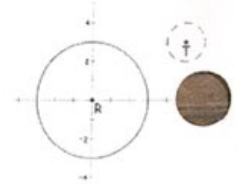


Warm Up: Show that the circles are similar by describing the transformations that map $\odot R$ onto $\odot T$. State the scale factor.

Right 5, up 3.
Scale factor $\frac{1}{3}$



Vocabulary

Center of Circle – Point in the center

Chord – Line segment whose endpoints lie on the perimeter of the circle

Diameter – A chord that goes through the center

Radius – Line segment from center to perimeter (half of the diameter)

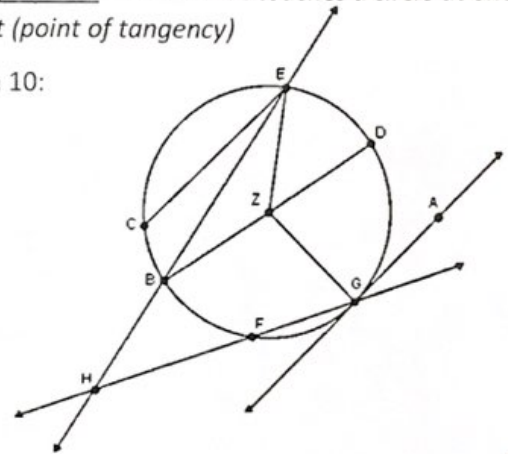
Major Arc – Arc measure is $> 180^\circ$

Minor Arc – Arc measure is $< 180^\circ$

Secant Line – A line that goes through a circle

Tangent Line – A line that touches a circle at one point (point of tangency)

Example Set 1: Use the figure below to answer questions 1 through 10:



1) What is the name of the circle? $\odot Z$	
2) What is the name of each radius of the circle shown in the figure? $\overline{EZ}, \overline{DZ}, \overline{CZ}, \overline{BZ}$	
3) What is the name of each secant line of the circle shown in the figure? $\overline{EH}, \overline{GH}$	
4) What is the name of each chord of the circle shown in the figure? $\overline{BE}, \overline{CE}, \overline{BD}, \overline{FG}$	
5) What is the name of each diameter of the circle shown in the figure? \overline{BD}	6) What is the name of each tangent line of the circle shown in the figure? \overline{AG}
7) List each vocabulary term that \overline{ZG} is an example of. radius	8) List each vocabulary term that \overline{DB} is an example of. Diameter, chord
9) List each vocabulary term of the following: \widehat{CE} : chord \widehat{CGE} : major arc	10) List each vocabulary term that \overline{BH} is an example of. secant line

Example Set 2: Three Types of Angles in a Circle we will study.

Central Angle:
Central Angle = Intercepted Arc
 $m\angle BAC = m\widehat{BC}$

Fill in the measure of each angle and arc given \overline{DB} is a diameter.

Inscribed Angle:
Inscribed Angle = $\frac{1}{2}$ Intercepted Arc
 $2(\text{Inscribed Angle}) = \text{Intercepted Arc}$
 $2(m\angle CBD) = m\widehat{DC}$

Fill in the measure of each angle and arc given \overline{DB} is a diameter.

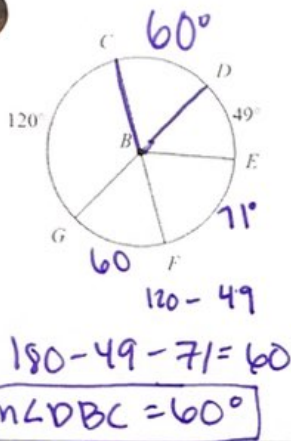
Circumscribed Angle:
Circumscribed Angles are supplementary to the central angle that intercepts the same arc
 $m\angle A + m\angle B = 180^\circ$

Find the measure of $\angle B$.

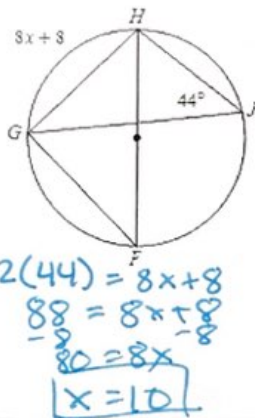
* a quadrilateral that is inscribed, opposite \angle 's are Supplementary

Guided Practice:

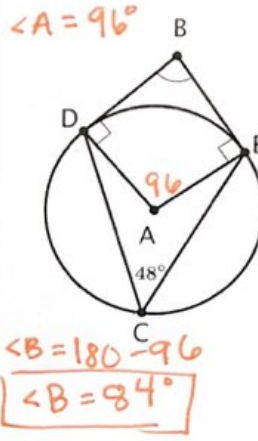
Type of Angle: central
Find the $m\angle DBC$:



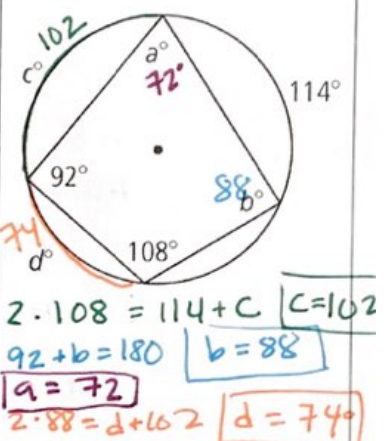
Type of Angle: Inscribed
Solve for x:



Type of Angle: circumscribed
Find the measure of $\angle B$.



Challenge Question:
Find the values of a, b, c, & d:



Arc Length & Area of a Sector

Area
 $A = \pi r^2$

Circumference
 $C = 2\pi r$

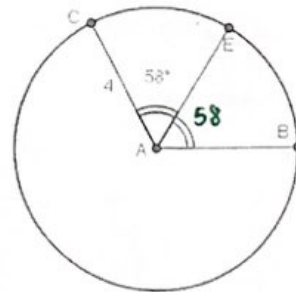
Area of a Sector
 $A.S. = \pi r^2 \cdot \frac{\theta^\circ}{360^\circ}$

Arc Length
 $A.L. = 2\pi r \cdot \frac{\theta^\circ}{360^\circ}$

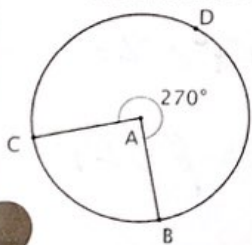
Guided Practice:

Find the following:

- Area of $\odot A =$
 $A = \pi (4)^2$ $A = 16\pi \text{ units}^2$
- Circumference of $\odot A =$
 $C = 2\pi (4) = 4\pi \text{ units}$
- Length of $\widehat{BEC} =$
 $= 2\pi (4) \cdot \frac{116}{360} = \frac{464}{15} \pi \text{ units}$
- Area of Sector $BEC =$
 $= \pi (4)^2 \cdot \frac{116}{360} = \frac{232}{45} \pi \text{ units}^2$



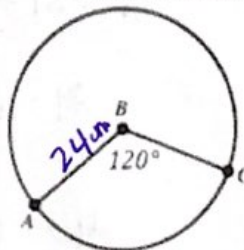
5) The area of the sector CAB is $25\pi \text{ ft}^2$. What is the circumference of the circle? *change to CAB*



$25\pi = \pi r^2 \cdot \frac{90}{360}$
 $9000\pi = \pi r^2 \cdot 90$
 $1000\pi = \pi r^2$
 $100 = r^2$
 $r = 10$

$C = 2\pi \cdot 10$
 $C = 20\pi \text{ ft}$

6) The arc length of \widehat{AC} measures $16\pi \text{ cm}$. What is the area of the circle?



$2\pi r \cdot \frac{120}{360} = 16\pi$
 $\frac{240\pi r}{240} = \frac{5760\pi}{240}$
 $\pi r = 24\pi$
 $r = 24$

$A = \pi 24^2 = 576\pi \text{ cm}^2$