

## CODE RED – DO NOW

Complete Problems #1-3

1. What is the **AREA** and **Circumference** of a circle with a diameter of 12 inches.  $r = 6$

$A = 36\pi \text{ in}^2$        $C = 12\pi \text{ in}$

2. What is the  $m\widehat{CD}$ ?

$139^\circ$

$$\begin{array}{r} 180 \\ - 41 \\ \hline 139^\circ \end{array}$$

3. If  $\overline{CZ} = 8 \text{ in.}$  what is the length of

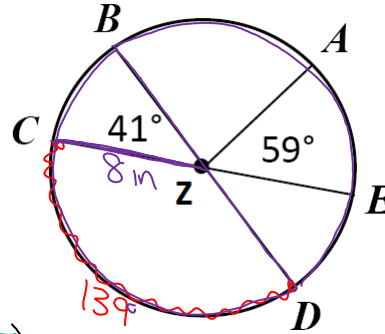
arc  $\widehat{CD}$ ?

$$\frac{\text{arc measure}}{360} = \frac{\text{arc length}}{\text{circumference}}$$

$19.4 \text{ in}$

$$\frac{139}{360} \times \frac{x}{16\pi}$$

$$\frac{360x}{360} = \frac{139 \times 16\pi}{360}$$



# Angles in Circles

SOL G.11

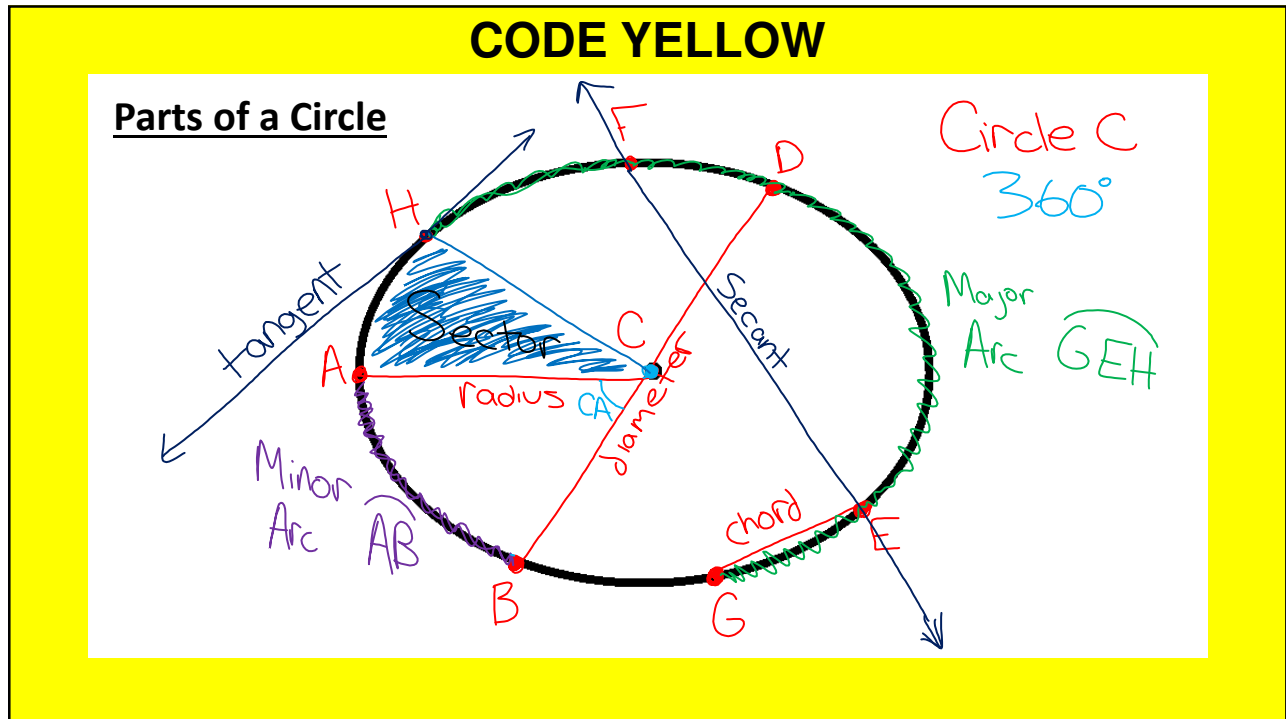
**Learning Target:** By the end of class today, I will be able to find the measures of angles inscribed inside, on and outside of a circle, by taking notes and doing practice problems as a class before scoring at least 75% on an exit ticket, answering at least 3 out of 4 questions correctly.

**Essential Questions:**

- How can line segments form angles both inside and outside of circles?
- How can intercepted arcs be used to show a relationship among angles, line segments and lines?

## Today's Agenda

- ✓ DO NOW
- ✓ Parts of a Circle
- ✓ Inscribed Angles
- ✓ Overlapping Arcs
- ✓ Exit Ticket

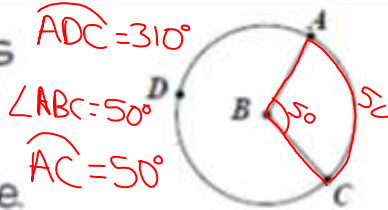


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### CENTRAL ANGLES

$$\begin{array}{r} 360 \\ -50 \\ \hline 310 \end{array}$$

A central angle is an angle with a vertex on the center of a circle.

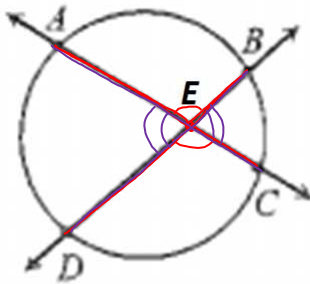


The sum of all central angles in a circle is 360°.

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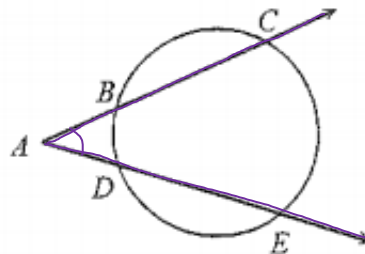
There are 3 other places where angles can be formed:

**Inside**



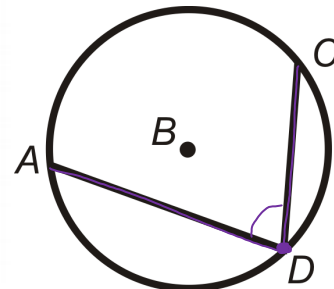
$$\begin{array}{l} \angle AEB \cong \angle DEC \\ \angle BEC \cong \angle AED \end{array}$$

**Outside**



$$\angle A$$

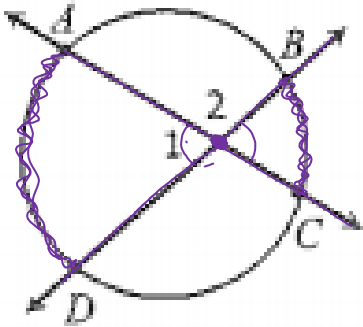
**On**



$$\angle D$$

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### Interior Intersections

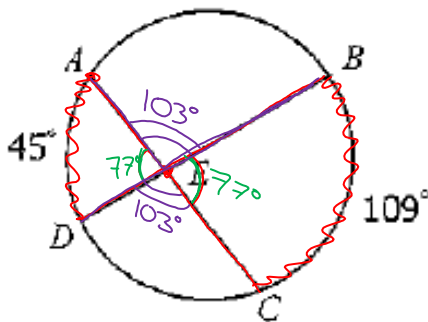


$$\text{Inside Angle} = \frac{\text{ARC} + \text{arc}}{2}$$

$$m\angle 1 = \frac{\widehat{AD} + \widehat{BC}}{2}$$

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### Interior Intersections



Find  $m\angle AED$ .

$$\angle AED = \frac{\text{ARC} + \text{arc}}{2}$$

$$\angle AED = \frac{109 + 45}{2}$$

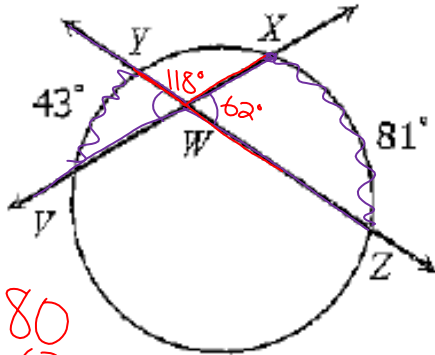
$$\angle AED = 77^\circ$$

What is  $m\angle BEC$ ? 77°

What is  $m\angle AEB$ ? 103°

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#### Interior Intersections



$$\begin{array}{r} 180 \\ - 62 \\ \hline 118 \end{array}$$

Find  $m\angle XWZ$ ?

$$\angle XWZ = \frac{\text{ARC} + \text{arc}}{2}$$

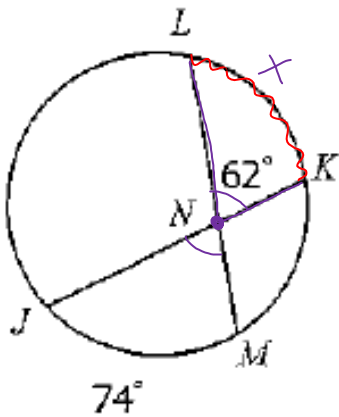
$$\angle XWZ = \frac{81 + 43}{2}$$

$$\angle XWZ = 62^\circ$$

What is  $m\angle YWX$ ? 118°

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#### Interior Intersections



Find  $m\widehat{LK}$ .

$$\angle = \frac{\text{ARC} + \text{arc}}{2}$$

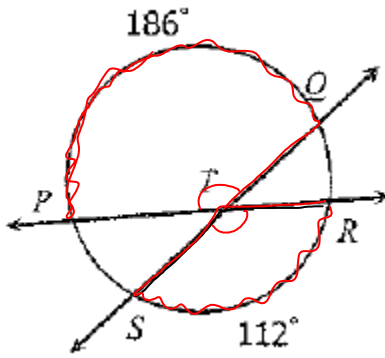
$$(2) 62 = \frac{74 + x}{2} \quad (\text{2})$$

$$\begin{array}{r} 124 = 74 + x \\ - 74 \quad - 74 \\ \hline 50^\circ = x \end{array}$$

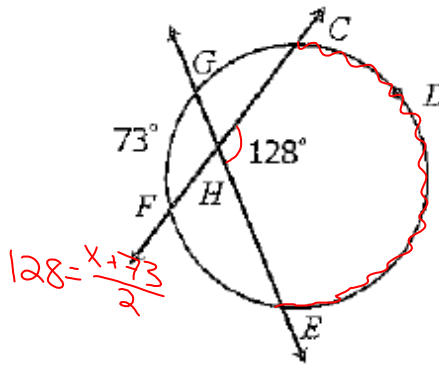
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### Interior Intersections

Find  $m\angle STR = 149^\circ$

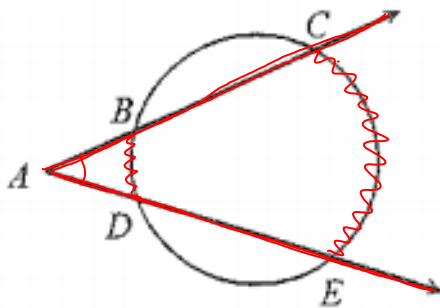


Find  $m\widehat{CDE} = 183^\circ$



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### Exterior Intersections

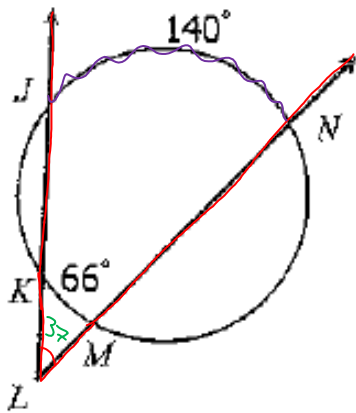


$$\text{Outside Angle} = \frac{\text{ARC} - \text{arc}}{2}$$

$$m\angle A = \frac{\widehat{CE} - \widehat{BD}}{2}$$

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### Exterior Intersections



Find  $m\angle KLM$ .

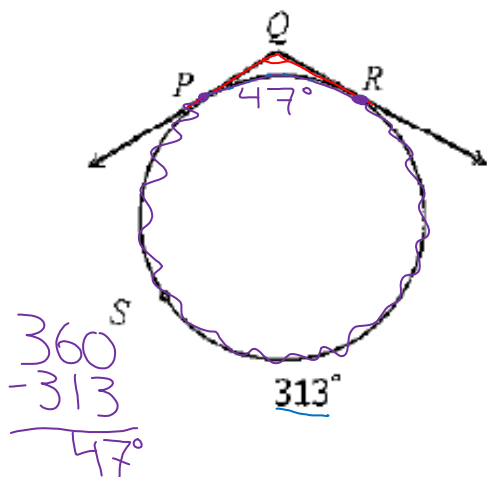
$$\angle KLM = \frac{\text{ARC} - \text{arc}}{2}$$

$$\angle KLM = \frac{140 - 66}{2}$$

$$\angle KLM = \frac{74}{2} = 37^\circ$$

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### Exterior Intersections



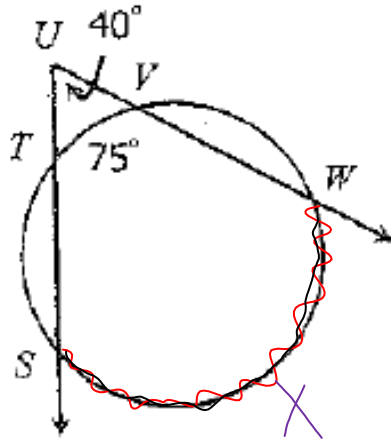
Find  $m\angle PQR$ .

$$\angle PQR = \frac{313 - 47}{2}$$

$$\angle PQR = \frac{266}{2} = 133^\circ$$

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### Exterior Intersections



Find  $m\widehat{WS}$ .

$$\angle = \frac{\text{ARC} - \text{arc}}{2}$$

$$(2) 40 = \frac{X - 75}{2} \quad (\cancel{2})$$

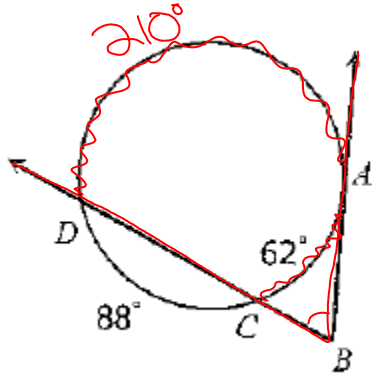
$$80 = X - 75$$

$$\begin{array}{r} +75 \\ \hline 155^\circ = X \end{array}$$

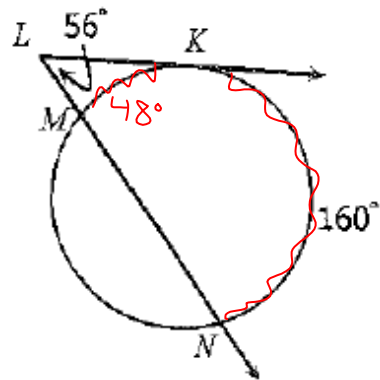
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### Interior Intersections

Find  $m\angle ABC = 74^\circ$



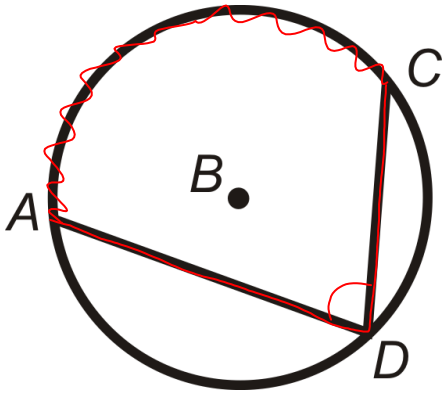
Find  $m\widehat{MK} = 48^\circ$





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### On-the-Circle Intersections

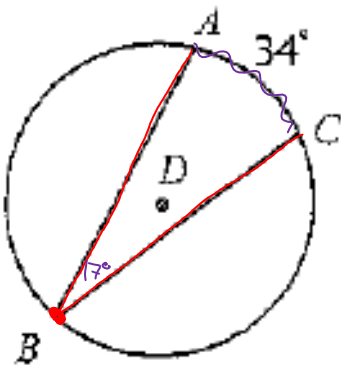


$$\text{Angle on-the-circle} = \frac{\text{Arc}}{2}$$

$$m\angle ADC = \frac{\widehat{AC}}{2}$$

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### On-the-Circle Intersections



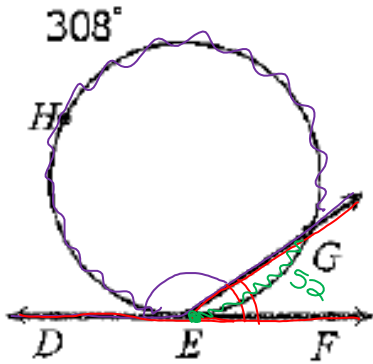
Find  $m\angle ABC$ .

$$\angle ABC = \frac{\text{arc}}{2}$$

$$\angle ABC = \frac{34}{2} = 17^\circ$$

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#### On-the-Circle Intersections



Find  $m\angle DEG$ .

$$\angle DEG = \frac{308}{2} = 154^\circ$$

$$\begin{array}{r} 180 \\ -154 \\ \hline \end{array}$$

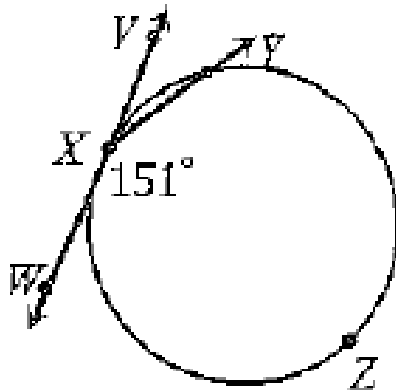
Find  $m\angle FEG$ .

$$26^\circ$$

$$\widehat{GE} = 52^\circ$$

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#### On-the-Circle Intersections



Find  $m\widehat{XY}$ .

$$\begin{array}{r} 180 \\ -151 \\ \hline 29^\circ = \angle VXY \end{array}$$

$$29 \times 2 = 58^\circ$$

Find  $m\widehat{XZY}$ .

$$151 \times 2 = 302^\circ$$

**CODE RED – EXIT TICKET**

**Write a paragraph (3-5 sentences) summarizing what you learned in this lesson.**

Complete your EXIT TICKET silently and independently at your seat. Remember to do your best and TRY every problem.

When you are finished, raise your hand and Coach Riddick will come around to collect it.