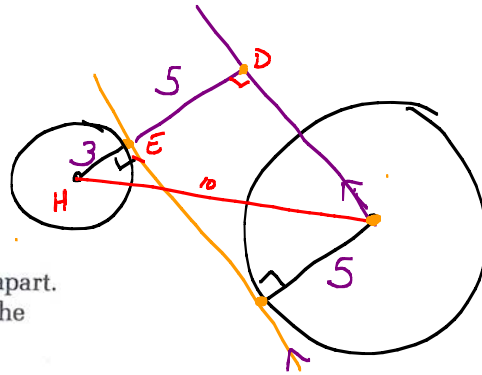
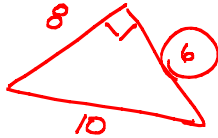
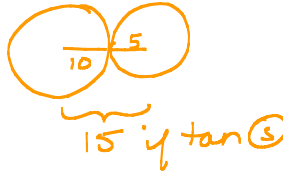
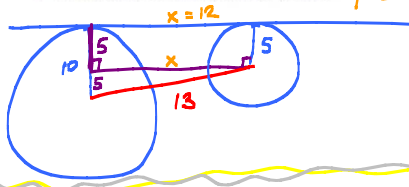


13 The centers of two circles of radii 10 cm and 5 cm are 13 cm apart.

a Find the length of a common external tangent. (Hint: Use the common-tangent procedure.) 12

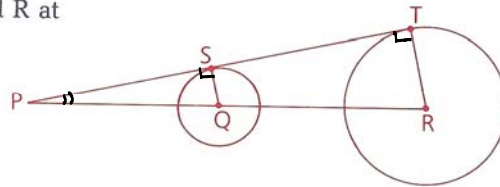
b Do the circles intersect? Yes (13 < 15)



14 The centers of two circles with radii 3 and 5 are 10 units apart. Find the length of a common internal tangent (Hint: Use the common-tangent procedure.)

15 Given: \overline{PT} is tangent to $\odot Q$ and R at points S and T .

Conclusion: $\frac{PQ}{PR} = \frac{SQ}{TR}$

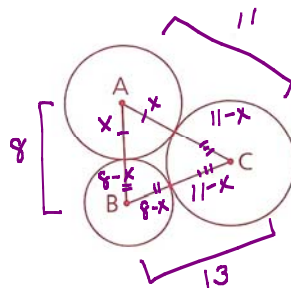
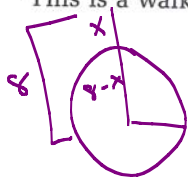


1. \overline{PT} tan $\odot Q$ & $\odot R$ @ S & T
 2. $\overline{QS} \perp \overline{RT} \perp \overline{PT}$
 3. $\angle QSP \cong \angle RTP$ $r + \angle s$
 4. $\angle QSP \cong \angle RTP$
 5. $\angle P \cong \angle P$
 6. $\triangle QSP \sim \triangle RTP$
 7. $\frac{PQ}{PR} = \frac{SQ}{TR}$
1. Given
 2. $\tan \Rightarrow \perp$
 3. $\perp \Rightarrow r + \angle$
 4. $r + \angle s \cong \angle s$
 5. Ref
 6. $AA \sim$
 7. $\sim \Rightarrow$ prop sds

16 Given: Tangent $\odot A$, B , and C ,

$AB = 8$, $BC = 13$, $AC = 11$

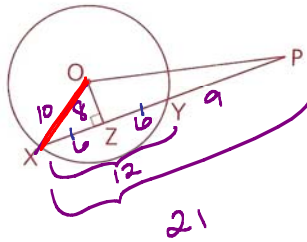
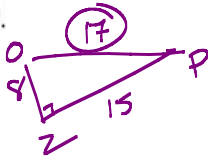
Find: The radii of the three \odot (Hint: This is a walk-around problem.)



$\odot A = 3$
 $\odot B = 8 - 3 = 5$
 $\odot C = 11 - 3 = 8$

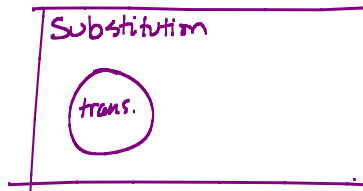
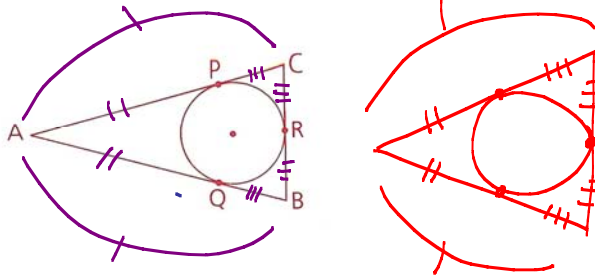
$$\begin{aligned} 8 - x + 11 - x &= 13 \\ -2x + 19 &= 13 \\ +2x - 13 - 13 + 2x & \\ 6 &= 2x \\ 3 &= x \end{aligned}$$

- 17 The radius of $\odot O$ is 10.
The secant segment \overline{PX} measures 21 and is 8 units from the center of the \odot .
- Find the external part (PY) of the secant segment. $21 - 12 = 9$
 - Find OP.



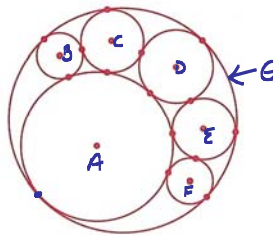
- 18 Given: $\triangle ABC$ is isosceles, with base \overline{BC} .
Conclusion: $\overline{BR} \cong \overline{RC}$

- $\triangle ABC$ isos, base \overline{BC} 1. Given
- $\overline{AC} \cong \overline{AB}$ 2. $\text{Isos} \Rightarrow 2 \cong \text{sds}$
- Each side $\triangle ABC$ tan to \odot 3. $\text{tan} \cap$ at 1 pt.
- $\overline{AP} \cong \overline{AQ}$ 4. $2 \text{ tan} \Rightarrow \cong \text{seg}$
- $\overline{PC} \cong \overline{QB}$ 5. Subtract ($AC - AP = AB - AQ$)
- $\overline{BR} \cong \overline{RC}$ 6. Substitute



- 19 If two of the seven circles are chosen at random, what is the probability that the chosen pair are

- Internally tangent? $2/7$
- Externally tangent? $3/7$
- Not tangent? $2/7$



AB						
AC	BC					
AD	BD	-				
AE	BE	-	-			
AF	BF	-	-	-		
AG	BG	-	-	-	-	