Accelerated Geometry ***Name*** _____

Chapter 10 – Section 2: Congruent Chords ***Date*** 4/2

After studying section 10.1 last night, you should now be able to:

1. Identify the characteristics of circles
2. Recognize chords and diameters of circles
3. Recognize special relationships between radii and chords

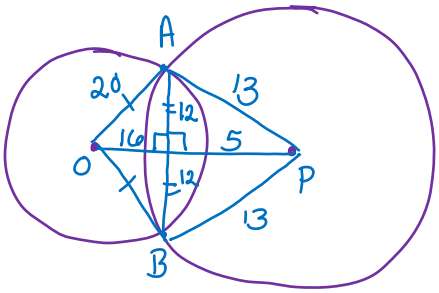
Do you remember from Section 4.4…

Theorem 24: If two points are each equidistant from the endpoints of a segment, then the two points determine the perpendicular bisector of that segment.

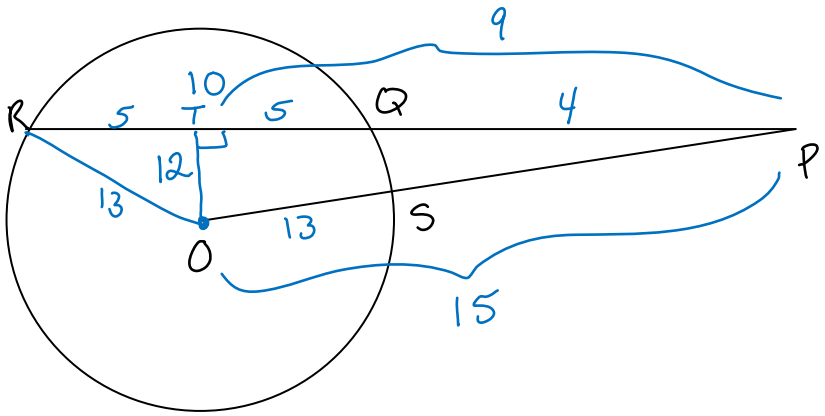
Review problems from Section 10.1.

1. From page 443 #14: Two circles intersect and have a common chord 24 cm long. The centers of the circles are 21 cm apart. The radius of one circle is 13 cm. Find the radius of the other circle. (I reminded you about Theorem 24 for a reason!)

AB = 24 OP = 21 $\overline{OP} \perp$ bisec. $\overline{AB}$



2. From page 443 #23: In circle O, PQ = 4, RQ = 10 and PO = 15. Find PS.



SP = 2

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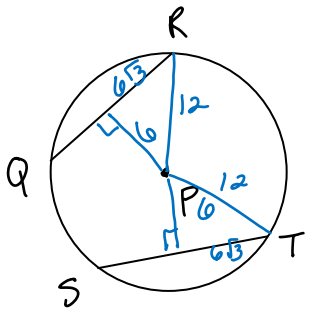
After studying section 10.2, you will be able to apply the relationship between congruent chords of a circle.

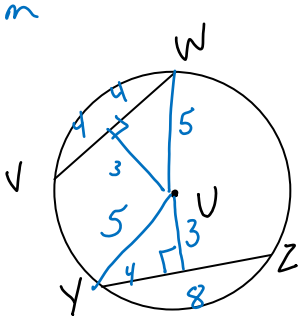
Theorem 77: In a circle or congruent circles, if two chords are equidistant from the center, then they are congruent.

3. Given: Circle P with radius 12 in
   Chords $\overline{QR}$ and $\overline{ST}$ are both 6 in from center P
   Find: QR and ST. $12\sqrt{3}$ in



Theorem 78: In a circle or congruent circles, if two chords are congruent, then they are equidistant from the center of the circle. Converse Sum Thm

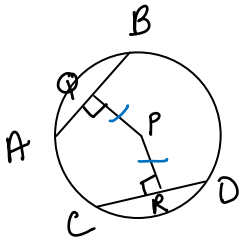
4. Given: Circle U with diameter 10 in $r=5$
   $\overline{VW} \cong \overline{YZ}$
   YZ = 8 in
   Find: The distance $\overline{VW}$ is from U 3 in



5. In circle P, PQ = PR, AB = 6x + 14 and CD = 4 - 4x. Find AB and AQ.

$AB = CD$
$6x+14 = 4-4x$
$10x = -10$
$x = -1$

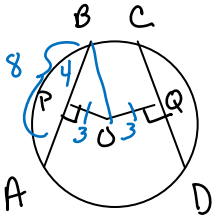
$AB = 8$
$AQ = 4$



6. In circle O, PB = 3x – 17, CD = 15 – x, OQ = OP = 3. Find AB and the length of the radius of the circle.

$2(PB) = CD$
$2(3x-17) = 15-x$
$6x-34 = 15-x$
$7x = 49$
$x = 7$

$AB = 8$
Radius = 5



Homework Hints:

- **Page 445 #24: Draw an inscribed obtuse isosceles triangle so that the center of the circle is not inside the triangle.**
- **Page 445 #25: Start with 2 equations and find a way to set them equal so that you only have to solve for one variable.**
- **Page 449 #15: Draw in $\overline{EC}$. What is $\overline{EC}$? What is $\overline{AE}$? Use ΔEDC and ΔADC to write 2 equations. Then see the hint for #25….**