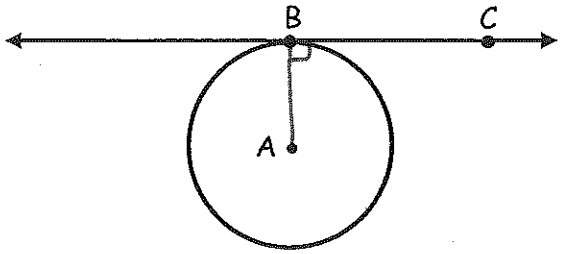
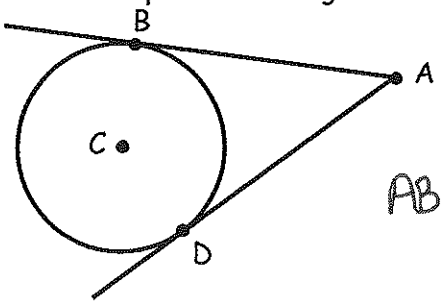
Name: KEY Date: _____ Period: ____

12.1 Notes-(Tangents)

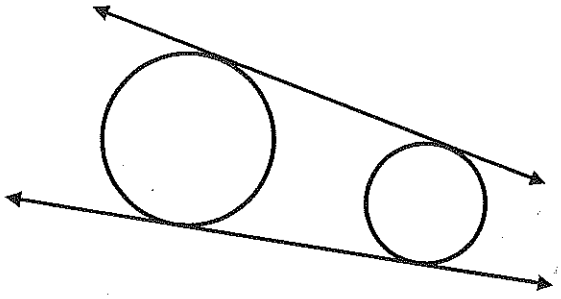
Theorem 1: Line tangent to a circle $\longleftrightarrow$ line $\perp$ to radius at tangent point



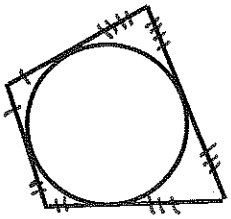
Theorem 2: Tangent segments from same exterior point are congruent.



$AB \cong AD$



External Common Tangent



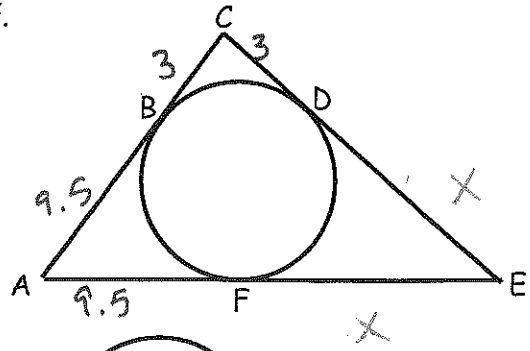
Polygon circumscribed about a circle

Name:_____ Date: _____ Period: ____

Ex. 1 BC = 3, AF = 9.5, perimeter of ΔACE = 50. Find DE.

$3+3+x+x+9.5+9.5=50$

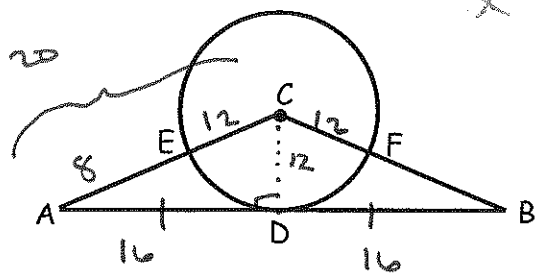
$x=12.5$



Ex. 2 AD = DB = 16; EC = 12. Find AE.

$12^2+16^2=c^2$

$20=c$



Ex. 3 m∠EML = 66°; MK = 15; KL = 36

m∠MKL = 90

m∠ELM = 24

EL = 36

$66\cdot 2$ = m$\widehat{KPE}$ = 132

ML = 39

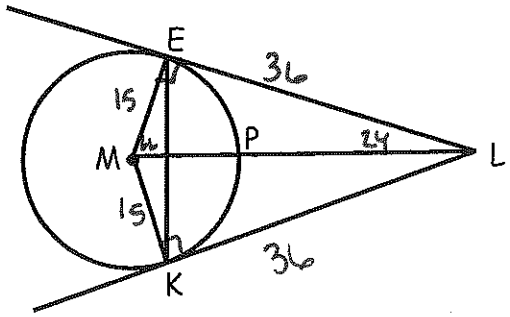
PL = 24

$15^2+36^2=ML^2$

$39=ML$

$MP+PL=ML$

$15+PL=39 \rightarrow PL=24$

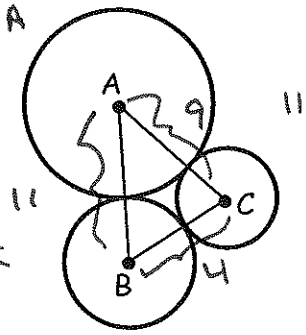


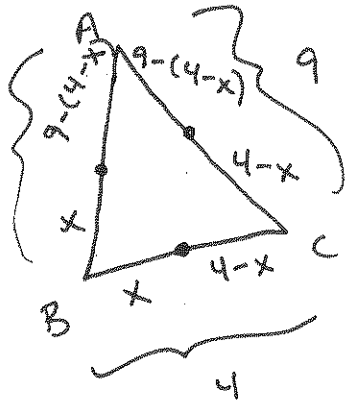
Ex. 4 Circles A, B, and C are tangent. AB = 11; BC = 4; AC = 9. Find the radius of each circle.

radius of circle A = 8

radius of circle B = 3

Radius of circle C = 1





$24=x+x+4-x+4-x+9-(4-x)+9-(4-x)$

$24=\cancel{2x}+8-\cancel{2x}+9-4+x+9-4+x$

$24=13+x+5+x$

$24=18+2x$

$6=2x$

$3=x$

Ex. 5 A belt fits tightly around two circular pulleys, as shown. Find the distance between the centers of the pulleys.

$6^2+35^2=c^2$

$1261=c^2$

$35.5=c$