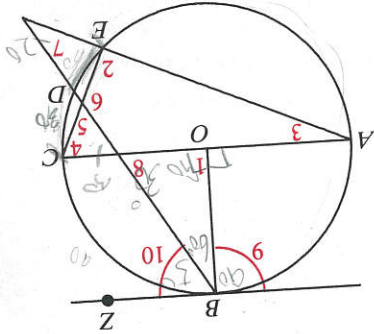
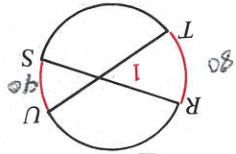


11. If $m\widehat{RT} = 80$ and $m\widehat{US} = 40$, then $m\angle I = ?$.
12. If $m\widehat{RU} = 130$ and $m\widehat{TS} = 100$, then $m\angle I = ?$.
13. If $m\angle I = 50$ and $m\widehat{RT} = 70$, then $m\widehat{US} = ?$.
14. If $m\angle I = 52$ and $m\widehat{US} = 36$, then $m\widehat{RT} = ?$.



Draw your own large diagram so that you can write arc measures alongside the arcs. Find the measure of each numbered angle.

- 1-10. \overline{BZ} is tangent to $\odot O$; \overline{AC} is a diameter; $m\widehat{BC} = 90$; $m\widehat{CD} = 30$; $m\widehat{DE} = 20$

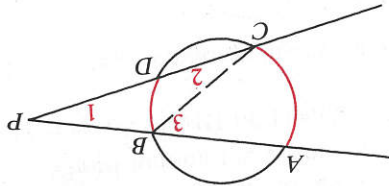
Written Exercises

1. Draw chord \overline{BC} .
2. $m\angle 1 + m\angle 2 = m\angle 3$
3. $m\angle 1 = m\angle 3 - m\angle 2$
4. $m\angle 3 = \frac{1}{2}m\widehat{AC}$; $m\angle 2 = \frac{1}{2}m\widehat{BD}$
5. $m\angle 1 = \frac{1}{2}m\widehat{AC} - \frac{1}{2}m\widehat{BD}$, or $m\angle 1 = \frac{1}{2}(m\widehat{AC} - m\widehat{BD})$

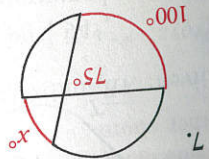
Proof:

Given: Secants \overline{PA} and \overline{PC}

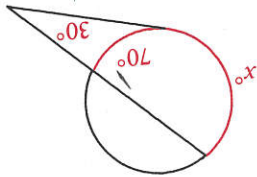
Prove: $m\angle 1 = \frac{1}{2}(m\widehat{AC} - m\widehat{BD})$



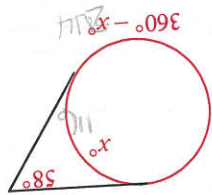
10. Supply reasons to complete a proof of the first case of Theorem 7-10.



7.



8.

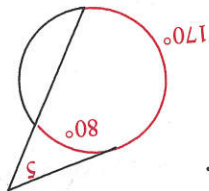


9.

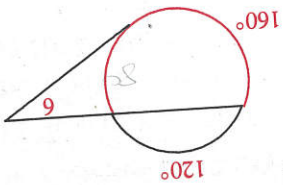
State an equation you can use to find x . Then find the value of x .



4.



5.



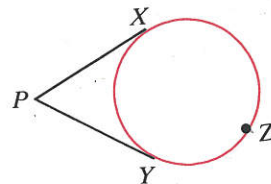
6.

In Exercises 15-17, \overline{PX} and \overline{PY} are tangents.

15. If $m\widehat{XZY} = 250$, then $m\angle P = \underline{\quad? \quad}$.

16. If $m\widehat{XY} = 90$, then $m\angle P = \underline{\quad? \quad}$.

17. If $m\angle P = 85$, then $m\widehat{XY} = \underline{\quad? \quad}$.

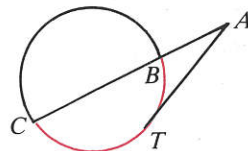


In Exercises 18-20, \overline{AT} is a tangent.

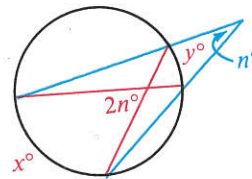
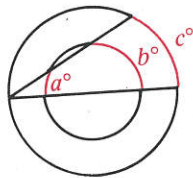
18. If $m\widehat{CT} = 110$ and $m\widehat{BT} = 50$, then $m\angle A = \underline{\quad? \quad}$.

19. If $m\angle A = 40$ and $m\widehat{BT} = 40$, then $m\widehat{CT} = \underline{\quad? \quad}$.

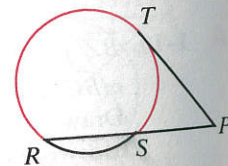
20. If $m\angle A = 35$ and $m\widehat{CT} = 110$, then $m\widehat{BT} = \underline{\quad? \quad}$.



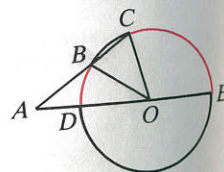
- B** 21. A quadrilateral circumscribed about a circle has angles of 80° , 90° , 94° , and 96° . Find the measures of the four nonoverlapping arcs determined by the points of tangency.
22. Prove Case II of Theorem 7-10. (*Hint*: See Classroom Exercise 10. In a figure like the second one shown below the theorem on page 318, draw the chord joining the points of tangency.)
23. Prove Case III of Theorem 7-10.
24. Write an equation involving a , b , and c .
25. Find the ratio $x:y$.



- C** 26. \overline{PT} is a tangent. It is known that $80 < m\widehat{RS} < m\widehat{ST} < 90$. State as much as you can about the measure of $\angle P$.



27. \overline{AC} and \overline{AE} are secants of $\odot O$. It is given that $\overline{AB} \cong \overline{OB}$. Discover and prove a relation between the measures of \widehat{CE} and \widehat{BD} .



28. Take any point P outside a circle. Draw a tangent segment \overline{PT} and a secant \overline{PBA} with A and B points on the circle. Take K on \overline{PA} so that $PK = PT$. Draw \overline{TK} . Let the intersection of \overline{TK} with the circle be point X . Discover and prove a relationship between \widehat{AX} and \widehat{XB} .