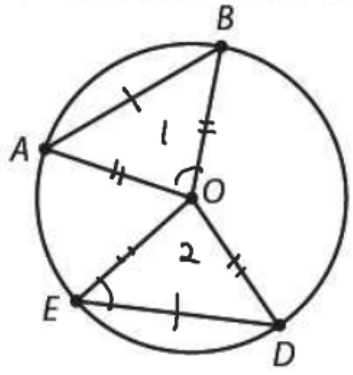
Name:_____ Block:_____

PRACTICE QUIZ: UNIT 6 LESSON 1 – CIRCLES

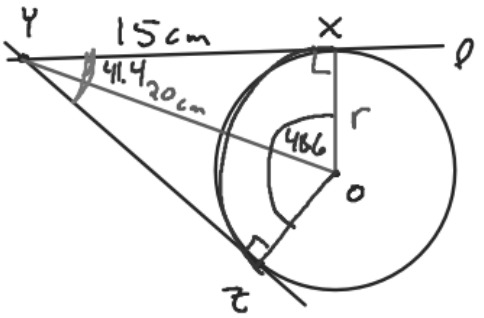
1. In the circle with center O below, $\overline{AB} \cong \overline{ED}$. Prove that $\angle BAO \cong \angle DEO$.



Statements	Reason
1) $\overline{AB} \cong \overline{EO}$	1) Given
2) $\overline{AO} \cong \overline{BO} \cong \overline{EO} \cong \overline{DO}$	2) All rad: of a circle are $\cong$.
3) $\triangle AOB \cong \triangle EOD$	3) SSS
4) $\angle BOA \cong \angle DEO$	4) CPCTC

2. Line ℓ is tangent to a circle with center O at point X. In addition, point Y is on ℓ, $\overline{YZ}$ is tangent to the circle at point Z, $XY = 15$ cm, and $YO = 20$ cm.

a. Sketch and label a diagram that matches the above description.



b. Determine the radius of the circle. Show your work.

$15^2 + r^2 = 20^2$

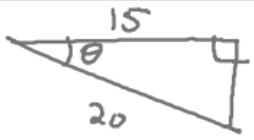
$225 + r^2 = 400$

$r^2 = 175$

$r = \sqrt{175}$

≈ 13.22 cm

c. Determine the measure of $\angle XYZ$. Show your work.



$\cos\theta = \frac{15}{20}$

$\cos^{-1}\left(\frac{15}{20}\right) = \theta$

$\theta = 41.4°$

$(41.4) \cdot 2$

$82.8°$

d. Determine measure of XZ. Explain.

$m\angle XOY = 48.6°$

$m\angle XOZ = 2m\angle XOY$

$m\angle XOZ = 2(48.6)$

$= 97.2$

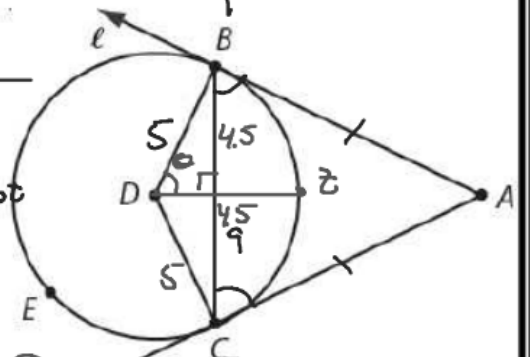
$m\overset{\frown}{XZ} = 97.2°$

3) $\angle ABC \cong \angle ACB$ | 3) Base angles of isos. $\triangle$ are $\cong$.

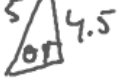
3. In the diagram right, lines ℓ and m are tangent to the circle with center D at points B and C, respectively.

a. Prove that $\angle ABC \cong \angle ACB$.

Statement	Reason
1) ℓ and m are tangents	1) Given
2) $\overline{AB} \cong \overline{AC}$	2) Tangents from same external pt are $\cong$.



b. If $BD = 5$ inches and $BC = 9$ inches, find $m\overset{\frown}{BEC}$.



$\sin\theta = \frac{4.5}{5}$

$\sin^{-1}\left(\frac{4.5}{5}\right) = \theta$

$\theta = 64.2^\circ$

$m\angle BDC = 128.4^\circ$

$m\overset{\frown}{BC} = 128.4$

$m\overset{\frown}{BEC} = 360 - m\overset{\frown}{BC}$

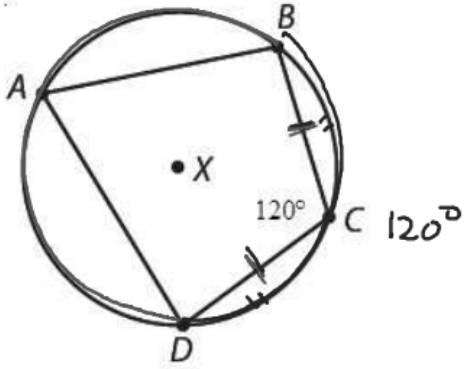
$360 - 128.4 = 231.6^\circ$

c. Draw an angle in the diagram above so that the measure of your angle is half the measure of $\angle BDC$.

$\overline{DZ}$ Bisects angle CBDC

4. Find the measure of each indicated segment or the measure of each indicated angle.

a. Points A, B, C, and D are on a circle with center X.



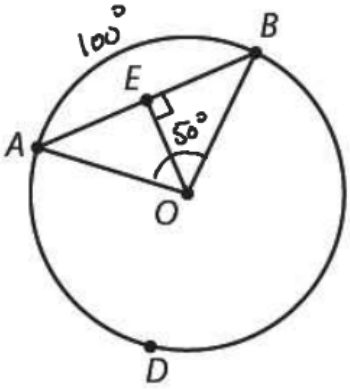
i. $m\overset{\frown}{BAD} = 240^\circ$

ii. $m\overset{\frown}{CD}$ $360 - 240$

120

60°

b. Points A, B, and D are on a circle with center O. Additionally, E is the midpoint of $\overline{AB}$ and $m\overset{\frown}{AB} = 100^\circ$.

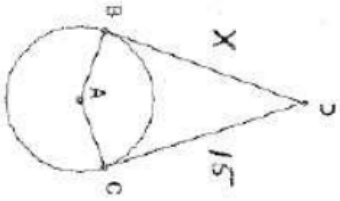


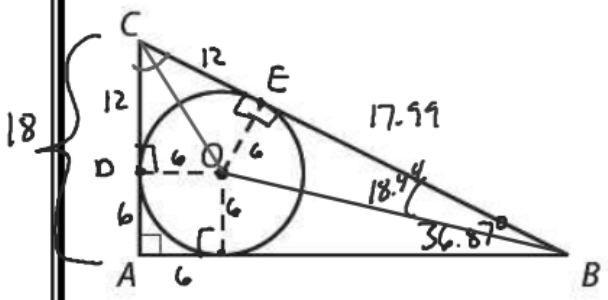
i. $m\overset{\frown}{BDA} = 260^\circ$

ii. $m\angle OBE = 40^\circ$

5. $\overline{BD}$ is tangent to circle A at B and $\overline{CD}$ is tangent to circle A at C. Find the value of x.

$X = 15$





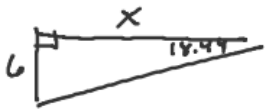
6. Each side of right $\triangle ABC$ is tangent to the circle with center O. The radius of the circle is 6 inches and the length AC is 18 inches. Find each of the following. Show your work or explain your reasoning.

a. $m\angle C = 53.13^\circ$

b. $m\angle B = 36.87^\circ$

$180 - 90 - 53.13$

c. $\overline{BC}$



$\tan 18.44 = \frac{6}{X}$

$X \tan 18.44 = 6$

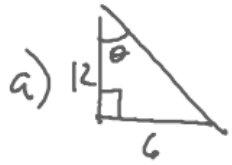
$X = \frac{6}{\tan 18.44}$

$X = 17.99$

$BC = 17.99 + 12$

$= 29.99 \approx 30$ inches

a)



$\tan\theta = \frac{6}{12}$

$\tan^{-1}\left(\frac{6}{12}\right) = \theta$

$\theta = 26.57$

$m\angle C = 2\theta$

$= 2(25.57)$

$= 53.13$