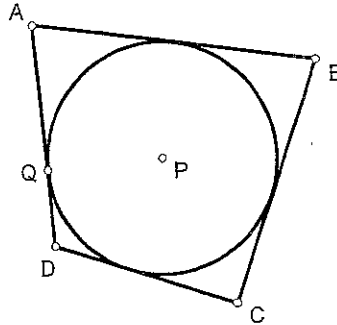
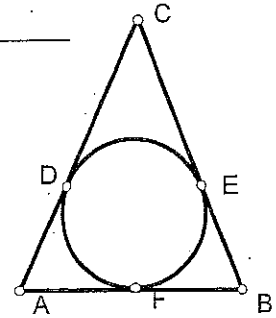


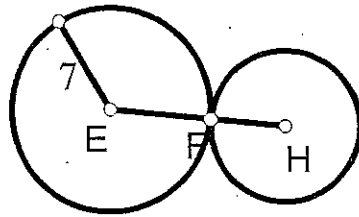
1. Circle P is tangent to each side of ABCD. $AB = 20$. $BC = 11$, and $DC = 14$.
Let $AQ = x$ and find AD .



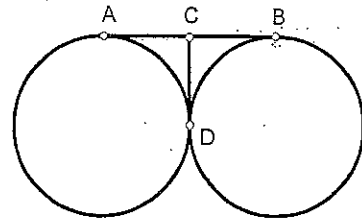
2. $AF = FB = 4$, $DC = 6$.
Perimeter of $\triangle ABC =$ _____



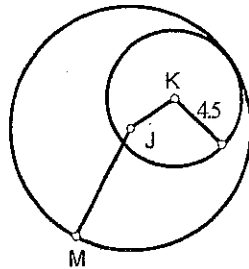
3. Given $\odot E$ and $\odot H$
 $EH = 12$, $FH =$ _____



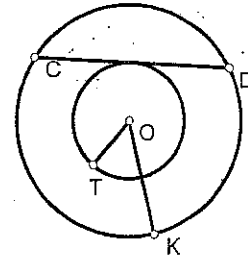
4. $AB = 10$,
 $CD =$ _____



5. Given $\odot K$ and $\odot J$
 $JM = 7.1$, $JK =$ _____



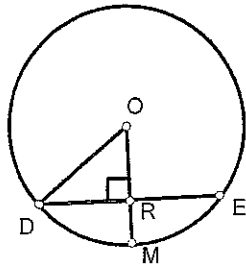
6. $OT = 9$, $OK = 15$,
 $CD =$ _____



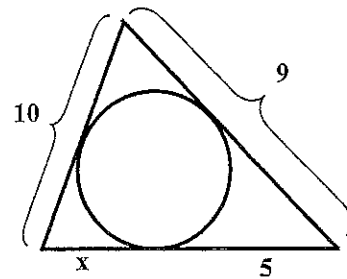
7. A chord of a circle is 10 inches long and is 12 inches from the center of the circle. Find the length of the radius. Radius = _____

8. The diameter of a circle is 20 cm. long and a chord is 16 cm. long. Find the distance between the chord and the center of the circle.
Distance = _____

9. If $OD = 10$, $DE = 16$, $RM =$ _____



10. $x =$ _____



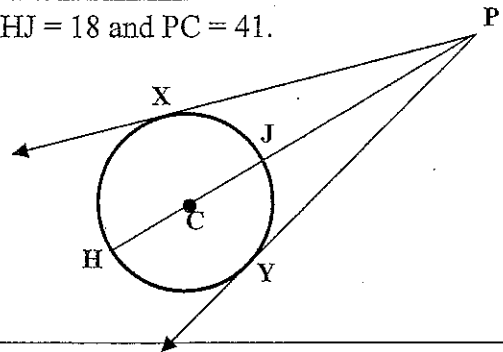
11. \overline{PX} and \overline{PY} are tangent to $\odot C$ from an external point P. $HJ = 18$ and $PC = 41$.

(a) $PX =$ _____

(b) $PY =$ _____

(c) What is the distance from C to X? _____

(d) What is the distance from C to Y? _____

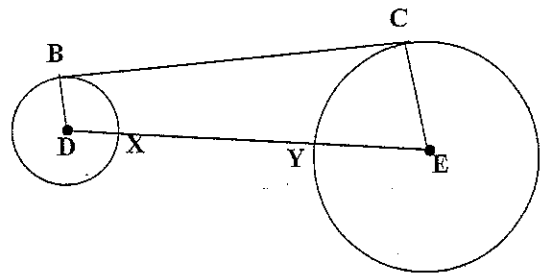


12. \overline{BC} is a common external tangent of $\odot D$ and $\odot E$.

$BD = 3$, $CE = 15$, and $DE = 30$.

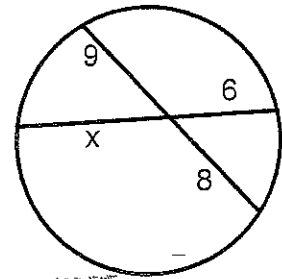
(a) $XY =$ _____

(b) $BC =$ _____

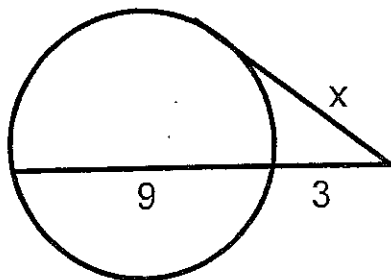


13. The minor arc cut off by two tangents to a circle from an outside point is five-sevenths of the major arc. Find the angle formed by the tangents.
angle = _____

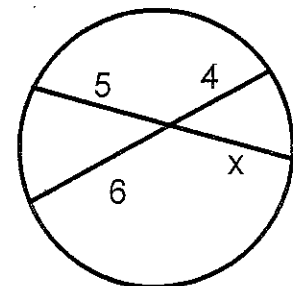
14. $x =$ _____



15. $x =$ _____

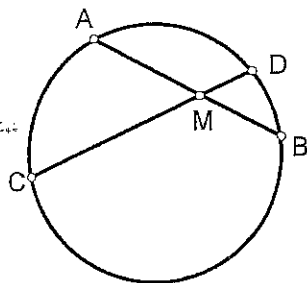


16. $x =$ _____



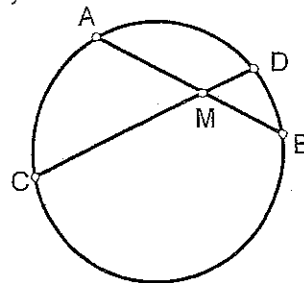
17. $CM = 8$, $DM = 6$, $AB = 16$.

$AM =$ _____



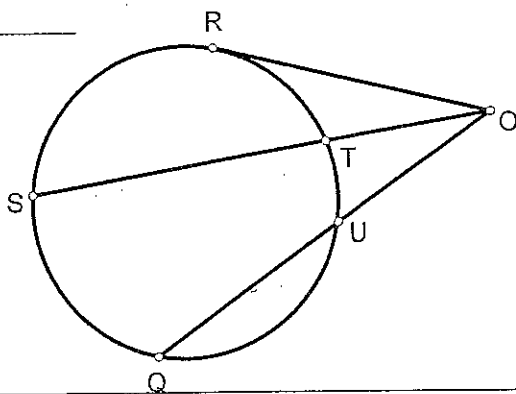
18. $AM = 8$, $AB = 16$, $CD = 20$.

$CM =$ _____



19. $OQ = 6$, $OU = 4$, $ST = 5$.

$OT =$ _____



20. $RO = 10$, $ST = 21$.

$SO =$ _____

