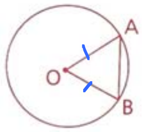
NAME Ans. Key — Ms. Kresovic

Adv Geo – ______ — Mon 8 April 2013

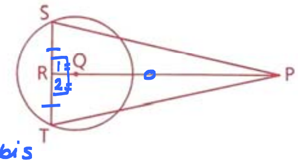
10.1: 1-13, 16, 20, 23

1 Given: ⊙O, chord $\overline{AB}$
Prove: **a** △AOB is isosceles.
b ∠A ≅ ∠B



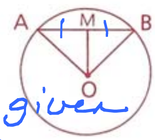
1. ⊙O — 1. Given
2. $\overline{OA} \cong \overline{OB}$ — 2. ⊙ ⇒ ≅ rad
3. △AOB isos — 3. 2 ≅ sds ⇒ isos
4. ∠A ≅ ∠B — 4. isos ⇒ 2≅∠s OR ≅△ ⇒ △

2 Given: ⊙Q, $\overline{PR} \perp \overline{ST}$
Prove: ∠S ≅ ∠T



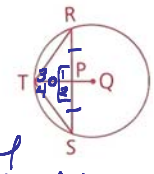
1. ⊙Q, $\overline{PR} \perp \overline{ST}$ — 1. given
S 2. $\overline{RS} \cong \overline{RT}$ — 2. rad ⊥ chd ⇒ bis
3. ∠1&∠2 rt∠s — 3. ⊥ ⇒ rt∠s
A 4. ∠1 ≅ ∠2 — 4. rt∠s ⇒ ≅∠s
S 5. $\overline{RP} \cong \overline{RP}$ — 5. Reflex
6. △SRP ≅ △TRP — 6. SAS
7. ∠S ≅ ∠T — 7. CPCTC

3 Given: ⊙O; $\overline{OM}$ is a median.
Conclusion: $\overline{OM}$ is an altitude.



1. ⊙O, $\overline{OM}$ median — 1. given
2. $\overline{OA} = \overline{OB}$ — 2. ⊙ ⇒ ≅ rad
3. △OAB isos base $\overline{AB}$ — 3. 2 ≅ sds ⇒ isos
4. $\overline{OM}$ alt — 4. isos △, med ⇒ alt

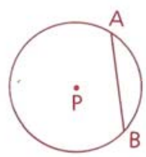
4 Given: ⊙Q, $\overline{QT} \perp \overline{RS}$
Prove: $\overrightarrow{TQ}$ bisects ∠RTS.

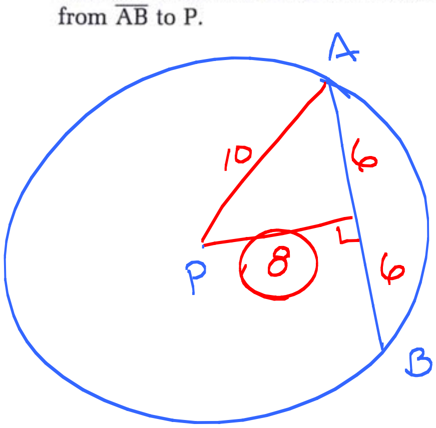


~~HL rt∠ TR ref TR ≅ TS (?)~~

1. ⊙Q & $\overline{QT} \perp \overline{RS}$ — 1. g
2. $\overline{PT} \cong \overline{PT}$ — 2. Ref
3. ∠1 & ∠2 rt∠ — 3. ⊥ ⇒ rt∠s
4. ∠1 ≅ ∠2 — 4. rt∠s ≅
5. $\overline{RP} \cong \overline{PS}$ — 5. rad ⊥ chd ⇒ bis
6. △RTP ≅ △STP — 6. SAS
7. ∠3 ≅ ∠4 — 7. CPCTC
8. $\overrightarrow{TQ}$ bis ∠RTS — 8. ≅∠s ⇒ bis

5 Chord $\overline{AB}$ measures 12 mm and the radius of ⊙P is 10 mm. Find the distance from $\overline{AB}$ to P.

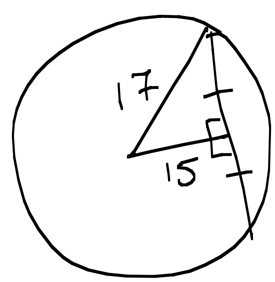




6 — 10 = 2(3,4,5)

$\boxed{\therefore 8mm}$

6 Find the length of a chord that is 15 cm from the center of a circle with a radius of 17 cm.

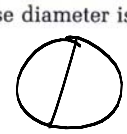


(–, 15, 17) → 8 = ½ chord
rad ⊥ chd ⇒ bis ∴
16 = chord

7 Given: PQRS is an isosceles trapezoid, with $\overleftrightarrow{SR} \parallel \overleftrightarrow{PQ}$.
Conclusion: ⊙P ≅ ⊙Q

1. isos trap PQRS, $\overline{SR} \parallel \overline{PQ}$ — 1. given
2. $\overline{SP} \cong \overline{RQ}$ — 2. isos trap → 2 ≅ sds
3. ⊙P ≅ ⊙Q — 3. ≅ radii ⇒ ≅ ⓢ.

8 Find, ~~to the nearest tenth~~, the circumference and the area of a circle whose diameter is 7.8 cm.



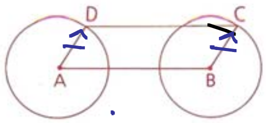
d = 7.8 cm
r = 3.9 cm

$A = \pi(3.9)^2 = 15.21\pi$

$C = 7.8\pi$

9 Given: ⊙A ≅ ⊙B, $\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$

Prove: ABCD is a ▱.

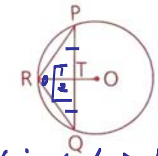


1. ⊙A ≅ ⊙B — 1. given
2. $\overline{AD} \cong \overline{BC}$ — 2. ≅ ⊙ ⇒ ≅ rad
3. $\overline{AD} \parallel \overline{BC}$ — 3. given
4. ▱ABCD — 4. If one pair of opp sds of quad both ≅ & ∥, then ▱

(See ch 5 quad props)

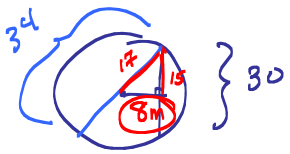
10 Given: ⊙O; $\overleftrightarrow{OR}$ bisects $\overline{PQ}$.

Prove: $\overrightarrow{RO}$ bisects ∠PRQ.

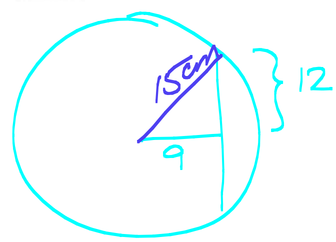


1. ⊙O, $\overline{OR}$ bis $\overline{PQ}$
2. OR ⊥ PQ — 2. rad bis chd ⇒ ⊥
3. ∠1 & ∠2 rt∠s — 3. ⊥ ⇒ rt∠
4. ∠1 ≅ ∠2 — 4. rt∠ ⇒ ≅∠s
5. $\overline{PT} \cong \overline{TQ}$ — 5. bis ⇒ ≅ seg
6. $\overline{RT} \cong \overline{RT}$ — 6. ref
7. △PRT ≅ △QRT — 7. SAS
8. ∠PRO ≅ ∠QRO — 8. CPCTC
9. $\overrightarrow{RO}$ bis ∠PRQ — 9. ≅∠s ⇒ bis

11 Find the distance from the center of a circle to a chord 30 m long if the diameter of the circle is 34 m.



12 Find the radius of a circle if a 24-cm chord is 9 cm from the center.

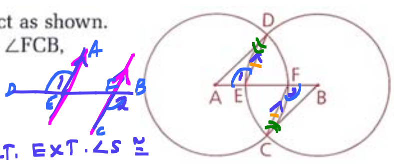


9, 12, —

3(3, 4, 5)

13 Given: ⊙ A and B intersect as shown. $\overline{DE} \parallel \overline{FC}$, ∠ADE ≅ ∠FCB, $\overline{DE} \cong \overline{FC}$

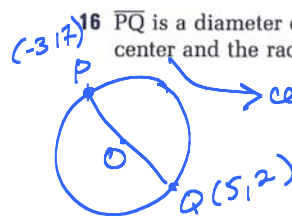
Prove: ⊙A ≅ ⊙B



⊙A + B not shown

1. $\overline{DE} \parallel \overline{FC}$ — 1. given
2. ∠1 ≅ ∠2 — 2. ∥ ⇒ ALT. EXT. ∠s ≅
3. $\overline{DE} \cong \overline{FC}$ — 3. given
4. ∠ADE ≅ ∠FCB — 4. given
5. △DEA ≅ △CFB — 5. ASA
6. $\overline{AD} \cong \overline{BC}$ — 6. CPCTC
7. ⊙A ≅ ⊙B — 7. ≅ rad ⇒ ≅ ⊙s

16 $\overline{PQ}$ is a diameter of ⊙O. P = (−3, 17) and Q = (5, 2). Find the center and the radius of ⊙O.



center = mdpt diameter

$O = \left(\frac{-3+5}{2}, \frac{17+2}{2}\right) = \left(1, \frac{19}{2}\right)$

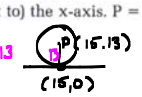
$OP = \sqrt{\Delta x^2 + \Delta y^2} = \sqrt{(1+3)^2 + \left(\frac{19}{2} - 17\right)^2} = \sqrt{16 + \left(\frac{19}{2} - \frac{34}{2}\right)^2} = \sqrt{16 + \left(\frac{-15}{2}\right)^2} = \sqrt{16 + \frac{225}{4}} = \sqrt{\frac{64}{4} + \frac{225}{4}} = \sqrt{\frac{289}{4}} = \frac{17}{2}$

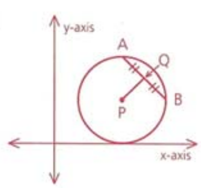
17 ⊙P just touches (is tangent to) the x-axis. P = (15, 13) and Q = (19, 16).

a Find the radius of ⊙P. = 13

b Find PQ.

c Find the length of $\overline{AB}$.





b. Dist Form: $\sqrt{\Delta x^2 + \Delta y^2}$

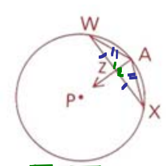
$PQ = \sqrt{(19-15)^2 + (16-13)^2} = \sqrt{4^2 + 3^2} = \boxed{5}$

c. 5, 13 → (5, 12, 13)

↳ BQ = 12 ∴ AB = 2(BQ) = $\boxed{24}$

18 Given: ⊙P; Z is the midpt. of $\overline{WX}$. △WAX is isosceles, with base $\overline{WX}$.

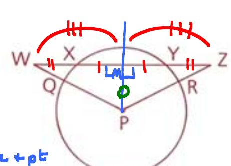
Prove: $\overrightarrow{AZ}$ passes through P.



1. ⊙P, Z mdpt $\overline{WX}$ — 1. given
2. $\overline{WZ} \cong \overline{ZX}$ — 2. mdpt ⇒ ≅ seg
3. △WAX isos, base $\overline{WX}$ — 3. given
4. $\overline{WA} \cong \overline{AX}$ — 4. isos ⇒ 2 sds ≅
5. $\overline{AZ} \cong \overline{AZ}$ — 5. Ref
6. △WAZ ≅ △XAZ — 6. SSS
7. ∠WZA ≅ ∠XZA — 7. CPCTC
8. ∠WZA supp ∠XZA — 8. St∠ ⇒ supp
9. ∠WZA & ∠XZA rt∠s — 9. ≅ & supp∠s ⇒ rt∠s
10. $\overline{AZ} \perp \overline{WX}$ — 10. rt∠s ⇒ ⊥
11. $\overline{AZ}$ bis $\overline{WX}$ — 11. 2 ≅ seg ⇒ bis
12. $\overline{AZ}$ ⊥ bis $\overline{WX}$ — 12. ⊥ & bis ⇒ ⊥ bis
13. $\overrightarrow{AZ}$ passes thru P. — 13. ⊥ bis of chd passes thru ctr of ⊙

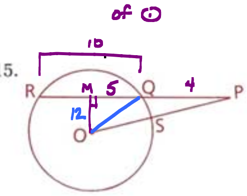
20 Given: ⊙P, $\overline{WX} \cong \overline{YZ}$

Prove: $\overline{WQ} \cong \overline{ZR}$



1. ⊙P — 1. given
2. Draw PM ⊥ WZ — 2. Given a line + pt not on line, there is 1 only 1 ⊥ line
3. ∠WMP & ∠ZMP rt∠ — 3. ⊥ ⇒ rt∠
4. ∠WMP ≅ ∠ZMP — 4. rt∠s ⇒ ≅∠s
5. $\overline{XM} \cong \overline{MY}$ — 5. rad ⊥ chd ⇒ bis
6. $\overline{WX} \cong \overline{YZ}$ — 6. Given
7. $\overline{WM} \cong \overline{MZ}$ — 7. Add
8. $\overline{MP} \cong \overline{MP}$ — 8. ref
9. △WMP ≅ △ZMP — 9. SAS
10. $\overline{WP} \cong \overline{ZP}$ — 10. CPCTC
11. $\overline{PQ} \cong \overline{PR}$ — 11. ⊙ ⇒ ≅ radii
12. $\overline{WQ} \cong \overline{ZR}$ — 12. Subtract

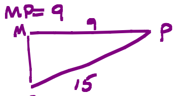
23 In circle O, PQ = 4, RQ = 10, and PO = 15. Find PS (the distance from P to ⊙O).



DRAW OM ⊥ RQ → MQ = 5.

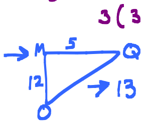
Given QP = 4 → MP = 9

Given PO = 15 →



3(3 — 5) → MO = 12

DRAW RADIUS QO →



OQ = OS (⊙ → ≅ RADII) → OS + PS = OP

13 + PS = 15

PS = 2