whole·exterior = whole·exterior
W·e = W·e

Name Schlansky
Mr. Schlansky

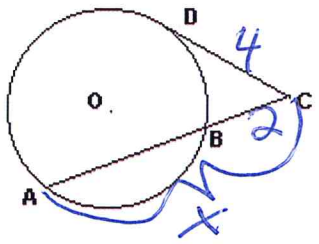
Date _____
Geometry

Exterior Angles (Segments)

1. In the diagram, tangent $\overline{DC}$ and secant $\overline{CBA}$ are drawn to circle O from external point C. If $\overline{DC} = 4$ and $\overline{BC} = 2$, find $\overline{AC}$.

W·e = W·e
4·4 = x·2
$\frac{16}{2} = \frac{2x}{2}$
8 = x

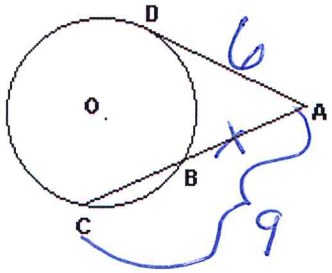
AC = 8



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

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

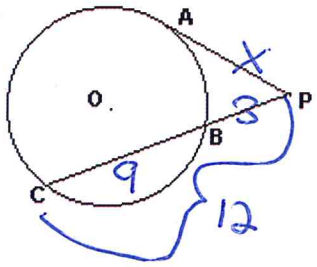
AB = 4



3. In the diagram, $\overline{AP}$ is a tangent and $\overline{PBC}$ is a secant to circle O. If $\overline{PC} = 12$ and $\overline{BC} = 9$, what is $\overline{AP}$?

W·e = W·e
x·x = 12·3
$\sqrt{x^2} = \sqrt{36}$
x = 6

AP = 6

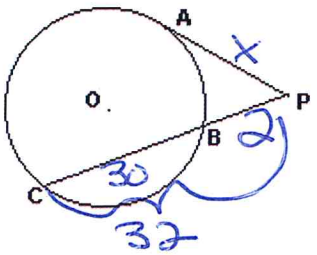


12 - 9 = 3

4. In the diagram, $\overline{AP}$ is a tangent and $\overline{PBC}$ is a secant to circle O. If $\overline{PB} = 2$ and $\overline{BC} = 30$, what is $\overline{AP}$?

W·e = W·e
x·x = 32·2
$\sqrt{x^2} = \sqrt{64}$
x = 8

AP = 8



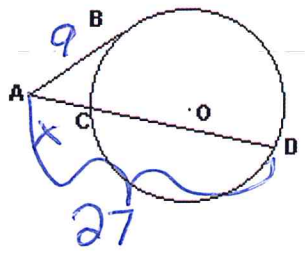
5. In the diagram, $\overline{AB}$ is tangent to circle O at B, and $\overline{ACD}$ is a secant. If $\overline{AB} = 9$ and $\overline{AD} = 27$, find $\overline{AC}$.

$w \cdot e = w \cdot e$

$9 \cdot 9 = 27 \cdot x$

$\frac{81}{27} = \frac{27x}{27}$

$3 = x$



6. In the diagram below of circle O, secant $\overline{AB}$ intersects circle O at D, secant $\overline{AOC}$ intersects circle O at E, $AE = 4$, $AB = 12$, and $DB = 6$.

What is the length of $\overline{OC}$?

1) 4.5
2) 7
3) 9
4) 14

$w \cdot e = w \cdot e$

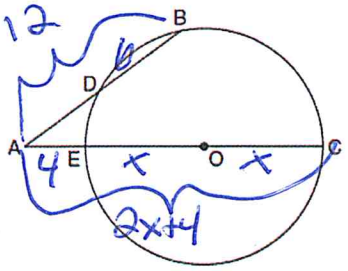
$12 \cdot 6 = (2x+4)4$

$72 = 8x + 16$

$-16 \quad -16$

$\frac{56}{8} = \frac{8x}{8}$

$7 = x$



(Not drawn to scale)

7. 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 $\overline{BC}$?

1) 20
2) 16
3) 15
4) 12

$w \cdot e = w \cdot e$

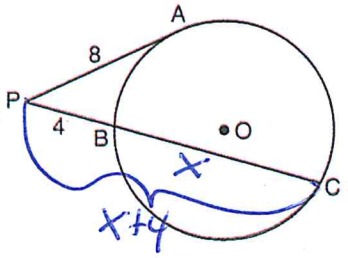
$8 \cdot 8 = (x+4)4$

$64 = 4x + 16$

$-16 \quad -16$

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

$12 = x$



Quadratic Equations

1) Bring everything to 1 side
2) Factor
3) Set each factor equal to 0

8. In the diagram below, $\overline{PS}$ is a tangent to circle O at point S, $\overline{PR}$ is a secant, $PS = x$, $PQ = 3$, and $PR = x + 18$. What is the length of $\overline{PS}$?

$w \cdot e = w \cdot e$

$x \cdot x = 3(x+18)$

$x^2 = 3x + 54$

$-3x - 54 \quad -3x - 54$

$x^2 - 3x - 54 = 0$

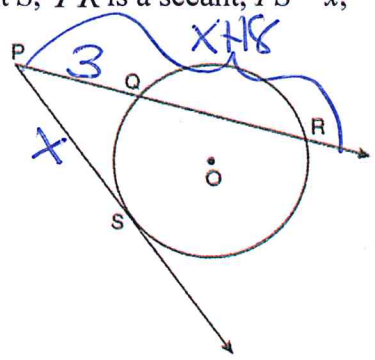
$(x-9)(x+6) = 0$

$x - 9 = 0 \quad x + 6 = 0$

$+9 \quad +9 \quad -6 \quad -6$

$x = 9 \quad x = -6$

$PS = 9$



(Not drawn to scale)