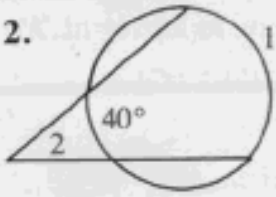
Name: _____
Period: _____

Worksheet 5.10 Secants and Tangents

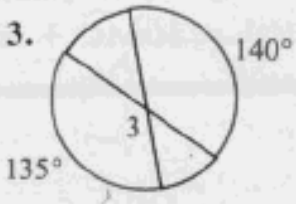
Find the measure of each numbered angle.

1.

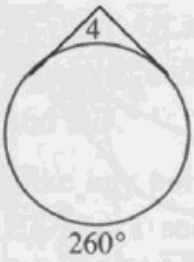
2.



3.



4.



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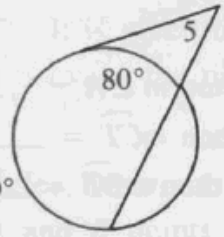
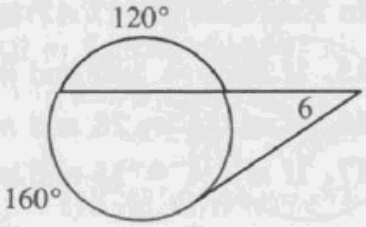
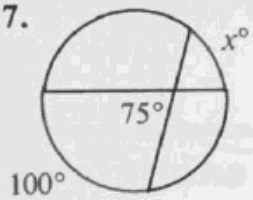


6.

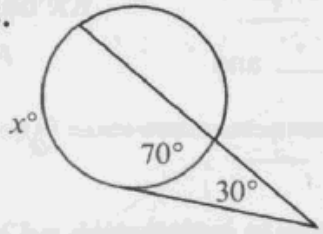


State an equation you could use to find the value of x. Then solve for x.

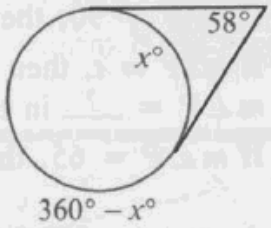
7.



8.



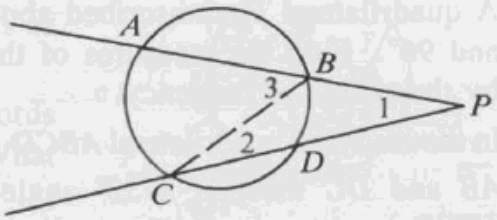
9.



10. Supply reasons to complete a proof of Case I of Theorem 9-10.

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

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



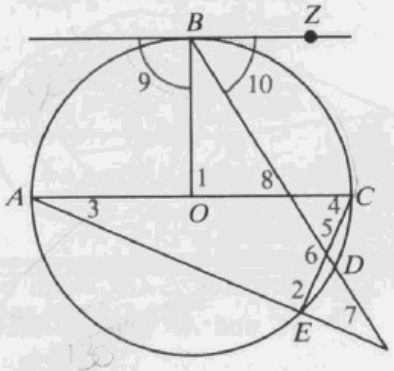
Proof:

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. $m\angle 3 = \frac{1}{2}m\overset{\frown}{AC}$; $m\angle 2 = \frac{1}{2}m\overset{\frown}{BD}$
5. $m\angle 1 = \frac{1}{2}m\overset{\frown}{AC} - \frac{1}{2}m\overset{\frown}{BD}$, or $m\angle 1 = \frac{1}{2}(m\overset{\frown}{AC} - m\overset{\frown}{BD})$

Name: _____
Period: _____

Written Exercises

1–10. $\overleftrightarrow{BZ}$ is tangent to $\odot O$; $\overline{AC}$ is a diameter; $m\overset{\frown}{BC} = 90$; $m\overset{\frown}{CD} = 30$; $m\overset{\frown}{DE} = 20$. Draw your own large diagram so that you can write arc measures alongside the arcs. Find the measure of each numbered angle.



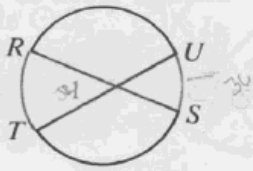
Complete.

11. If $m\overset{\frown}{RT} = 80$ and $m\overset{\frown}{US} = 40$, then $m\angle 1 =$ ___?___.

12. If $m\overset{\frown}{RU} = 130$ and $m\overset{\frown}{TS} = 100$, then $m\angle 1 =$ ___?___.

13. If $m\angle 1 = 50$ and $m\overset{\frown}{RT} = 70$, then $m\overset{\frown}{US} =$ ___?___.

14. If $m\angle 1 = 52$ and $m\overset{\frown}{US} = 36$, then $m\overset{\frown}{RT} =$ ___?___.

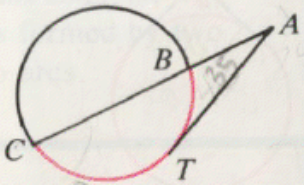


In Exercises 15–17 $\overline{AT}$ is a tangent.

15. If $m\overset{\frown}{CT} = 110$ and $m\overset{\frown}{BT} = 50$, then $m\angle A =$ ___?___.

16. If $m\angle A = 28$ and $m\overset{\frown}{BT} = 46$, then $m\overset{\frown}{CT} =$ ___?___.

17. If $m\angle A = 35$ and $m\overset{\frown}{CT} = 110$, then $m\overset{\frown}{BT} =$ ___?___.



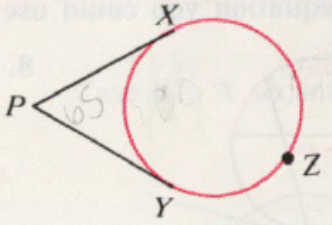
In Exercises 18–21 $\overline{PX}$ and $\overline{PY}$ are tangents.

18. If $m\overset{\frown}{XZY} = 250$, then $m\angle P =$ ___?___.

19. If $m\overset{\frown}{XY} = 90$, then $m\angle P =$ ___?___.

20. If $m\overset{\frown}{XY} = t$, then $m\overset{\frown}{XZY} =$ ___?___ and $m\angle P =$ ___?___ in terms of t.

21. If $m\angle P = 65$, then $m\overset{\frown}{XY} =$ ___?___.



22. A secant and a tangent to a circle intersect in a 42° angle. The two arcs of the circle intercepted by the secant and tangent have measures in a 7:3 ratio. Find the measure of the third arc.