arcs and angles
2(EA) = major − minor
2(VA) = arc + arc

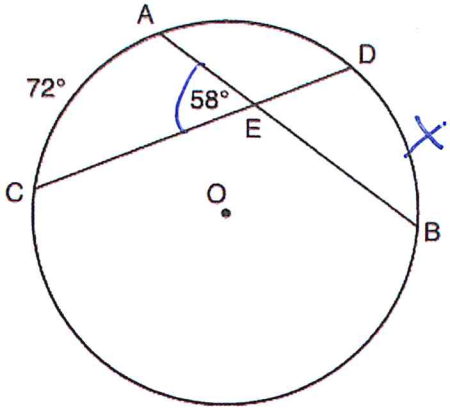
Segments
P·P = P·P
W·E = W·E

Name Schlansky
Mr. Schlansky

Date _____
Geometry

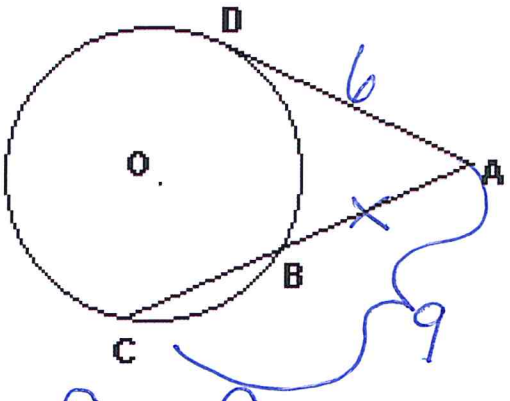
# *Circle Rules Practice*

1. In the diagram below of circle $O$, chords $\overline{AB}$ and $\overline{CD}$ intersect at $E$. If $m\overset{\frown}{AC} = 72°$ and $m\angle AEC = 58°$, how many degrees are in $m\overset{\frown}{DB}$?




2(VA) = arc + arc
2(58) = 72 + x
116 = 72 + x
−72 −72
44 = x
$\overset{\frown}{DB} = 44°$

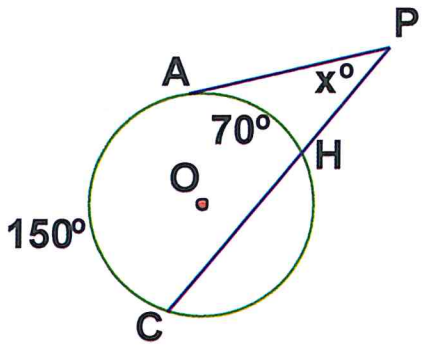
2. In the diagram, $\overline{AD}$ is tangent to circle $O$ at $D$, and $\overline{CBA}$ is a secant. If $AD = 6$ and $AC = 9$, what is $AB$?




W·E = W·E
6·6 = 9·x
$\frac{36}{9} = \frac{9x}{9}$
4 = x

$\overline{AB} = 4$

3. If $\overset{\frown}{AC} = 150°$, $\overset{\frown}{AH} = 70°$, find $m\angle APH$

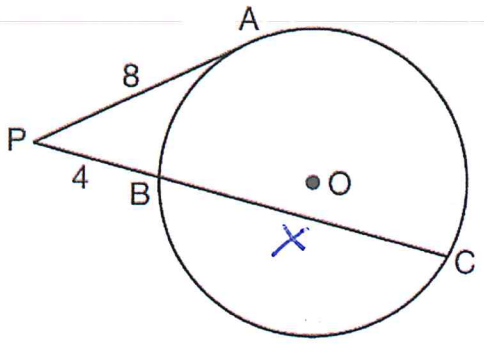



2(EA) = major − minor
2x = 150 − 70
$\frac{2x}{2} = \frac{80}{2}$
x = 40

$\angle APH = 40°$

4. In the diagram below of circle $O$, $\overline{PA}$ is tangent to circle $O$ at $A$, and $\overline{PBC}$ is a secant with points $B$ and $C$ on the circle.

If $PA = 8$ and $PB = 4$, what is the length of $\overline{BC}$?




$w \cdot e = w \cdot e$

$8 \cdot 8 = (x+4)4$

$64 = 4x + 16$

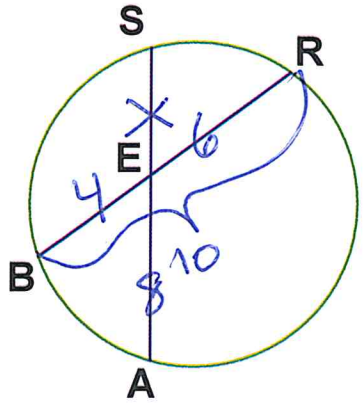
$-16 \quad -16$

$\frac{48}{4} = \frac{4x}{4}$

$12 = x$

$\overline{BC} = 12$

5. If $\overline{BR} = 10$, $\overline{BE} = 4$, $\overline{AE} = 8$, find $\overline{ES}$




$10 - 4 = 6$

$p \cdot p = p \cdot p$

$6 \cdot 4 = 8 \cdot x$

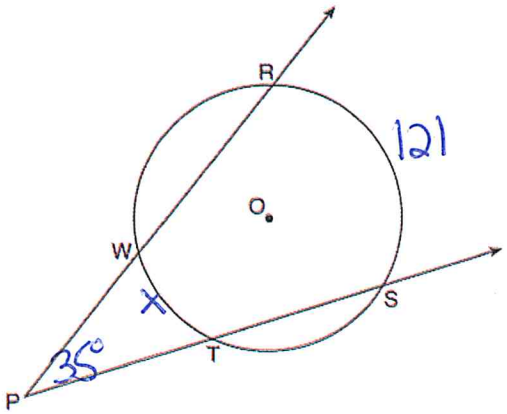
$\frac{24}{8} = \frac{8x}{8}$

$3 = x$

$\overline{ES} = 3$

6. As shown in the diagram below, secants $\overrightarrow{PWR}$ and $\overrightarrow{PTS}$ are drawn to circle $O$ from external point $P$.

If $m\angle RPS = 35°$ and $m\overset{\frown}{RS} = 121°$, determine and state $m\overset{\frown}{WT}$.




$2(EA) = \text{major} - \text{minor}$

$2(35) = 121 - x$

$70 = 121 - x$

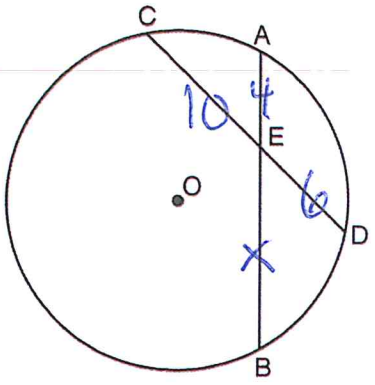
$-121 \quad -121$

$\frac{-51}{-1} = \frac{-x}{-1}$

$51 = x$

$\overset{\frown}{WT} = 51$

7. In the diagram below of circle $O$, chords $\overline{AB}$ and $\overline{CD}$ intersect at $E$.
If $CE = 10$, $ED = 6$, and $AE = 4$, what is the length of $\overline{EB}$?




$p \cdot p = p \cdot p$

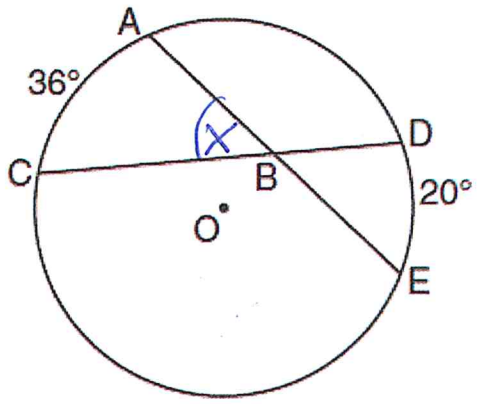
$10 \cdot 6 = 4 \cdot x$

$\frac{60}{4} = \frac{4x}{4}$

$15 = x$

$\overline{EB} = 15$

8. In the diagram below of circle $O$, chords $\overline{AE}$ and $\overline{DC}$ intersect at point $B$, such that $m\overset{\frown}{AC} = 36$ and $m\overset{\frown}{DE} = 20$. What is $m\angle ABC$?




$2(VA) = arc + arc$

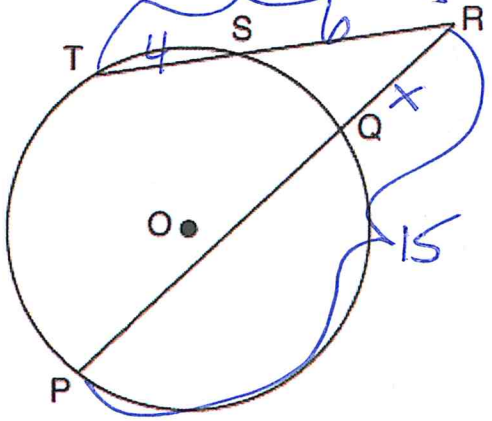
$2x = 36 + 20$

$\frac{2x}{2} = \frac{56}{2}$

$x = 28$

$\angle ABC = 28°$

9. In the diagram below, secants $\overline{RST}$ and $\overline{RQP}$, drawn from point $R$, intersect circle $O$ at $S$, $T$, $Q$, and $P$.
If $RS = 6$, $ST = 4$, and $RP = 15$, what is the length of $\overline{RQ}$?




$w \cdot e = w \cdot e$

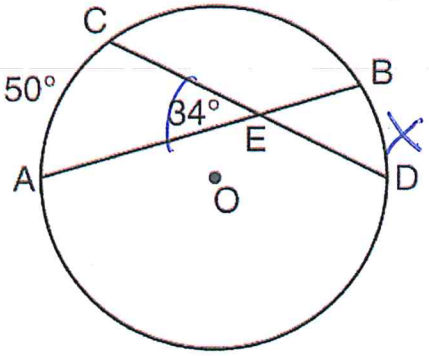
$10 \cdot 6 = 15 \cdot x$

$\frac{60}{15} = \frac{15x}{15}$

$4 = x$

$\overline{RQ} = 4$

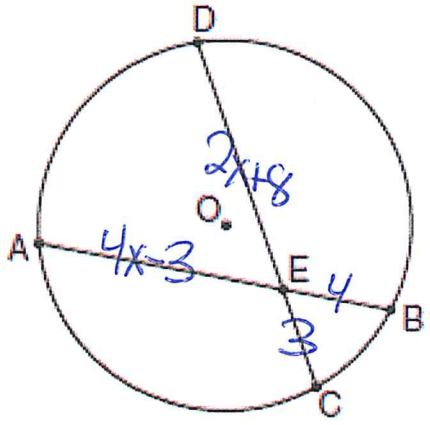
10. In the diagram below of circle $O$, chords $\overline{AB}$ and $\overline{CD}$ intersect at $E$.
If $m\angle AEC = 34$ and $m\overset{\frown}{AC} = 50$, what is $m\overset{\frown}{DB}$?




$2(VA) = arc + arc$
$2(34) = 50 + x$
$68 = 50 + x$
$-50 \quad -50$
$18 = x$

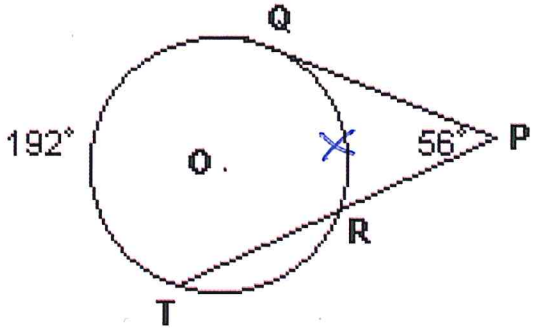
$\overset{\frown}{DB} = 18°$

11. In the diagram of circle $O$ below, chord $\overline{AB}$ intersects chord $\overline{CD}$ at $E$, $DE = 2x + 8$, $EC = 3$, $AE = 4x - 3$, and $EB = 4$.
What is the value of $x$?




$P \cdot P = P \cdot P$
$4(4x-3) = 3(2x+8)$
$16x - 12 = 6x + 24$
$-6x \quad -6x$
$10x - 12 = 24$
$+12 \quad +12$
$\frac{10x}{10} = \frac{36}{10}$
$x = 3.6$

12. In the diagram of circle $O$, $\overline{PQ}$ is tangent to $O$ at $Q$ and $\overline{PRT}$ is a secant. If $m\angle P = 56$ and $m\overset{\frown}{QT} = 192$, find $m\overset{\frown}{QR}$




$2(EA) = major - minor$
$2(56) = 192 - x$
$112 = 192 - x$
$-192 \quad -192$
$\frac{-80}{-1} = \frac{-x}{-1}$
$80 = x$

$\overset{\frown}{QR} = 80°$