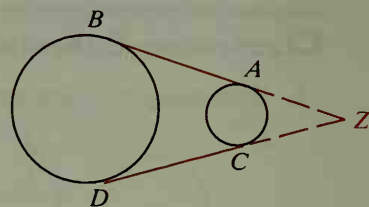
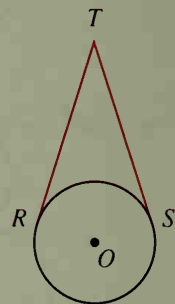


7. a. What do you think is true of common external tangents  $\overline{AB}$  and  $\overline{CD}$ ? Prove it.  
 b. Will your results in part (a) be true if the circles are congruent?



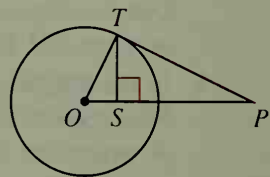
8. Given:  $\overline{TR}$  and  $\overline{TS}$  are tangents to  $\odot O$  from  $T$ ;  
 $m\angle RTS = 36$
- Copy the diagram. Draw  $\overline{RS}$  and find  $m\angle TSR$  and  $m\angle TRS$ .
  - Draw radii  $\overline{OS}$  and  $\overline{OR}$  and find  $m\angle ORS$  and  $m\angle OSR$ .
  - Find  $m\angle ROS$ .
  - Does your result in part (c) support one of your conclusions about angles in Classroom Exercise 5? Explain.



9. Draw  $\odot O$  with perpendicular radii  $\overline{OX}$  and  $\overline{OY}$ . Draw tangents to the circle at  $X$  and  $Y$ .
- If the tangents meet at  $Z$ , what kind of figure is  $OXZY$ ? Explain.
  - If  $OX = 5$ , find  $OZ$ .

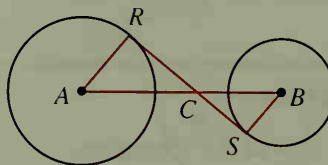
10. Given:  $\overline{PT}$  is tangent to  $\odot O$  at  $T$ ;  $\overline{TS} \perp \overline{PO}$
- Complete the following statements.

- $TS$  is the geometric mean between  $\frac{?}{?}$  and  $\frac{?}{?}$ .
- $TO$  is the geometric mean between  $\frac{?}{?}$  and  $\frac{?}{?}$ .
- If  $OS = 6$  and  $SP = 24$ ,  $TS = \frac{?}{?}$  and  $TP = \frac{?}{?}$ .



11. Given:  $\overline{RS}$  is a common internal tangent to  $\odot A$  and  $\odot B$ .

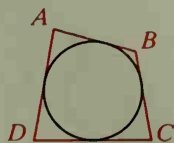
Explain why  $\frac{AC}{BC} = \frac{RC}{SC}$ .



- B** 12. Discover and prove a theorem about two lines tangent to a circle at the endpoints of a diameter.

13. Is there a theorem about spheres related to the theorem in Exercise 12? If so, state the theorem.

14. Quad.  $ABCD$  is circumscribed about a circle. Discover and prove a relationship between  $AB + DC$  and  $AD + BC$ .



15.  $\overline{PA}$ ,  $\overline{PB}$ , and  $\overline{RS}$  are tangents. Explain why  $PR + RS + SP = PA + PB$ .

