Geometry   Name_____
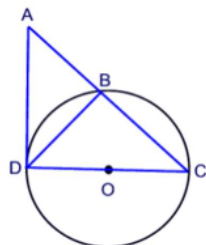
HW 13-9   Period_____   Date_____

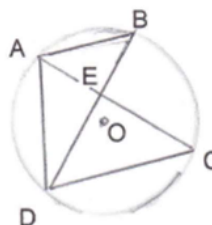1.

Given: tangent $\overline{AD}$

diameter $\overline{CD}$

secant $\overline{AC}$

Prove: $\triangle ADC \sim \triangle DBC$

Statement	Reason
	Given
$\angle C \cong \angle C$	Reflexive
$\overline{AD} \perp \overline{DC}$	Radius $\perp$ to tangent at point of tangency
$\angle ADC$ is a rt $\angle$	$\perp$ *lines* $\rightarrow$ *rt.*$\angle$*'s*
$\angle DBC$ is a rt $\angle$	Incribed $\angle$ in a semi-circle $\rightarrow$ rt. $\angle$
$\angle ADC \cong \angle DBC$	*rt.*$\angle$*'s* $\rightarrow \cong \angle$*'s*
$\triangle ADC \cong \triangle DBC$	AA~

2.   Given: Circle O, chords $\overline{AC}$ and $\overline{BD}$
         intersecting at E. Point C is
         the midpoint of arc $\overset{\frown}{BD}$.
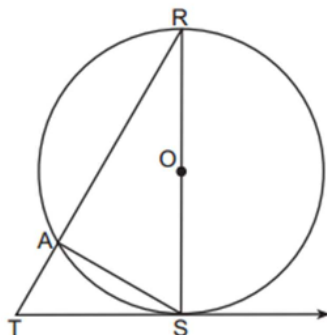   Chords $\overline{AD}$, $\overline{AB}$, and $\overline{DC}$.

Prove: $\triangle ACD \sim \triangle ABE$

Statement	Reason
1.	1. Given
2. $\overset{\frown}{BC} \cong \overset{\frown}{DC}$	2. Midpoint $\rightarrow \cong$ arcs
3. $\angle DAC \cong \angle BAE$	3. Inscribed $\angle$*'s* that intercept $\cong$ arcs $\rightarrow \cong \angle$*'s*
4. $\angle ACD \cong \angle ABE$	4. Inscribed $\angle$*'s* that intercept the same arc $\rightarrow \cong \angle$*'s*
5. $\triangle ACD \sim \triangle ABE$	5. AA~

$$(AN)^2 = AR \cdot AB$$

3.

In the diagram of circle O below, diameter $\overline{RS}$, chord $\overline{AS}$, tangent $\overrightarrow{TS}$, and secant $\overrightarrow{TAR}$ are drawn.

Complete the following proof to show $(RS)^2 = RA \cdot RT$

Statements	Reasons
1. circle O, diameter $\overline{RS}$, chord $\overline{AS}$, tangent $\overrightarrow{TS}$, and secant $\overrightarrow{TAR}$	1. Given
2. $\overline{RS} \perp \overrightarrow{TS}$	2. Radius $\perp$ to tangent at point of tangency
3. $\angle RST$ is a right angle	3. $\perp$ lines form right angles
4. $\angle RAS$ is a right angle	4. Incribed $\angle$ in a semi-circle $\rightarrow$ rt. $\angle$
5. $\angle RST \cong \angle RAS$	5. $rt.\angle's \rightarrow \cong \angle's$
6. $\angle R \cong \angle R$	6. Reflexive property
7. $\triangle RST \sim \triangle RAS$	7. AA~
8. $\dfrac{RS}{RA} = \dfrac{RT}{RS}$	8. Corresponding Sides of Similar Triangles are Proportional
9. $(RS)^2 = RA \cdot RT$	9. Product of Means = Product of Extremes

2

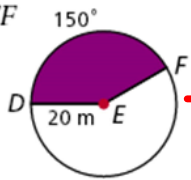Geometry   Name_____

HW 13-**5**   Period_____   Date_____

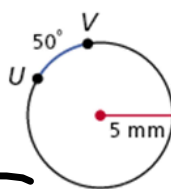Find the [area of each sector]. Give your answer in terms of π and rounded to the nearest hundredth.

12. sector DEF 150°

$$A = \frac{500\pi}{3} \; m^2$$

$$A = 523.60 \; m^2$$

$$\frac{m\degree}{360\degree} = \frac{A}{\pi r^2}$$

Find each [arc length]. Give your answer in terms of π and rounded to the nearest hundredth.

19. $\widehat{UV}$ 50°

$$L = \frac{25\pi}{18} \; mm$$

$$L = 4.36 \; mm$$

$$\frac{m\degree}{360\degree} = \frac{L}{2\pi r}$$

$$30\degree \cdot \frac{\pi}{180}$$

$$D \to R \cdot \frac{\pi}{180}$$

Convert the following to radians.

1. 30° $\dfrac{\pi}{6}$

2. -45° $-\dfrac{\pi}{4}$

3. 180° π

4. - 135° $-\dfrac{3\pi}{4}$

5. 85° $\dfrac{17\pi}{36}$ $\dfrac{\pi}{180}$

$$4. \; \frac{-135\degree}{1} \cdot \frac{\pi}{180} =$$

Convert the following radians to degrees.

6. $\dfrac{5\pi}{3}$ $300°$

$$\frac{5\pi}{3} \cdot \frac{180}{\pi}$$

7. $\dfrac{7\pi}{4}$ $315°$

8. $\dfrac{9\pi}{6}$ $270°$

9. $\dfrac{2\pi}{5}$ $72°$

10. 4.2 $240.6°$

$$4.2 \cdot \frac{180}{\pi}$$

Take Home Quiz due

Rip out HW 13-4 and Turn it in with the QUIZ

Warm-up: August 2017 #23

June 2016 #29

$r = 16$

23 In a circle with a diameter of 32, the area of a sector is $\frac{512\pi}{3}$. The measure of the angle of the sector, in radians, is

(1) $\frac{\pi}{3}$ (3) $\frac{16\pi}{3}$
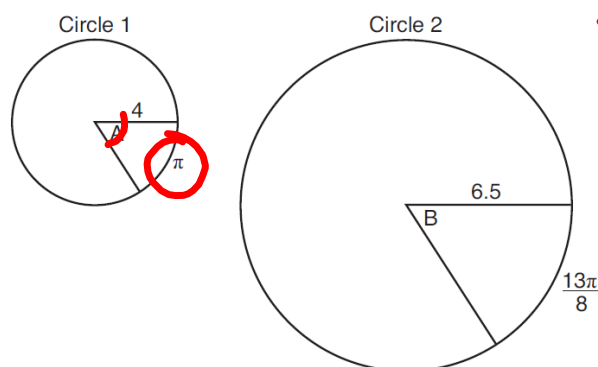
(2) $\frac{4\pi}{3}$ (4) $\frac{64\pi}{3}$

$$\frac{m^\circ}{360^\circ} = \frac{A.}{\pi r^2}$$

$$\frac{256\pi m}{256\pi} = \frac{1,440\pi}{256\pi} \qquad \frac{m}{360} = \frac{\frac{512\pi}{3}}{256\pi}$$

$$m = 240^\circ \cdot \frac{\pi}{1 \quad 180} = \frac{240\pi}{180} = \frac{4\pi}{3}$$

29 In the diagram below, Circle 1 has radius 4, while Circle 2 has radius 6.5. Angle *A* intercepts an arc of length π, and angle *B* intercepts an arc of length $\frac{13\pi}{8}$.

Circle 1

Circle 2

4

A

π

6.5

B

$\frac{13\pi}{8}$

$$\frac{m°}{360°} = \frac{L}{2\pi r}$$

Dominic thinks that angles *A* and *B* have the same radian measure. State whether Dominic is correct or not. Explain why.

Circle 1:

$$\frac{m°}{360°} = \frac{\pi}{2\pi(4)}$$

$$\frac{8\pi m}{8\pi} = \frac{360\pi}{8\pi}$$

$$m = 45° \cdot \frac{\pi}{180}$$

$$A \Rightarrow \frac{\pi}{4} \text{ rad}$$
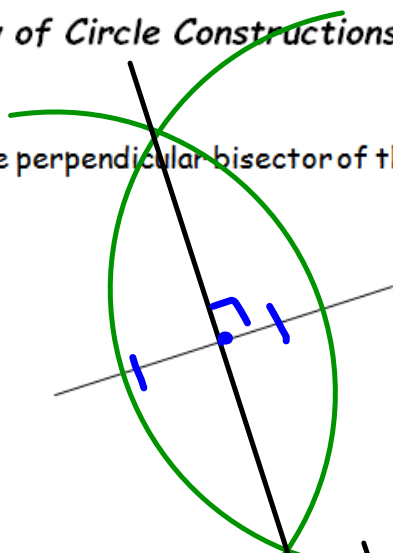
Circle 2:

$$\frac{m°}{360°} = \frac{\frac{13\pi}{8}}{2\pi(6.5)}$$

$$\frac{13\pi m}{13\pi} = \frac{585\pi}{13\pi}$$

$$m = 45 \cdot \frac{\pi}{180}$$
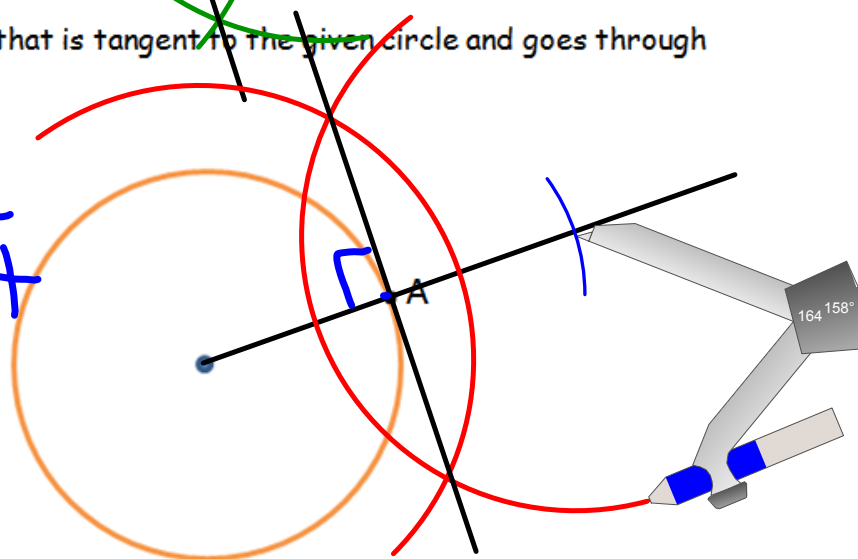
$$B \Rightarrow \frac{\pi}{4} \text{ rad}$$

Class Notes 9: **Review of Circle Constructions**

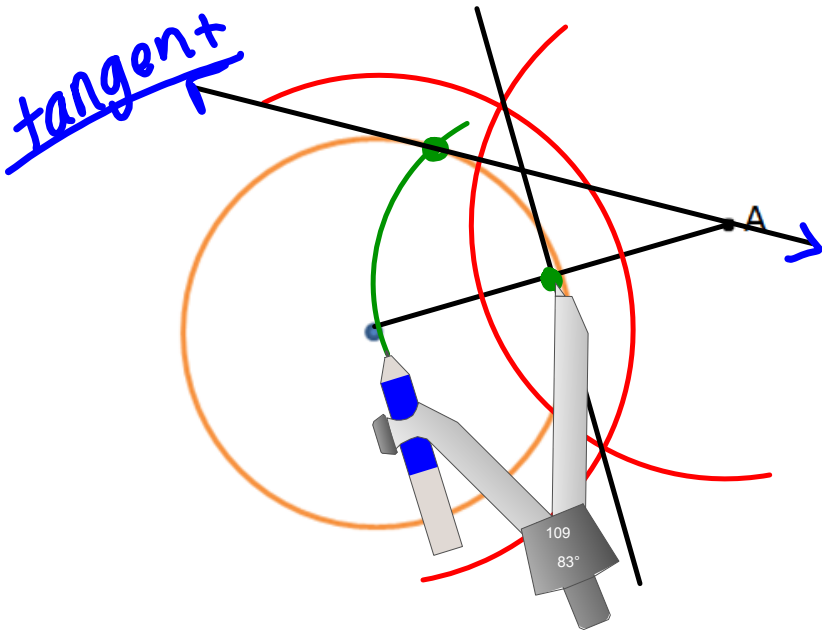Review: Construct the perpendicular bisector of the following segment.

Example: Construct a line that is tangent to the given circle and goes through point A.
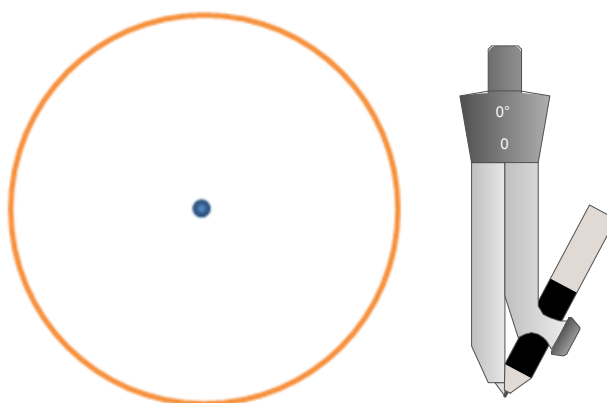
radius ⊥
tangent

A

Practice:

tangent

A

109
83°

Construct an equilateral triangle inscribed in the circle below:

Construct a regular hexagon in the circle below: