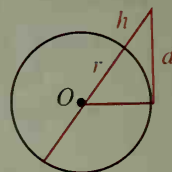
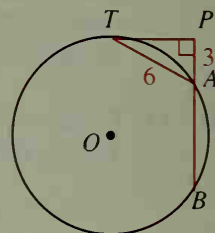


21. A secant, a radius, and a tangent of $\odot O$ are shown.
- Explain why $(r + h)^2 = r^2 + d^2$.
 - Simplify the equation in part (a) to show that $d^2 = h(2r + h)$.
 - You have proved a special case of a theorem. What theorem is this?

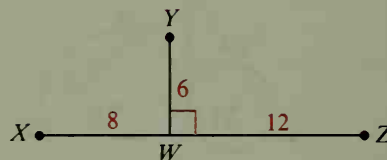


22. \overline{PT} is tangent to $\odot O$. Secant \overrightarrow{BA} is perpendicular to \overline{PT} at P . If $TA = 6$ and $PA = 3$, find (a) AB , (b) the distance from O to \overline{AB} , and (c) the radius of $\odot O$.



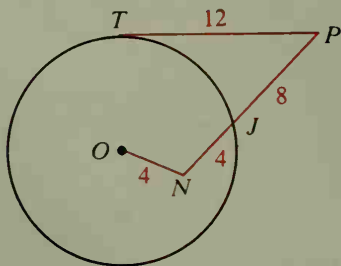
23. A bridge over a river has the shape of a circular arc. The span of the bridge is 24 meters. (The span is the length of the chord of the arc.) The midpoint of the arc is 4 meters higher than the endpoints. What is the radius of the circle that contains this arc?

24. A circle can be drawn through points X , Y , and Z .
- What is the radius of the circle?
 - How far is the center of the circle from point W ?

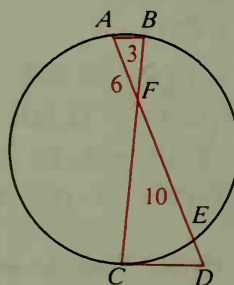


25. Draw two intersecting circles with common chord \overline{PQ} and let X be any point on \overline{PQ} . Through X draw any chord \overline{AB} of one circle. Also draw through X any chord \overline{CD} of the other circle. Prove that $AX \cdot XB = CX \cdot XD$.
26. A line is tangent to two intersecting circles at P and Q . The common chord is extended to meet \overline{PQ} at T . Prove that T is the midpoint of \overline{PQ} .

- C** 27. In the diagram at the left below, \overline{PT} is tangent to $\odot O$ and \overline{PN} intersects $\odot O$ at J . Find the radius of the circle.



Ex. 27



Ex. 28

- ★ 28. In the diagram at the right above, \overline{CD} is a tangent, $\widehat{AC} \cong \widehat{BC}$, $AB = 3$, $AF = 6$, and $FE = 10$. Find ED . (Hint: Let $ED = x$ and $CD = y$.) Then write two equations in x and y .)