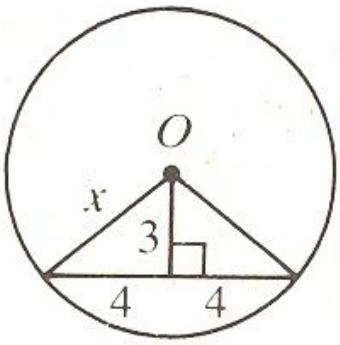
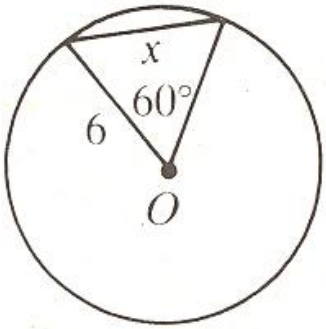
DIRECTIONS: Solve for x. O is the center of each circle. Use the Pythagorean Theorem and your knowledge of 45-45-90 & 30-60-90 triangles.

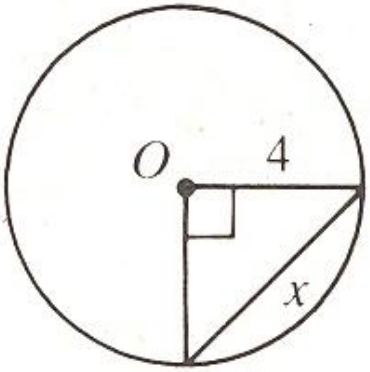
1. $x =$ _____



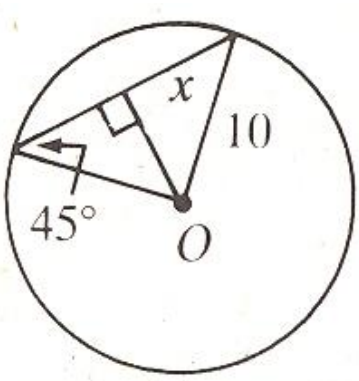
2. $x =$ _____



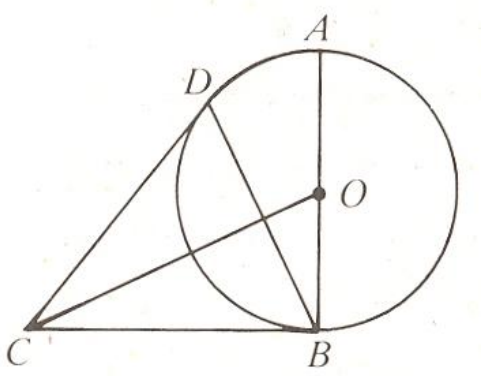
3. $x =$ _____



4. $x =$ _____



DIRECTIONS: $\overleftrightarrow{CB}$ and $\overleftrightarrow{CD}$ are tangent to circle O at B and D, respectively. Remember that when a tangent and a radius intersect at a point of tangency, they are perpendicular!



5. If $OC = 15$ and $OB = 9$, then BC = _____

6. If $OC = 3\sqrt{6}$ and $BC = 6$, then OB = _____

7. If $AB = 12$ and $BC = 8$, then OC = _____

8. If $OC = 2\sqrt{17}$ and $BC = 5\sqrt{2}$, then AB = _____

9. If $m\measuredangle OCB = 30$ and $OB = 4$, then OC = _____

10. If $m\measuredangle BOC = 60$ and $CB = 6\sqrt{3}$, then AB = _____

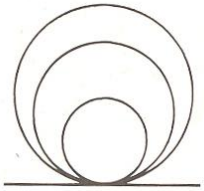
11. If $m\measuredangle BCD = 70$, then $m\measuredangle CBD = m\measuredangle$ _____ = _____

DIRECTIONS: Determine two things for each diagram:

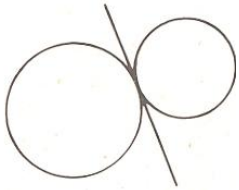
A) Are the circles externally tangent, internally tangent, or not tangent at all
B) Is the line a common external tangent, a common internal tangent, or neither

12.

13.



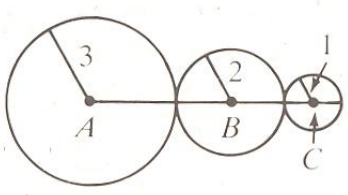
14.



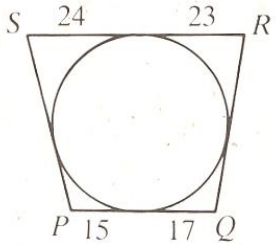
15.

DIRECTIONS: Use your knowledge of radii (if you know one radius, you know them all!) and lengths of external tangents from the same point to help you find the requested lengths.

16. $AC =$ _____



17. $SP =$ _____ $RQ =$ _____



18. $PR =$ _____ $PT =$ _____ $RS =$ _____ $QS =$ _____