

Circles – Tangent

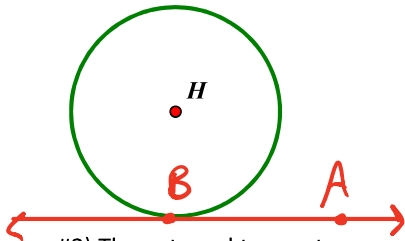
G.C.A.2

Hw Section 13.1

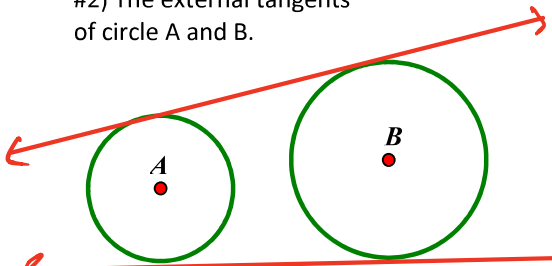
Name _____

Draw the following relationships.

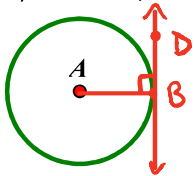
#1) \overline{AB} tangent to circle H at B.



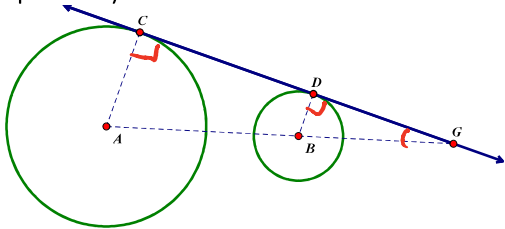
#2) The external tangents of circle A and B.



#3) In circle A, Radius \overline{AB} perpendicular to \overline{BD}



#4) \overline{GC} is a common external tangent to circles A and B. Explain why $\triangle GBD \sim \triangle GAC$.

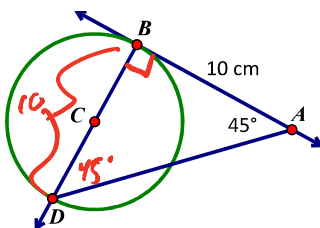


$\triangle GBD \sim \triangle GAC$ by the AA Similarity.

Both triangles have a right angle and both share angle G.

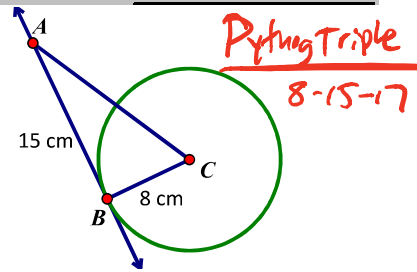
Solve for the missing information, given the \overline{AB} is a tangent line to circle C.

#5) $CB =$ 5



$CB = \frac{1}{2}(10)$
 $CB = 5$

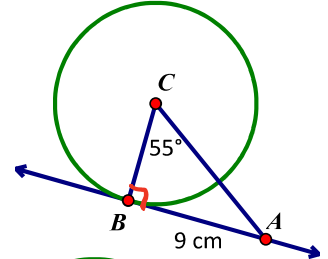
#6) $AC =$ 17 cm
 $x^2 + y^2 = r^2$
 $(8)^2 + (15)^2 = AC^2$
 $64 + 225 = AC^2$
 $289 = AC^2$
 $\pm 17 = AC$



Pythag Triple
 8-15-17

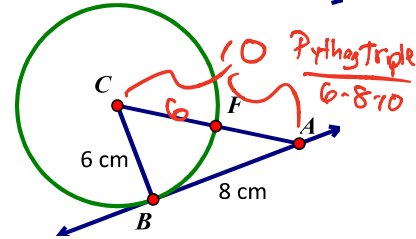
#7) $CB =$ 6.30 cm (2 dec)

$\tan(55^\circ) = \frac{9}{CB}$
 $CB \cdot \tan(55^\circ) = 9$
 $CB = \frac{9}{\tan(55^\circ)}$
 $CB = 6.30$



#8) $FA =$ 4 cm

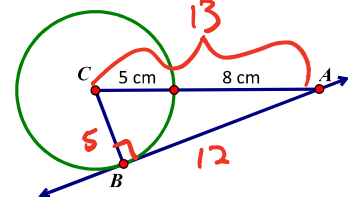
$6 + FA = 10$
 $FA = 4$



Pythag Triple
 6-8-10

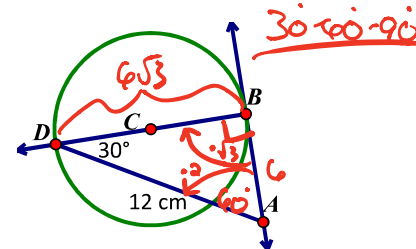
#9) $AB =$ 12 cm

Pythag Triple
 5-12-13



#10) $CB =$ $3\sqrt{3}$ cm

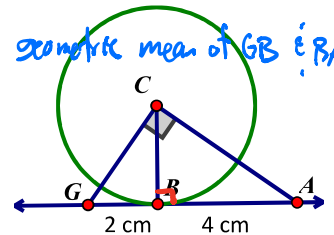
$BC = \frac{1}{2}(6\sqrt{3})$
 $B = 3\sqrt{3}$



30-60-90

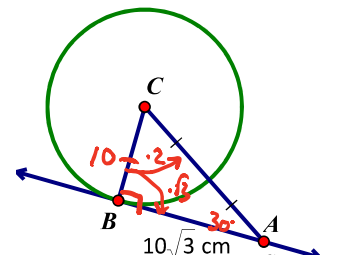
#11) $CB =$ 2.83 cm (2 dec)

$CB^2 = 2 \cdot 4$ (Altitude is geometric mean of GB & BA)
 $CB^2 = 8$
 $CB = \pm\sqrt{8}$
 $CB \approx 2.83$



#12) $CB =$ 10 cm

30-60-90



Circles – Tangent

G.C.A.2

Hw Section 13.1

Name _____

Determine if the \overline{AB} is a tangent line or not.

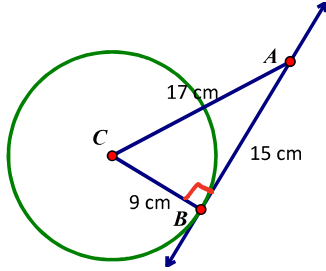
#13) Yes or **No**

$$x^2 + y^2 < r^2$$

$$(9)^2 + (15)^2 < (17)^2$$

$$81 + 225 < 289$$

$$306 < 289$$



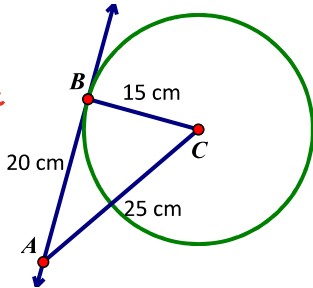
#14) **Yes** or No

$$x^2 + y^2 = r^2$$

$$(15)^2 + (20)^2 = (25)^2$$

$$225 + 400 = 625$$

$$625 = 625$$



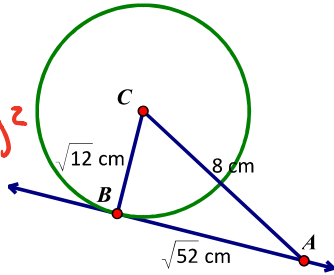
#15) **Yes** or No

$$x^2 + y^2 = r^2$$

$$(\sqrt{52})^2 + (\sqrt{12})^2 = (8)^2$$

$$52 + 12 = 64$$

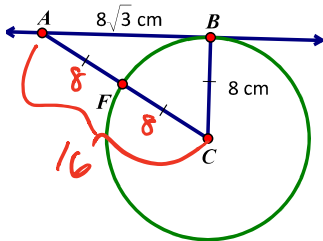
$$64 = 64$$



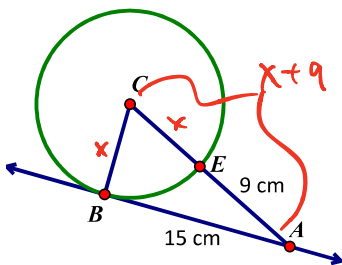
#16) **Yes** or No

$$x^2 + y^2 = r^2$$

$$30^2 + 40^2 = 90^2$$



#17) Given that \overline{AB} is tangent to circle C and EA = 9 cm and AB = 15 cm, determine CB. (Hint: Label the two radii with x)



$$x^2 + y^2 = r^2$$

$$x^2 + (15)^2 = (x+9)^2$$

$$x^2 + 225 = x^2 + 18x + 81$$

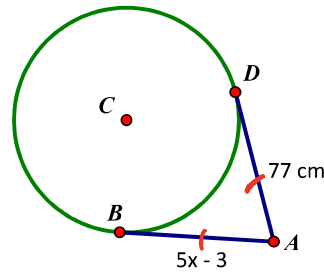
$$225 = 18x + 81$$

$$144 = 18x$$

$$8 = x$$

$$CB = 8 \text{ cm}$$

#18) If \overline{AB} and \overline{AD} are tangent, then $x = \underline{16 \text{ cm}}$

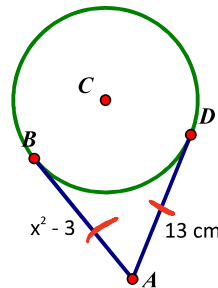


$$5x - 3 = 77$$

$$5x = 80$$

$$x = 16$$

#19) If \overline{AB} and \overline{AD} are tangent, then $x = \underline{\pm 4 \text{ cm}}$

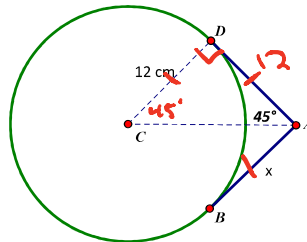


$$x^2 - 3 = 13$$

$$x^2 = 16$$

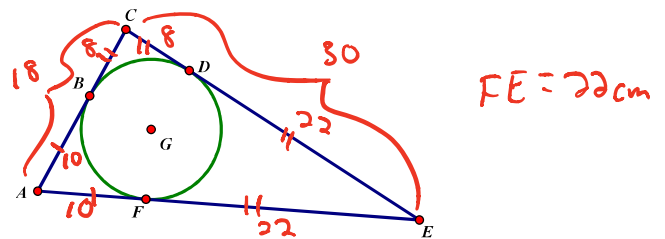
$$x = \pm 4$$

#20) If \overline{AB} and \overline{AD} are tangent, then $x = \underline{12 \text{ cm}}$

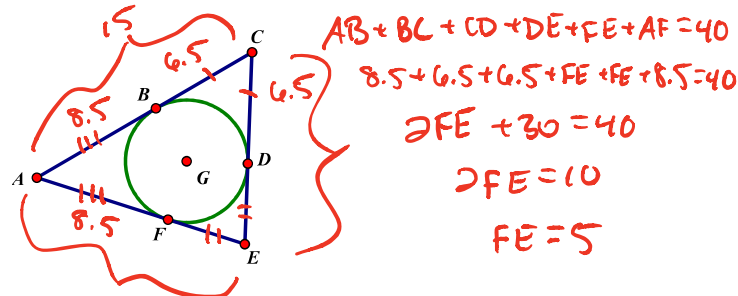


Solve for the missing information (Lines that appear to be tangent are tangent.)

#21) AC = 18 cm, CE = 30 cm & AF = 10 cm, find FE



#22) Perimeter $\Delta = 40$ cm, AC = 15 cm, AF = 8.5 cm, find FE



$$AB + BC + CD + DE + FE + AF = 40$$

$$8.5 + 6.5 + 6.5 + FE + FE + 8.5 = 40$$

$$2FE + 30 = 40$$

$$2FE = 10$$

$$FE = 5$$