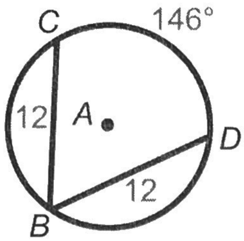
Find the value of the indicated arc in ⊙A.

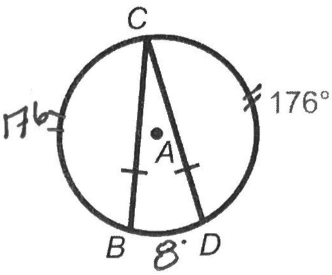
1. $m\widehat{BC}$

$\boxed{107^\circ}$



$$\begin{array}{r} 360 \\ -146 \\ \hline 214 \\ \hline 2 \end{array}$$

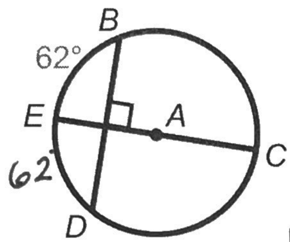
2. $m\widehat{BD}$



$$\begin{array}{r} 360 \\ -176 \\ -176 \\ \hline \boxed{8^\circ} \end{array}$$

3. $m\widehat{BC}$

$\boxed{118^\circ}$

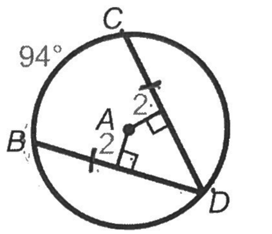


$$\begin{array}{r} 360 \\ -62 \\ -62 \\ \hline 236/2 = 118^\circ \end{array}$$

or

$180 - 62 = 118^\circ$

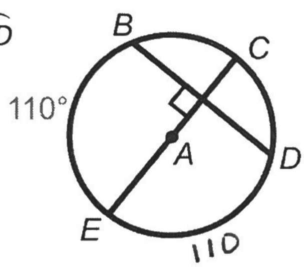
4. $m\widehat{BD}$



$$\begin{array}{r} 360 \\ -94 \\ \hline 266/2 \end{array} = \boxed{133^\circ}$$

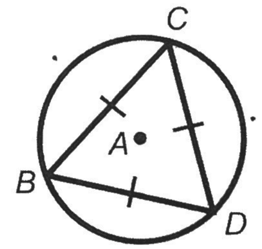
5. $m\widehat{BD}$

$\boxed{140^\circ}$



$$\begin{array}{r} 360 \\ -110 \\ -110 \\ \hline 140^\circ \end{array}$$

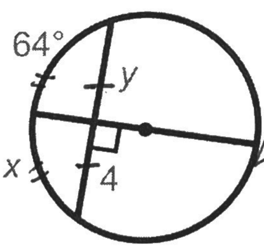
6. $m\widehat{BD}$



$\frac{360}{3} = \boxed{120^\circ}$

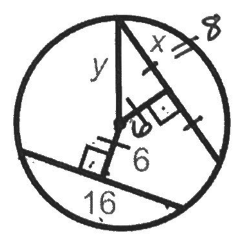
Find the value of *x* and/or *y*.

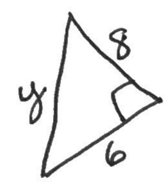
7.



$\boxed{\begin{array}{l} x = 64^\circ \\ y = 4 \end{array}}$

8.





$\boxed{x = 8}$

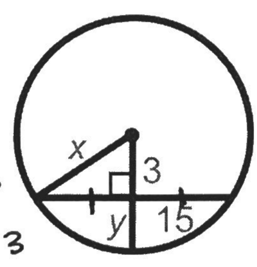
$6^2 + 8^2 = y^2$

$36 + 64 = y^2$

$100 = y^2$

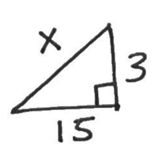
$\sqrt{100} = \boxed{10 = y}$

9.



$x = 15.3$

$$\begin{array}{r} y = 15.3 \\ -3 \\ \hline \boxed{12.3} \end{array}$$



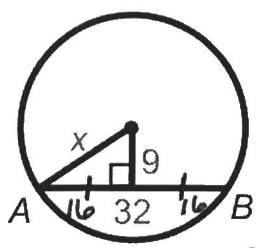
$3^2 + 15^2 = x^2$

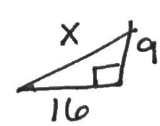
$234 = x^2$

$\boxed{15.3 = x}$

$y \begin{cases} \text{radius total} \\ - \text{Partial Radius} \end{cases}$

10. AB = 32



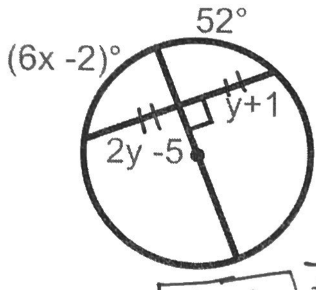


$9^2 + 16^2 = x^2$

$\sqrt{337} = \sqrt{x^2}$

$\boxed{x \approx 18.4}$

11.



$52 = 6\cancel{x} - 2$

$54 = 6x$

$\boxed{9 = x}$

$\cancel{y} + 1 = 2y - 5$

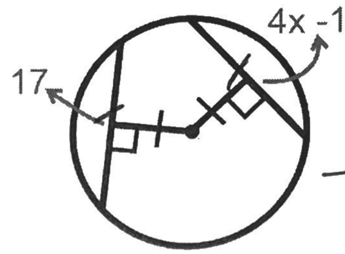
$-\cancel{y} \quad -y$

$1 = y - \cancel{5}$

$+5 \quad \cancel{+5}$

$\boxed{y = 6}$

12.



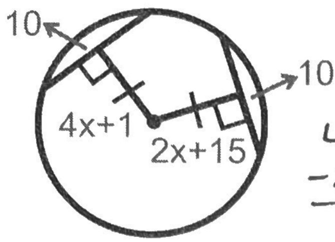
$17 = 4x - \cancel{1}$

$+1 \quad \cancel{+1}$

$18 = 4x$

$\boxed{x = 4.5}$

13.



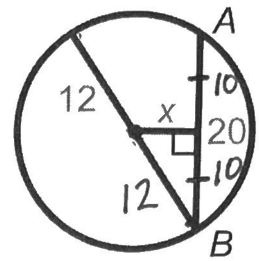
$4x + \cancel{1} = 2\cancel{x} + 15$

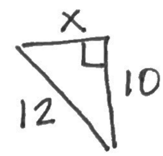
$-2x \quad -1$

$2x = 14$

$\boxed{x = 7}$

14.





$x^2 + 10^2 = 12^2$

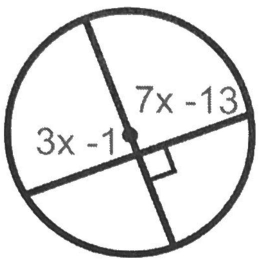
$x^2 + 1\cancel{00} = 144$

$-1\cancel{00} \quad -100$

$x^2 = 44$

$\boxed{x \approx 6.6}$

15.



$3\cancel{x} - 1 = 7x - 13$

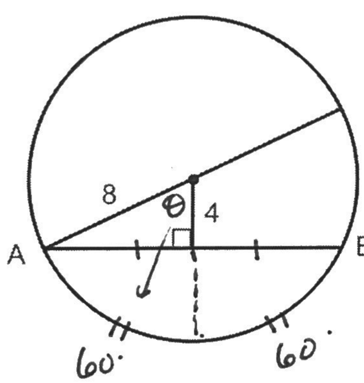
$+13 \quad -3x$

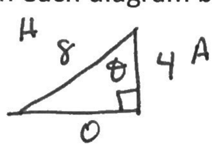
$\frac{12}{4} = \frac{4x}{4}$

$\boxed{x = 3}$

16. Find the measure of $\overset{\frown}{AB}$ in each diagram below.

a.



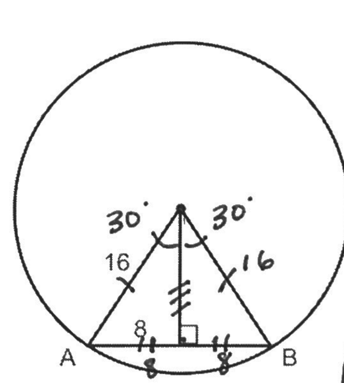


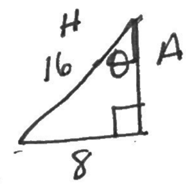
$\cos\theta = \frac{4}{8}$

$\theta = 60°$

$\boxed{120°}$

b.



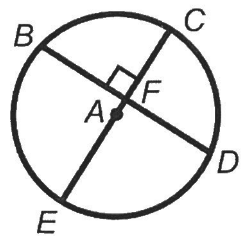


$\sin\theta = \frac{8}{16} = 30°$

$\boxed{m\overset{\frown}{AB} = 60°}$

In problems 17-19, what can you conclude about the picture? State a theorem that justifies your answer. You may assume that A is the center of the circle.

17.

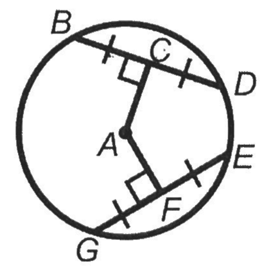


Diameter-chord Thm.

$\overline{CE}$ is ⊥ to chord $\overline{BD}$

therefore $\overline{BF} \cong \overline{FD}$

18.

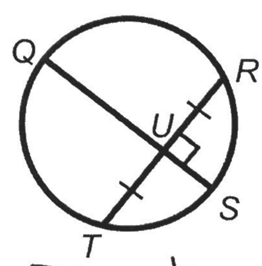


radius is a ⊥ bisector to a chord.

Equidistant Chord Theorem

$\overline{AC} \cong \overline{AF}$

19.



Diameter-Chord Theorem

$\overline{QS}$ is a diameter