle NPM = 46$, $\overline{PL}$ bisects $\angle KPM$, and $\overline{OP} \perp \overline{KN}$. Find each measure.

a.) $m\ OK$

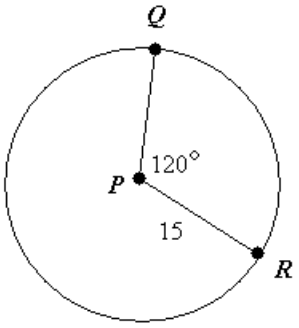


b.) $m\ LM$

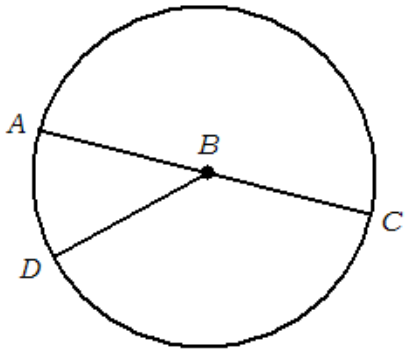
c.) $m\ JKO$

Arc Length

✓ Part of the _____.



Example #3: In circle B, $AC = 9$ and $m\angle ABD = 40$. Find the length of AD.



Section 10 – 3: Arcs and Chords

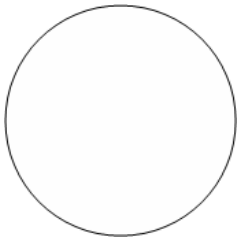
Notes

Arcs and Chords

- ✓ The _____ of a chord are also endpoints of an _____.

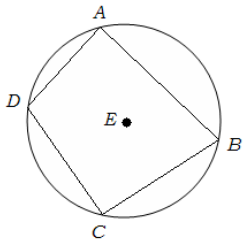
Theorem 10.2: In a circle, two _____ arcs are congruent if and only if their corresponding _____ are congruent.

Ex:



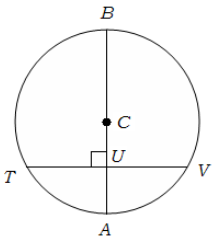
Inscribed and Circumscribed

- ✓ The chords of _____ arcs can form a _____.
- ✓ Quadrilateral *ABCD* is an _____ polygon because all of its _____ lie on the circle.
- ✓ Circle E is _____ about the polygon because it contains all of the vertices of the _____.

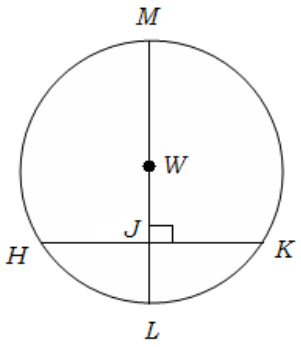


Theorem 10.3: In a circle, if the diameter (or radius) is _____ to a chord, then it _____ the chord and its arc.

Ex:



Example #1: Circle W has a radius of 10 centimeters. Radius $\overline{WL}$ is perpendicular to chord $\overline{HK}$, which is 16 centimeters long.

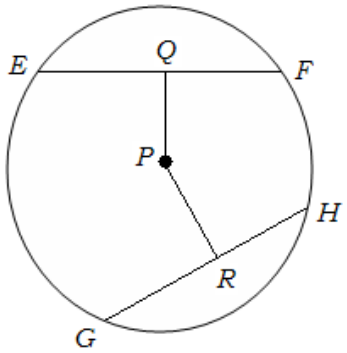


a.) If $mHL = 53$, find mMK.

b.) Find JL.

Theorem 10.4: In a circle, two _____ are congruent if and only if they are _____ from the center.

Example #2: Chords $\overline{EF}$ and $\overline{GH}$ are equidistant from the center. If the radius of circle P is 15 and $EF = 24$, find PR and



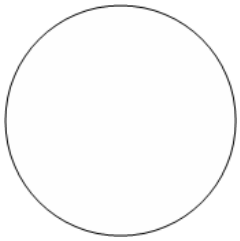
Section 10 – 4: Inscribed Angles

Notes

Inscribed Angles

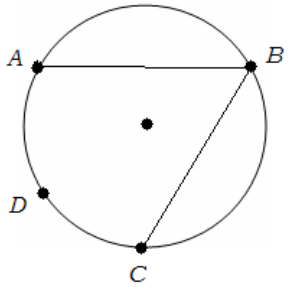
- ✓ An inscribed angle is an angle that has its _____ on the circle and its _____ contained in _____ of the circle.

Ex:

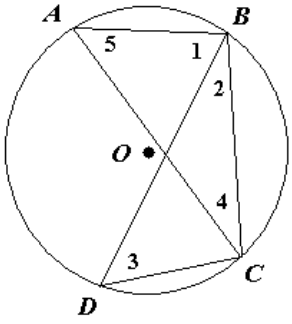


Theorem 10.5: If an angle is _____ in a circle, then the measure of the angle equals _____ the measure of its intercepted arc (or the measure of the _____ arc is _____ the measure of the inscribed angle).

Ex:

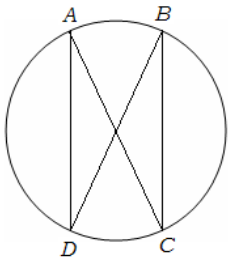


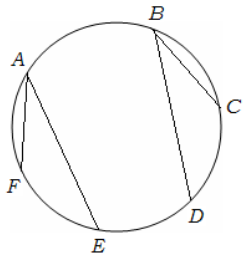
Example #1: In circle O, $mAB = 140$, $mBC = 100$, and $mAD = mDC$. Find the measures of the numbered angles.



Theorem 10.6: If two inscribed angles of a _____ (or congruent circles) intercept _____ arcs or the same arc, then the angles are _____.

Ex:

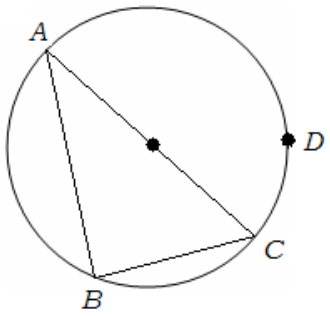




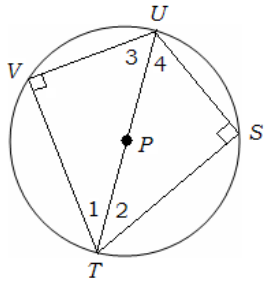
Angles of Inscribed Polygons

Theorem 10.7: If an inscribed angle intercepts a semicircle, the angle is a _____ angle.

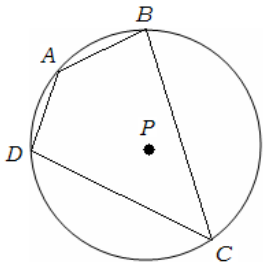
Ex:



Example #2: Triangles *TVU* and *TSU* are inscribed in circle *P*, with $VU \cong SU$. Find the measure of each numbered angle if $m\angle 2 = x + 9$ and $m\angle 4 = 2x + 6$.

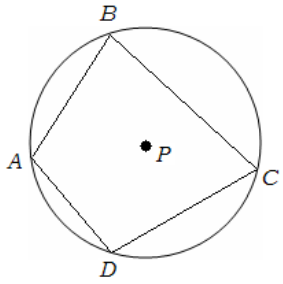


Example #3: Quadrilateral *ABCD* is inscribed in circle *P*. If $m\angle B = 80$ and $m\angle C = 40$, find $m\angle A$ and $m\angle D$.



Theorem 10.8: If a quadrilateral is _____ in a circle, then its _____ angles are _____.

Ex:



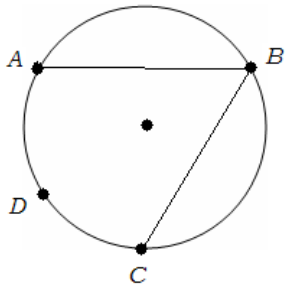
Section 10 – 4: Inscribed Angles

Notes

Inscribed Angles

If an angle is _____ in a circle, then the measure of the angle equals _____ the measure of its intercepted arc (or the measure of the _____ arc is _____ the measure of the inscribed angle).

Ex:



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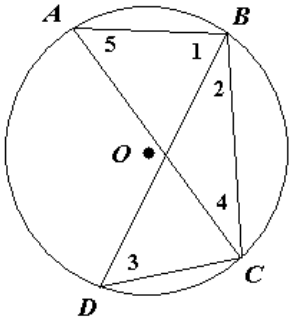
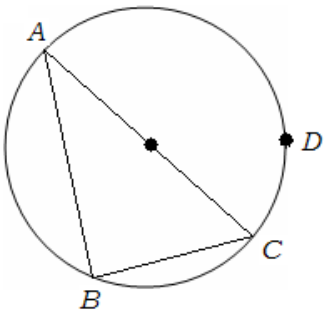


Angles of Inscribed Polygons

Theorem 10.7: If an inscribed angle intercepts a semicircle, the angle is a _____ angle.

Ex:



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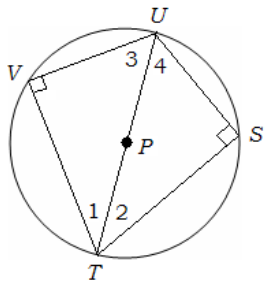
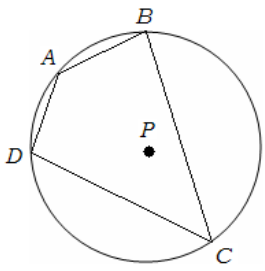


Example #3: Quadrilateral *ABCD* is inscribed in circle *P*. If $m\angle B = 80$ and $m\angle C = 40$, find $m\angle A$ and $m\angle D$.



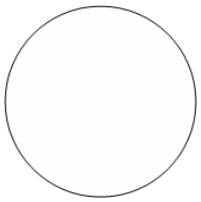
Section 10 – 5: Tangents

Notes

Tangents

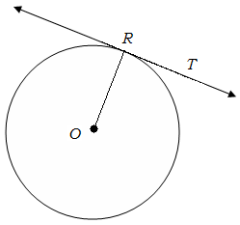
- ✓ **Tangent** – a line in the plane of a _____ that intersects the circle in exactly one _____.
- ✓ The point of intersection is called the _____ ___ _____.

Ex:

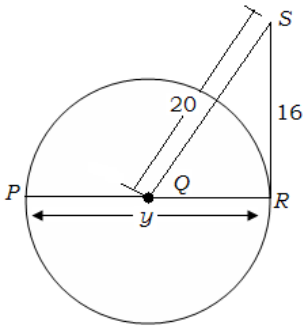


Theorem 10.9: If a line is _____ to a circle, then it is _____ to the _____ drawn to the point of _____.

Ex:

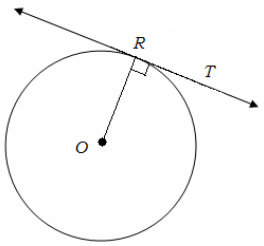


Example #1: $\overline{RS}$ is tangent to circle Q at point R. Find y.



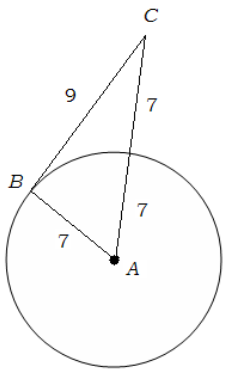
Theorem 10.10: If a _____ is perpendicular to a radius of a circle at its _____ on the circle, then the line is _____ to the circle.

Ex:

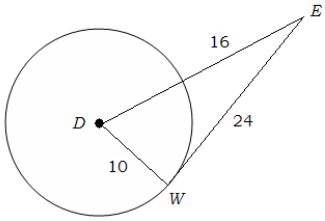


Example #2: Determine whether the given segments are tangent to the given circles.

a.) $\overline{BC}$

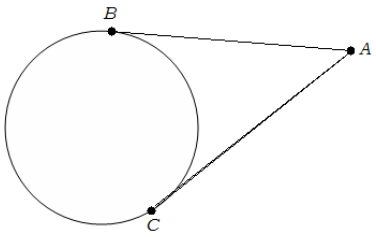


b.) $\overline{WE}$

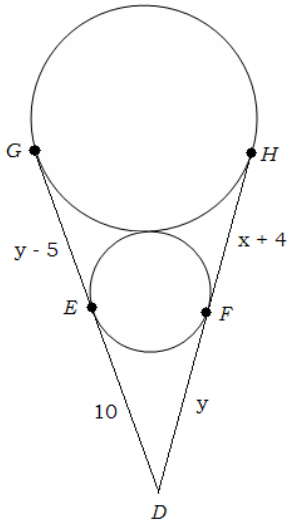


Theorem 10.11: If two _____ from the same exterior point are _____ to a circle, then they are _____.

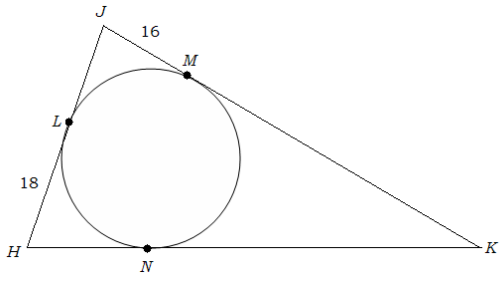
Ex:



Example #3: Find *x*. Assume that segments that appear tangent to circles are tangent.



Example #4: Triangle *HJK* is circumscribed about circle *G*. Find the perimeter of ΔHJK if $NK = JL + 29$.

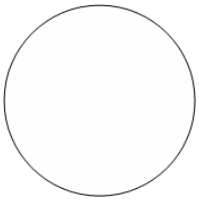


Section 10 – 6: Secants, Tangents, and Angle Measures

Notes

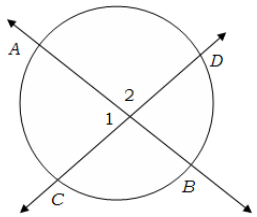
Secant – a line that intersects a circle in exactly _____ points

Ex:



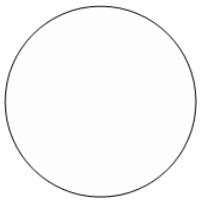
Theorem 10.12: (Secant-Secant Angle)

Ex:



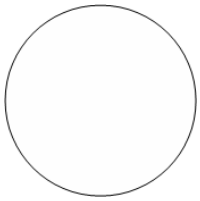
Theorem 10.13: (Secant-Tangent Angle)

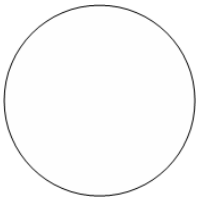
Ex:

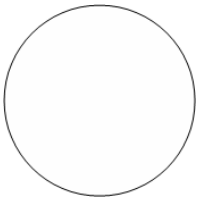


Theorem 10.14:

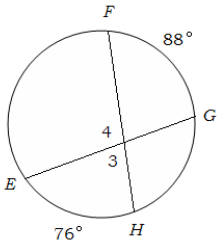
Two Secants	Secant-Tangent	Two Tangents



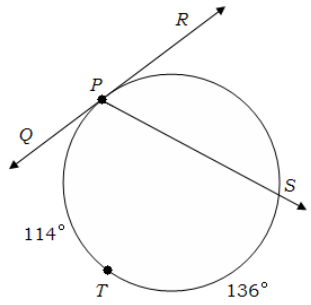




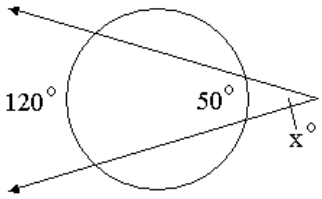
Example #1: Find $m\angle 3$ and $m\angle 4$ if $mFG = 88$ and $mEH = 76$.



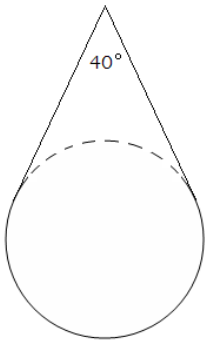
Example #2: Find $m\angle RPS$ if $mPT = 144$ and $mTS = 136$.



Example #3: Find x.



Example #4: Use the figure to find the measure of the bottom arc.



Example #5: Find x.