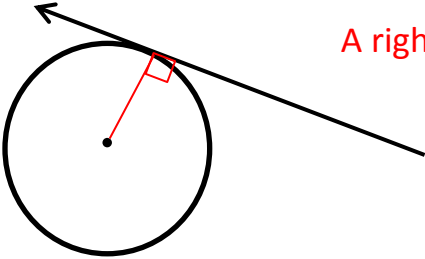
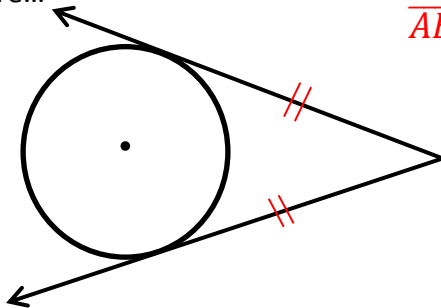


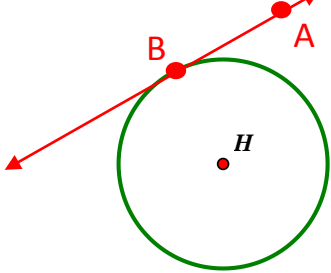
Tangent – A line that intersects a circle only once

Facts Related to Tangents:

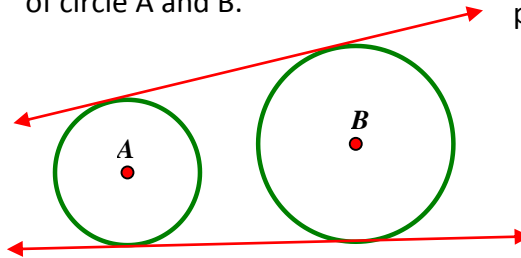
<p>1) Radii and tangents to a circle intersect to form...</p>  <p style="text-align: right; color: red;">A right angle</p>	<p>2) Tangents to a circle from a common external point are...</p>  <p style="text-align: right; color: red;">Congruent $\overline{AB} \cong \overline{CB}$</p>
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1. Draw the following relationships.

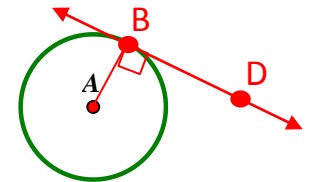
a) \overline{AB} tangent to circle H at B.



b) The external tangents of circle A and B.

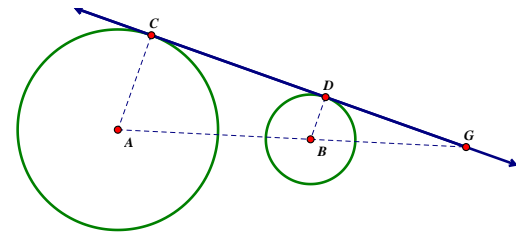


c) In circle A, Radius \overline{AB} perpendicular to \overline{BD}

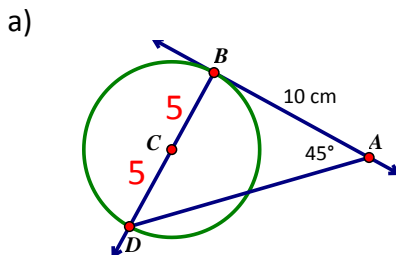


2. \overline{GC} is a common external tangent to circles A and B. Explain why $\triangle GBD \sim \triangle GAC$.

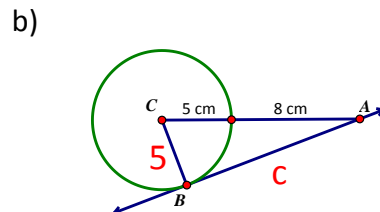
- $\angle G \cong \angle G \rightarrow$ reflexive property
- $\angle ACG \cong \angle BDG \rightarrow$ intersection of radii and tangents form right \angle 's and all right \angle 's are \cong
- $\triangle GBD \sim \triangle GAC$ by AA~



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

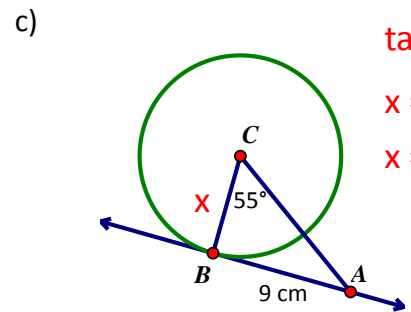


CB = 5 cm



$5^2 + c^2 = 13^2$
 $b = 12$

AB = 12 cm



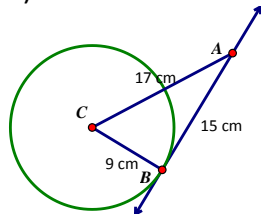
$\tan 55 = \frac{9}{x}$
 $x = \frac{9}{\tan 55}$
 $x = 6.3$

CB = 6.3 cm

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

Needs to be a right Δ which means test the Pythagorean Thm (make LONGEST side = "c")

a)

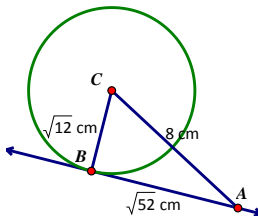


$$9^2 + 15^2 \stackrel{?}{=} 17^2$$

$$306 \neq 289$$

Yes or **No**

b)



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

$$12 + 52 = 64$$

Yes or No

5. 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)

$$x^2 + 15^2 = (x + 9)^2 \longrightarrow \text{Do NOT "distribute" the exponent.}$$

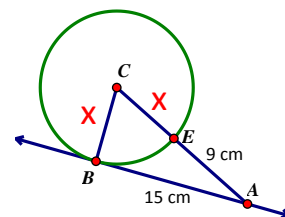
$$x^2 + 225 = (x + 9)(x + 9) \longrightarrow \text{Multiply the binomials together}$$

$$x^2 + 225 = x^2 + 9x + 9x + 81$$

$$\cancel{x^2} + 225 = \cancel{x^2} + 18x + 81$$

$$144 = 18x$$

$$x = 8$$

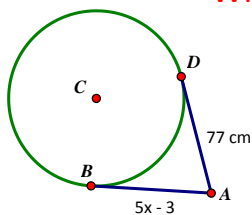


$$CB = 8 \text{ cm}$$

6. Solve for x (\overline{AB} and \overline{AD} are tangent lines)

a)

Which means \cong since both from A



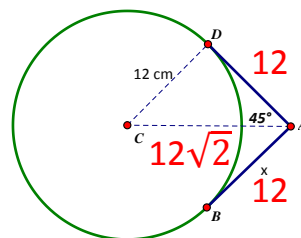
$$5x - 3 = 77$$

$$5x = 80$$

$$x = 16$$

$$x = \underline{16 \text{ cm}}$$

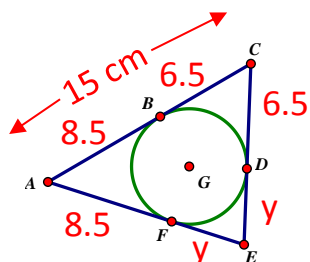
b)



$$x = \underline{12 \text{ cm}}$$

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

Perimeter = 40 cm, $AC = 15$ cm, $AF = 8.5$ cm



$$FE = \underline{5 \text{ cm}}$$

$$8.5 + 6.5 + 2y + 6.5 + 8.5 = 40$$

$$2y + 30 = 40$$

$$2y = 10$$

$$y = 5$$