Good afternoon: no warm up, check hw solutions now; we will continue with radians discussion then start chords lesson when bell rings

5) $\dfrac{17\pi}{6}$ in

6) 9π ft

7) $\dfrac{25\pi}{4}$ m

8) $\dfrac{70\pi}{3}$ cm

13) $\dfrac{81\pi}{2}$ in²

14) 25π m²

15) $\dfrac{243\pi}{8}$ m²

16) $\dfrac{27\pi}{8}$ yd²

reminders:
tutoring tomorrow 4-5p
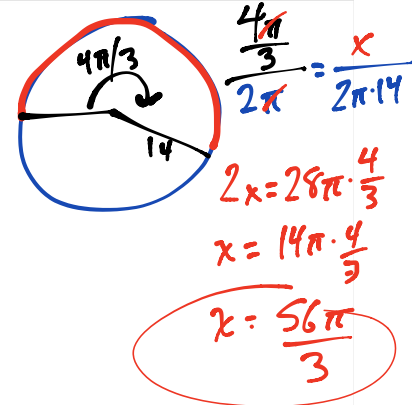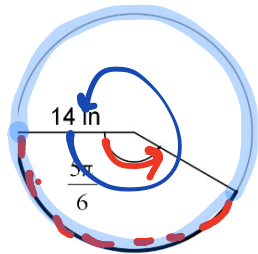retakes available in ds
next assess: Thurs/Fri

Radian/Degree Conversions: Use $180° = \pi$

Arc length and Sector Area:
Replace $360°$ with 2π!

2.

$$\frac{\frac{4\pi}{3}}{2\pi} = \frac{x}{2\pi \cdot 14}$$

$$2x = 28\pi \cdot \frac{4}{3}$$

$$x = 14\pi \cdot \frac{4}{3}$$

$$\boxed{x = \frac{56\pi}{3}}$$

1.

14 in

$\frac{5\pi}{6}$

$$\frac{\frac{5\pi}{6}}{2\pi} \diagtimes \frac{x}{2\pi(14)} \leftarrow \text{circumference}$$

$$\frac{2x}{2} = \frac{2\pi \cdot 14 \cdot \frac{5}{6}}{2}$$

$$\text{shortcut!} \rightarrow x = 14 \cdot \frac{5\pi}{6} = \frac{70}{6}\pi$$

$$\boxed{= \frac{35\pi}{3}}$$

Arc Length: $\theta \cdot r$

angle in radians $\times$ radius

The windshield wiper of a car rotates through an angle of measure $\frac{5\pi}{6}$ radians, as shown.
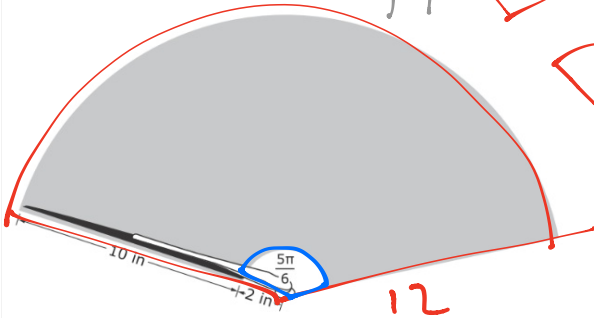
grey $= \bigcirc - \triangledown$

$\bigcirc = \dfrac{5\pi/6}{2\pi} = \dfrac{x}{\pi(12)^2}$ ← Area, not Circumference

$2x = 144 \cdot \dfrac{5}{6}\pi$

$2x = 120\pi$

$x = 60\pi$

The shaded section of the diagram represents the area cleared by the 10-inch blade of the windshield wiper as it moves from one side to the other. Approximately what is the area cleared by the blade of the windshield wiper?

A. 125 in²
B. 183 in²
C. 367 in²
D. 790 in²

$\triangledown = \dfrac{5\pi/6}{2\pi} = \dfrac{x}{\pi \cdot 2^2}$

$2x = 4\pi \cdot \dfrac{5}{6}$

$x = 2\pi \cdot \dfrac{5}{6}$

$x = \dfrac{5\pi}{3}$

$60\pi - \dfrac{5\pi}{3}$

$\approx 183 \rightarrow \boxed{B}$

Useful angles to know:

$180/6$ $\quad$ 30° $\xrightarrow{\quad}$ $\pi/6$ $\qquad\qquad$ 180° $\quad\pi$

$180/4$ $\quad$ 45° $\quad\pi/4$

$\qquad\qquad\qquad\qquad$ 270° $\quad\dfrac{3\pi}{2}$ $\qquad$ $90+180°$

$180/3$ $\quad$ 60° $\quad\pi/3$

$\qquad\qquad\qquad\qquad$ 360° $\quad 2\pi$

$180/2$ $\quad$ 90° $\quad\pi/2$

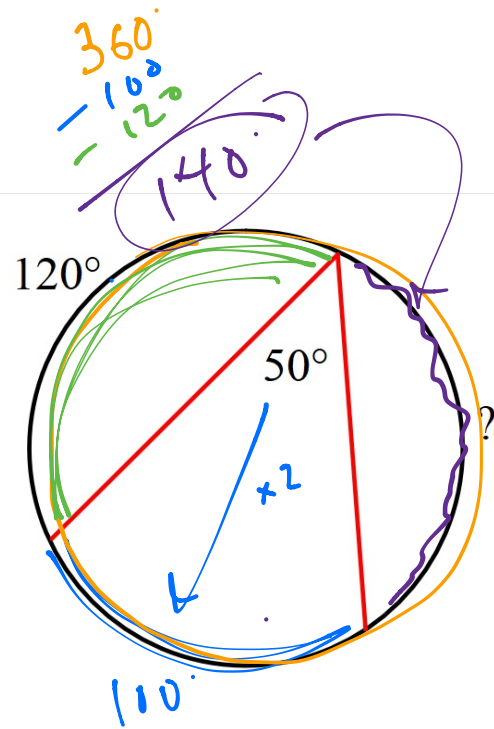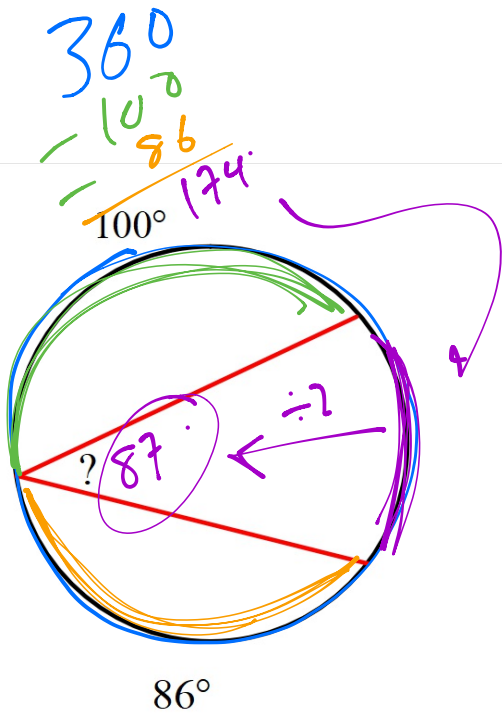# Chords and Arcs
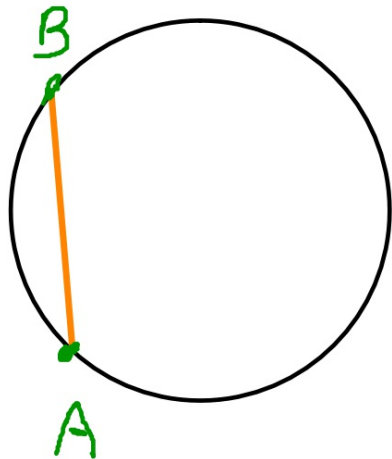
chord: a line segment with endpoints on circle

(diameter is the longest chord)

θ

Central Angle

Intercepted Arc

Inscribed Angle

Also inscribed Angle

also: Inscribed Angle

$\frac{1}{2}\theta$

θ radius

$\frac{1}{2}\theta$

$\frac{1}{2}\theta$
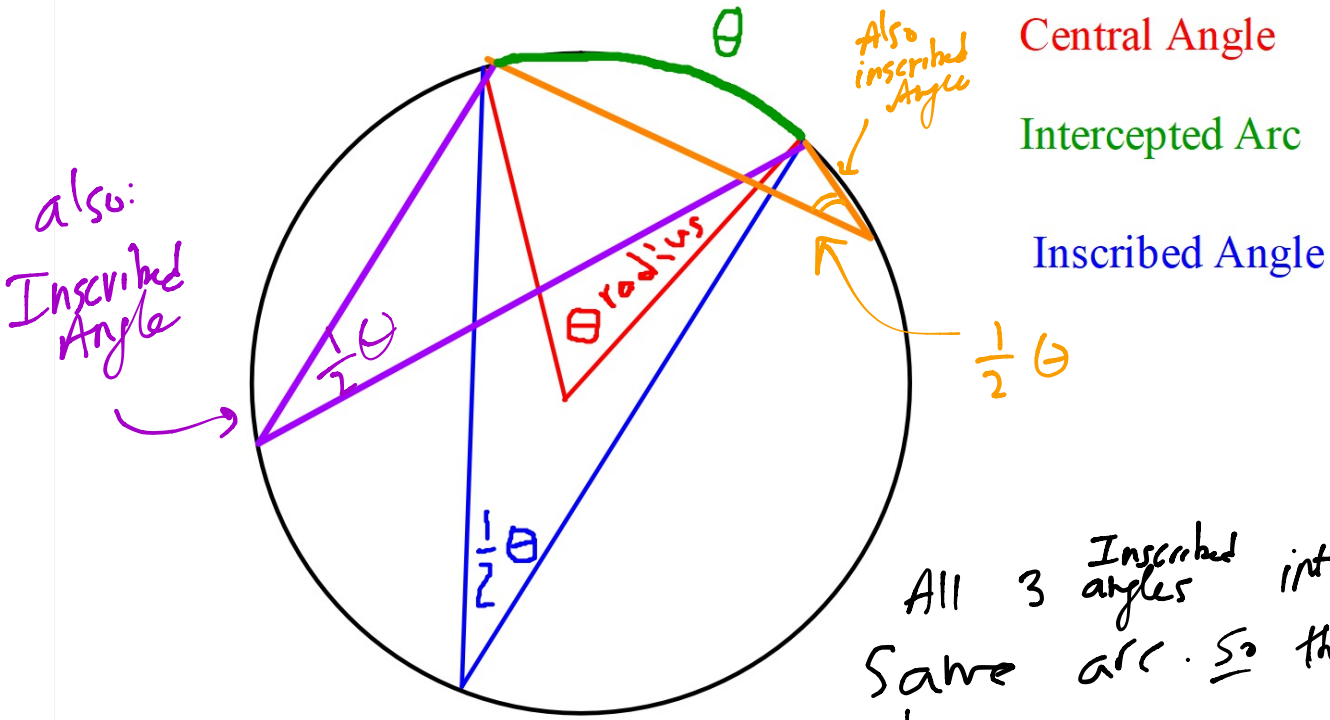
All 3 Inscribed angles intercept the same arc. So they are all $\frac{1}{2}$ of the same arc, so they're all $=$ to each other.

360
- 10
86
100° 174

360
- 10
12
140

100°

? 87   ÷2

86°

120°

50°

×2

110

?

HW:
#1-4, 9-12 on arc length, sector area handout
next assess: Thursday!
study formulas

66 °

103 °

64 °

?

x2

x2

206°

132°

68°

206°
- 68
138°