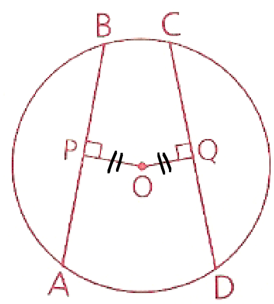
P5

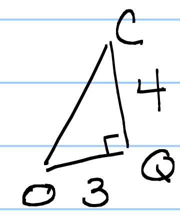
Note Title 3/14/2016

10.2: **11** In circle O, PB = 3x − 17, CD = 15 − x, and OQ = OP = 3.

a Find AB. $= 15 - 7 = 8$

b Find the radius of ⊙O. $= 5$





If rad = dist then ≅ chds ⇒ AB = CD

If rad ⊥ chd then rad bis chd ⇒ PB = PA

$\therefore \; 2PB = CD$

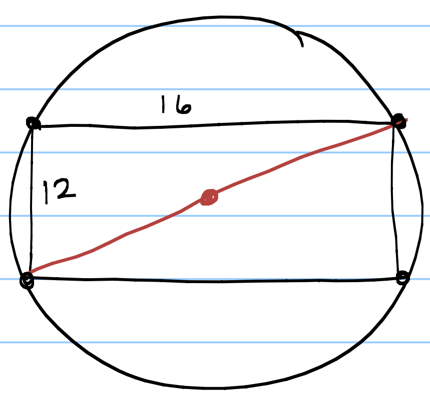
$2(3x - 17) = 15 - x$

$6x - 34 = 15 - x$

$7x = 49$

$x = 7$

13 A 16-by-12 rectangle is inscribed in a circle. Find the radius of the circle.



12, 16, ___

4 (3, 4, 5)

$d = 20 \quad \therefore r = 10$

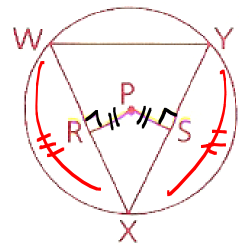
P7 Q&A

Problem Set A, *continued*

10.2

3 Given: $\odot P$, $\overline{PR} \perp \overline{WX}$, $\overline{PS} \perp \overline{XY}$, $\overline{PR} \cong \overline{PS}$

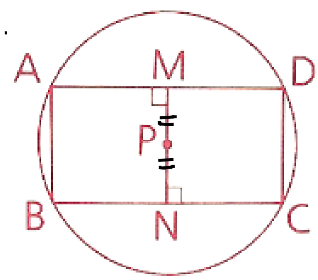
Conclusion: $\angle W \cong \angle Y$



S	R
1. $\odot P$ $\overline{PR} \perp \overline{WX}$, $\overline{PS} \perp \overline{XY}$ $\overline{PR} \cong \overline{PS}$	1. GIVEN
2. $\overline{WX} \cong \overline{YX}$	2. = dist $\Rightarrow$ $\cong$ CHORDS
3. $\angle W \cong \angle Y$	3. $\triangle \Rightarrow \triangle$

5 Given: $\odot P$;
P is the midpoint of $\overline{MN}$.
$\overline{MN} \perp \overline{AD}$, $\overline{MN} \perp \overline{BC}$

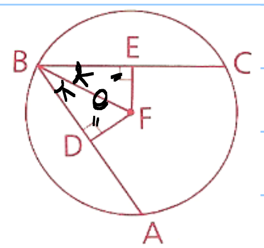
Conclusion: ABCD is a $\square$.



1. $\odot P$, P mdpt $\overline{MN}$	1. GIVEN
2. $\overline{PM} \cong \overline{PN}$	2. mdpt $\Rightarrow$ $\cong$ segs
3. $\overline{MN} \perp \overline{AD}$ & $\overline{MN} \perp \overline{BC}$	3. GIVEN
4. $\overline{AD} \cong \overline{BC}$	4. = dist $\Rightarrow$ $\cong$ CHORDS
5. AD // BC	5. If 2 lines are $\perp$ to a third, then they are // to each other.
6. $\square$ ABCD	6. IN A QUAD, IF ONE PAIR OF OPP SDS IS BOTH $\cong$ & //, THEN QUAD IS $\square$.

9 Given: $\odot F$,
$\overline{FE} \perp \overline{BC}$, $\overline{FD} \perp \overline{AB}$;
$\overrightarrow{BF}$ bisects $\angle ABC$.

Prove: $\overline{BC} \cong \overline{BA}$



~~SSS~~
~~SAS~~
~~ASA~~
~~HL~~
AAS

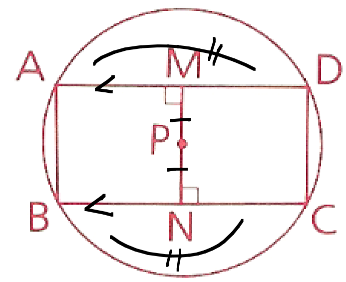
	1. $\odot F$	1. GIVEN
	2. $\overline{FE} \perp \overline{BC}$ & $\overline{FD} \perp \overline{AB}$	2. GIVEN
	3. $\angle FEB$ & $\angle FDB$ rt$\angle$s	3. $\perp \Rightarrow$ rt$\angle$s
A	4. $\angle FEB \cong \angle FDB$	4. rt$\angle$s $\Rightarrow \cong \angle$s
	5. $\overrightarrow{BF}$ bis $\angle ABC$	5. GIVEN
A	6. $\angle DBF \cong \angle EBF$	6. bis $\Rightarrow \cong \angle$s
S	7. $\overline{BF} \cong \overline{BF}$	7. REF
	8. $\triangle EBF \cong \triangle DBF$	8. AAS (4 6 7)
	9. $\overline{EF} \cong \overline{FD}$	9. CPCTC (8)
	10. $\overline{BC} \cong \overline{BA}$	10. = dist $\Rightarrow \cong$ chds (1, 2, 9)

5 Given: $\odot P$;

P is the midpoint of $\overline{MN}$.

$\overline{MN} \perp \overline{AD}$, $\overline{MN} \perp \overline{BC}$

Conclusion: ABCD is a ▱.

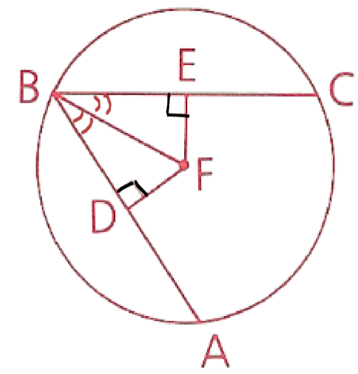


1. $\odot P$	1. GIVEN
2. P mdpt $\overline{MN}$	2. GIVEN
3. $\overline{PM} \cong \overline{PN}$	3. mdpt ⇒ ≅ SEGS (2)
4. $\overline{MN} \perp \overline{AD}$, $\overline{MN} \perp \overline{BC}$	4. GIVEN
5. $\overline{AD} \cong \overline{BC}$	5. = dist ⇒ ≅ CHDS (3, 4)
6. $\overline{AD} \parallel \overline{BC}$	6. If 2 lines are $\perp$ to a third then they are $\parallel$ to each other. (Thm 36, p 218)
7. ▱ABCD	7. In a quad, if one pr of sides is both ≅ & $\parallel$, then ▱. (p249 #3)

~~SSS~~ ~~ASA~~
~~SAS~~
~~HL~~
AAS

9 Given: $\odot F$,
$\overline{FE} \perp \overline{BC}$, $\overline{FD} \perp \overline{AB}$;
$\overrightarrow{BF}$ bisects $\angle ABC$.

Prove: $\overline{BC} \cong \overline{BA}$



$\cong \triangle s$

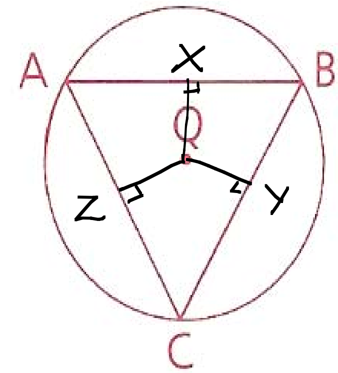
$EF = FD$

$BC = BA$

	S	R
	1. $\odot F$ $\overline{FE} \perp \overline{BC}$ & $\overline{FD} \perp \overline{AB}$	1. GIVEN
	2. $\angle FEB$ & $\angle FDB$ rt$\angle$s	2. $\perp \Rightarrow$ rt$\angle$s (1)
A	3. $\angle FEB \cong \angle FDB$	3. rt$\angle \Rightarrow \cong \angle$s (2)
	4. $\overrightarrow{BF}$ bis $\angle ABC$	4. Given
A	5. $\angle EBF \cong \angle DBF$	5. bis $\Rightarrow \cong \angle$s (4)
S	6. $\overline{BF} \cong \overline{BF}$	6. ref
	7. $\triangle EBF \cong \triangle DBF$	7. AAS (3 5 6)
	8. $\overline{EF} \cong \overline{FD}$	8. CPCTC (7)
	9. $\overline{BC} \cong \overline{BA}$	9. = dist $\Rightarrow \cong$ chds (1, 8)

4 Given: Equilateral $\triangle$ ABC is inscribed in $\odot$Q.

Conclusion: $\overline{AB}$, $\overline{BC}$, and $\overline{CA}$ are equidistant from the center.



1. EQUILATERAL $\triangle$ ABC inscribed in $\odot$Q	1. GIVEN
2. $\overline{AB} \cong \overline{AC} \cong \overline{BC}$	2. EQUILATERAL $\Rightarrow$ $\cong$ SIDES
3. DRAW $\overline{QX} \perp \overline{AB}$, $\overline{QY} \perp \overline{BC}$, & $\overline{QZ} \perp \overline{AC}$	3. GIVEN A LINE & A PT NOT ON THE LINE, THERE'S ONLY 1 $\perp$ LINE
4. $\overline{QX} \cong \overline{QY} \cong \overline{QZ}$	4. $\cong$ CHDS $\Rightarrow$ = DIST
5. $\overline{AB}$, $\overline{BC}$, & $\overline{AC}$ = dist from ctr.	5. $\cong$ sg $\Rightarrow$ = meas.