Answers for Lesson 12-2, pp. 673–675 Exercises

1. $\overset{\frown}{BC} \cong \overset{\frown}{YZ}$; $\overline{BC} \cong \overline{YZ}$

2. $\overline{ET} \cong \overline{GH} \cong \overline{JN} \cong \overline{ML}$
$\overset{\frown}{ET} \cong \overset{\frown}{GH} \cong \overset{\frown}{JN} \cong \overset{\frown}{ML}$;
$\angle TFE \cong \angle HFG \cong \angle JKN \cong \angle MKL$

3. 14 **4.** 2 **5.** 7

6. 50 **7.** 8 **8.** 10

9. Answers may vary. Samples are given.
a. $\overline{CE}$
b. $\overline{DE}$
c. $\angle CEB$
d. $\angle DEA$

10. the center of the circle

11. 6 **12.** 5.4 **13.** 8.9

14. 12.5 **15.** 9.9 **16.** 20.8

17. 108 **18.** 90 **19.** about 123.9

20. She can draw 2 chords, and their ⊥ bisectors, of the partial circle. The intersection pt. of the ⊥ bisectors will be the center and she can then measure the radius.

21. 12 cm **22.** 6 in.

23. **a.** $\overline{PL}$

b. $\overline{PM}$

c. All radii of a circle are ≅.

d. $\triangle LPN$

e. SAS

f. CPCTC

24. **a.** All radii of a circle are ≅.

b. $\overline{AB} \cong \overline{CD}$

c. Given

d. SSS

e. $\angle AEB \cong \angle CED$

f. ≅ central ∠s have ≅ arcs.

25. $\triangle OAC \cong \triangle OBC$ by HL. $\overline{AC} \cong \overline{BC}$ since CPCTC. Also $\angle AOC \cong \angle BOC$ (CPCTC), so $\widehat{AD} \cong \widehat{BD}$ since ≅ central ∠s intercept ≅ arcs.

26. about 13.9 cm

27. He doesn't know that the chords are equidistant from the center.

28. Check students' work.

29. If the chords, arcs, or central ∠s are in different circles and the circles have unequal radii, the theorems do not apply.

30. 5 in. **31.** 10 cm **32.** 10 ft **33.** C

34. 3.5 cm, 15.5 cm

35. **1.** $\odot P$ with $\widehat{QS} \cong \widehat{RT}$ (Given)

2. $m\widehat{QS} = m\angle QPS$ and $m\widehat{RT} = m\angle RPT$ (Arc measure = central ∠ measure.)

3. $m\widehat{QS} = m\widehat{RT}$ (Def. of ≅)

4. $\angle QPS \cong \angle RPT$ (Subst.)

36. X is equidist. from W and Y, since $\overline{XW}$ and $\overline{XY}$ are radii. So, X is on the ⊥ bis. of $\overline{WY}$ by the Conv. of the ⊥ Bis. Thm. But ℓ is the ⊥ bis. of $\overline{WY}$, so ℓ contains X.

37. C on the bisector of $\angle QPR$ means that C is equidistant from $\overline{PQ}$ and $\overline{PR}$, or $\overline{PQ}$ and $\overline{PR}$ are equidistant from C. Therefore, $PQ = PR$ since chords equidistant from the center of a circle are ≅.

38. All radii of $\odot O$ are ≅, so $\triangle AOB \cong \triangle COD$ by SSS. $\angle A \cong \angle C$ by CPCTC. Also, $\angle OEA \cong \angle OFC$ since both are rt. ∠s. Thus, $\triangle OEA \cong \triangle OFC$ by AAS, and $\overline{OE} \cong \overline{OF}$ by CPCTC.

39. **1.** $\odot A$ with $\overline{CE} \perp \overline{BD}$ (Given)

2. $\overline{CF} \cong \overline{CF}$ (Refl. Prop. of ≅)

3. $\overline{BF} \cong \overline{FD}$ (A diameter ⊥ to a chord bisects the chord.)

4. $\angle CFB$ and $\angle CFD$ are rt. ∠s (Def. of ⊥).

5. $\triangle CFB \cong \triangle CFD$ (SAS)

6. $\overline{BC} \cong \overline{CD}$ (CPCTC)

7. $\widehat{BC} \cong \widehat{DC}$ (≅ chords have ≅ arcs.)

40. 1661 gal

41. Let O be the center of the circles, and P be the pt. of tangency of the larger circle's chord to the smaller circle. Then $\overline{OP}$ is ⊥ to the chord, and therefore bisects it. So P is the mdpt. of the chord.