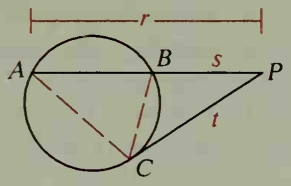
10. Write a proof of Theorem 9-13.

Given: Secant segment $\overline{PA}$ and tangent segment $\overline{PC}$ drawn to the circle from P.

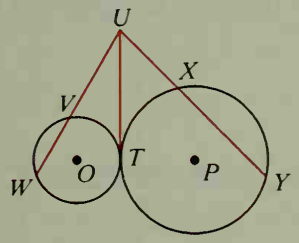
Prove: $r \cdot s = t^2$



Plan for Proof: Draw chords $\overline{AC}$ and $\overline{BC}$. Show that $\angle A$ and $\angle PCB$ are congruent because they intercept the same arc. Then show that $\triangle PAC$ and $\triangle PCB$ are similar triangles and use the properties of proportions to complete the proof.

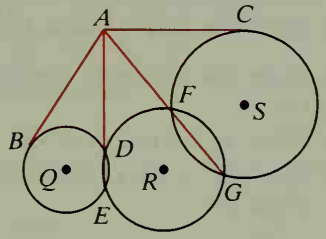
B **11.** Given: $\odot O$ and $\odot P$ are tangent to $\overline{UT}$ at T.

Prove: $UV \cdot UW = UX \cdot UY$



12. Given: $\overline{AB}$ is tangent to $\odot Q$; $\overline{AC}$ is tangent to $\odot S$.

Prove: $\overline{AB} \cong \overline{AC}$



Chords $\overline{AB}$ and $\overline{CD}$ intersect at P. Find the lengths indicated.

Example $AP = 5$; $BP = 4$; $CD = 12$; $CP =$?

Solution Let $CP = x$. Then $DP = 12 - x$.

$x(12 - x) = 5 \cdot 4$

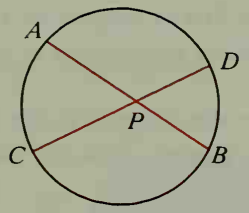
$12x - x^2 = 20$

$x^2 - 12x + 20 = 0$

$(x - 2)(x - 10) = 0$

$x = 2$ or $x = 10$

$CP = 2$ or 10



13. $AP = 6$; $BP = 8$; $CD = 16$; $DP =$?

14. $CD = 10$; $CP = 6$; $AB = 11$; $AP =$?

15. $AB = 12$; $CP = 9$; $DP = 4$; $BP =$?

16. $AP = 6$; $BP = 5$; $CP = 3 \cdot DP$; $DP =$?

$\overline{PT}$ is tangent to the circle. Find the lengths indicated.

17. $PT = 6$; $PB = 3$; $AB =$?

18. $PT = 12$; $CD = 18$; $PC =$?

19. $PD = 5$; $CD = 7$; $AB = 11$; $PB =$?

20. $PB = AB = 5$; $PD = 4$; $PT =$? and $PC =$?