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

1. $\overline{BC} \cong \overline{YZ} \; ; \; \overline{BC} \parallel \overline{YZ}$

2. $\overline{ET} \cong \overline{GH} \cong \overline{JN} \equiv \overline{ML}$

$\angle TFE \cong \angle HFG \equiv \angle JKN \equiv \angle MKL$

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 $\perp$ bisectors, of the partial circle. The intersection pt. of the $\perp$ 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 $\cong$.
   d. $\triangle LPN$
   e. SAS
   f. CPCTC
Answers for Lesson 12-2, pp. 673–675 Exercises (cont.)

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. \( \cong \) central \( \triangle \) have \( \cong \) arcs.

25. \( \triangle OAC \cong \triangle OBC \) by HL. \( \overline{AC} \cong \overline{BC} \) since CPCTC. Also \( \angle AOC \cong \angle BOC \) (CPCTC), so \( \overline{AD} \cong \overline{BD} \) since \( \cong \) central \( \triangle \) intercept \( \cong \) 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 \( \triangle \) 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 \( \overparen{QS} \cong \overparen{RT} \) (Given)

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

3. \( m\overparen{QS} = m\overparen{RT} \) (Def. of \( \cong \))

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

36. \( X \) is equidist. from \( W \) and \( Y \), since \( \overparen{XW} \) and \( \overparen{XY} \) are radii. So, \( X \) is on the \( \perp \) bis. of \( \overparen{WY} \) by the Conv. of the \( \perp \) Bis. Thm. But \( \ell \) is the \( \perp \) bis. of \( \overparen{WY} \), so \( \ell \) contains \( X \).
Answers for Lesson 12-2, pp. 673–675 Exercises (cont.)

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

38. All radii of $\odot O$ are $\cong$, 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. $\triangle$. Thus, $\triangle OEA \cong \triangle OFC$ by AAS, and $OE \cong OF$ by CPCTC.

39. 1. $\odot A$ with $CE \perp BD$ (Given)
   2. $CF \cong CF$ (Refl. Prop. of $\cong$)
   3. $BF \cong FD$ (A diameter $\perp$ to a chord bisects the chord.)
   4. $\angle CFB$ and $\angle CFD$ are rt. $\triangle$ (Def. of $\perp$).
   5. $\triangle CFB \cong \triangle CFD$ (SAS)
   6. $BC \cong CD$ (CPCTC)
   7. $BC \cong DC$ ($\cong$ chords have $\cong$ 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 $OP$ is $\perp$ to the chord, and therefore bisects it. So $P$ is the mdpt. of the chord.