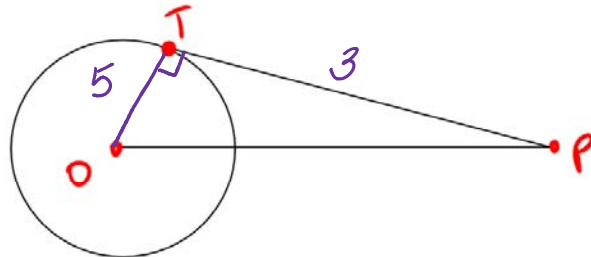


Geo H
10.4

Name:

1. TP is tangent to circle O. The radius is 5 mm and the tangent segment is 3 mm. Find OP.

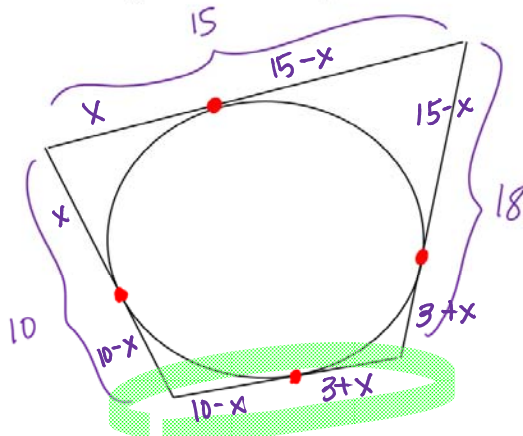


→ gives you \perp

$$5^2 + 3^2 = OP^2$$

$$OP = \sqrt{34}$$

2. Walk around problem! Each side of a quadrilateral is tangent to a circle. Find the missing side of the quadrilateral.



Two tangent theorem:
the tangents are equal

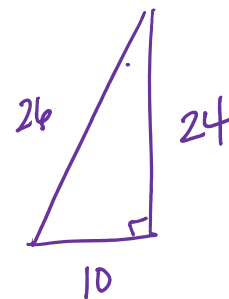
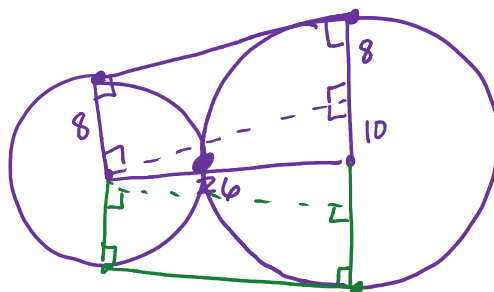
$$18 - (15 - x)$$

$$18 - 15 + x$$

$$3 + x$$

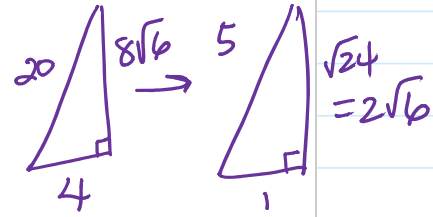
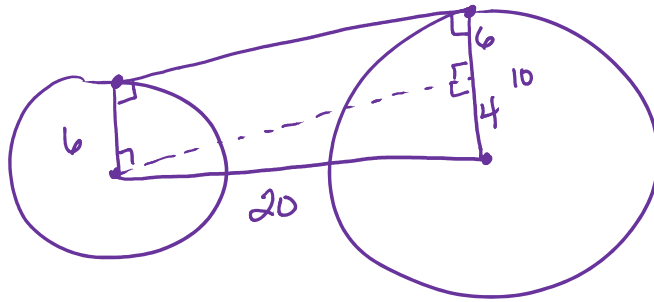
$$10 - x + 3 + x = 13$$

3. A circle with radius of 8 is externally tangent to a circle with a radius of 18. Find the length of the common external tangent of the circles.

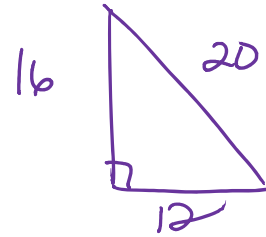
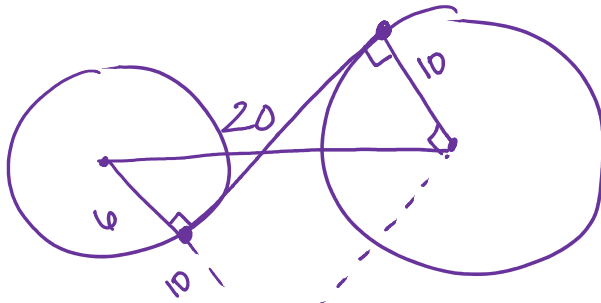


Common external tangent = 24

4. The centers of two circles with radii of 6 and 10 are 20 units apart. Find the common internal AND external tangents of the circles.

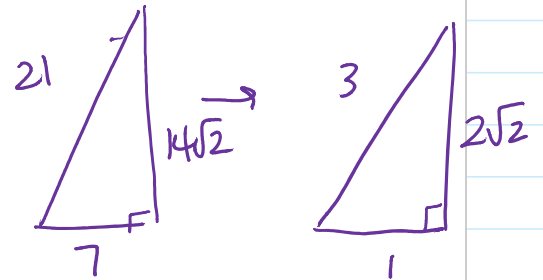
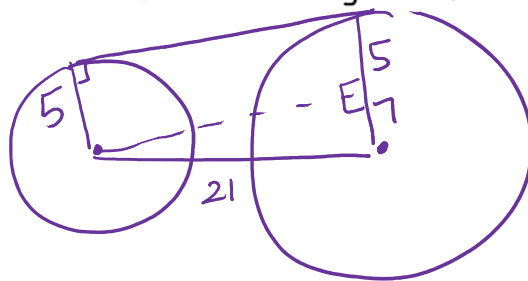


Common external = $8\sqrt{6}$ tangent

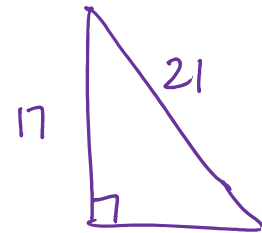
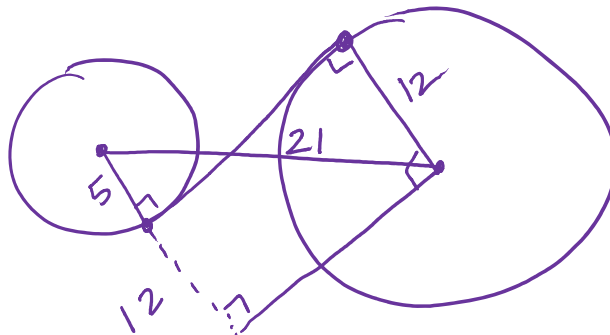


Common internal tangent = 12

5. The centers of two circles with radii of 5 and 12 are 21 units apart. Find the common internal AND external tangents of the circles.



CET = $14\sqrt{2}$



CIT = $2\sqrt{38}$