

## Answers for Lesson 3-2, pp. 137–139 Exercises

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1.  $\overleftrightarrow{BE} \parallel \overleftrightarrow{CG}$  ; Conv. of Corr.  $\sphericalangle$ s Post.
2.  $\overline{CA} \parallel \overline{HR}$ ; Conv. of Corr.  $\sphericalangle$ s Post.
3.  $\overline{JO} \parallel \overline{LM}$ ; if two lines and a transversal form same-side int.  $\sphericalangle$ s that are suppl., then the lines are  $\parallel$ .
4.  $\overline{PQ} \parallel \overline{ST}$ ; Conv. of Alt. Int.  $\sphericalangle$ s Thm.
5. 30                      6. 50                      7. 59                      8. 31
9. The corr.  $\sphericalangle$ s are  $\cong$ , so the lines are  $\parallel$  by the Conv. of Corr.  $\sphericalangle$ s Post.
10.  $a \parallel b$ ; if two lines and a transversal form same-side int.  $\sphericalangle$ s that are suppl., then the lines are  $\parallel$ .
11.  $a \parallel b$ ; if two lines and a transversal form same-side int.  $\sphericalangle$ s that are suppl., then the lines are  $\parallel$ .
12.  $a \parallel b$ ; if two lines and a transversal form same side ext.  $\sphericalangle$ s that are suppl., then the two lines are  $\parallel$ .
13. none
14.  $a \parallel b$ ; Conv. of Corr.  $\sphericalangle$ s Post.
15. none
16.  $a \parallel b$ ; Conv. of Alt. Int.  $\sphericalangle$ s Thm.
17.  $\ell \parallel m$ ; Conv. of Corr.  $\sphericalangle$ s Post.
18.  $a \parallel b$ ; if two lines and a transversal form alt. ext.  $\sphericalangle$ s that are congruent, then the two lines are  $\parallel$ .
19.  $a \parallel b$ ; Conv. of Corr.  $\sphericalangle$ s Post.
20. none
21.  $\ell \parallel m$ ; Conv. of Alt. Int.  $\sphericalangle$ s Thm.

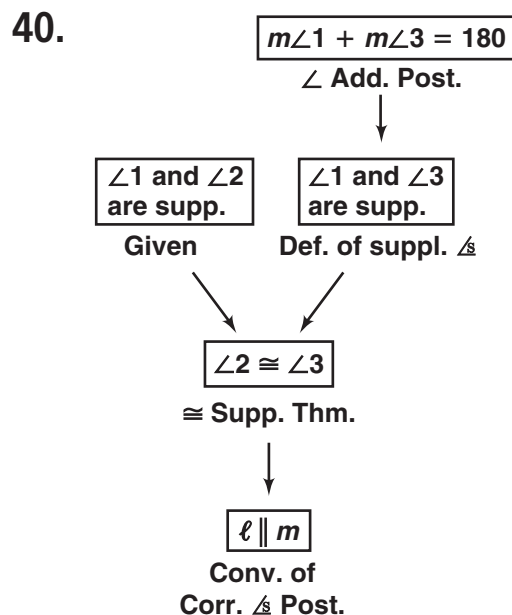
## Answers for Lesson 3-2, pp. 137–139 Exercises (cont.)

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22. a.  $\angle 1$   
b.  $\angle 1$   
c.  $\angle 2$   
d.  $\angle 3$   
e. Conv. of Corr.  $\triangle$
23. The corr.  $\triangle$  he draws are  $\cong$ .
24. 5                                      25. 20                                      26. C
27.  $m\angle 1 + m\angle 3 = 180$  (Given).  $m\angle 1 + m\angle 2 = 180$  ( $\angle$  Add. Post.).  $m\angle 1 + m\angle 3 = m\angle 1 + m\angle 2$  (Substitution).  $m\angle 3 = m\angle 2$  (Subt. Prop. of  $=$ ).  $\ell \parallel n$  (Conv. of Corres.  $\triangle$  Post.)
28. 10;  $m\angle 1 = m\angle 2 = 70$                       29. 5;  $m\angle 1 = m\angle 2 = 50$
30. 2.5;  $m\angle 1 = m\angle 2 = 30$                       31. 1.25;  $m\angle 1 = m\angle 2 = 10$
32. The corr.  $\triangle$  are  $\cong$ , and the oars are  $\parallel$  by the Conv. of Corr.  $\triangle$  Post.
33. Answers may vary. Sample:  $\angle 3 \cong \angle 9$ ;  $j \parallel k$  by Conv. of the Alt. Int.  $\triangle$  Thm.
34. Answers may vary. Sample:  $\angle 3 \cong \angle 9$ ;  $j \parallel k$  by Conv. of the Alt. Int.  $\triangle$  Thm. and  $\ell \parallel m$  by Conv. of Same-Side Int.  $\triangle$  Thm.
35. Answers may vary. Sample:  $\angle 3 \cong \angle 11$ ;  $\ell \parallel m$  by Conv. of the Alt. Int.  $\triangle$  Thm. and  $j \parallel k$  by Conv. of Corr.  $\triangle$  Post.
36. Answers may vary. Sample:  $\angle 3$  and  $\angle 12$  are suppl.;  $j \parallel k$  by the Conv. of Corr.  $\triangle$  Post.
37. Vert.  $\triangle$  Thm. and Conv. of Corr.  $\triangle$  Post.

**Answers for Lesson 3-2, pp. 137–139 Exercises (cont.)**

- 38.** 1.  $\ell \parallel n$  1. Given  
 2.  $\angle 8 \cong \angle 4$  2. Corres.  $\sphericalangle$  Post.  
 3.  $\angle 12 \cong \angle 8$  3. Given  
 4.  $\angle 12 \cong \angle 4$  4. Trans. Prop. of  $\cong$   
 5.  $j \parallel k$  5. Conv. of Corres.  $\sphericalangle$  Post.
- 39.** 1.  $j \parallel k$  1. Given  
 2.  $m\angle 9 + m\angle 4 = 180$  2. Same-Side Int.  $\sphericalangle$  Thm.  
 3.  $m\angle 8 + m\angle 9 = 180$  3. Given  
 4.  $m\angle 9 + m\angle 4 =$   
 $m\angle 8 + m\angle 9$  4. Trans. Prop. of =  
 5.  $m\angle 4 = m\angle 8$  5. Subt. Prop. of =  
 6.  $\ell \parallel n$  6. Conv. of Corres.  $\sphericalangle$  Post.



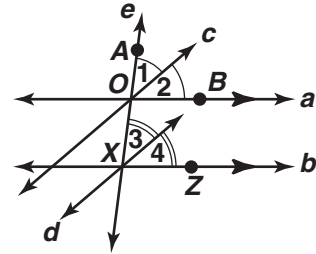
- 41.**  $\overline{PL} \parallel \overline{NA}$  and  $\overline{PN} \parallel \overline{LA}$  by Conv. of Same-Side Int.  $\sphericalangle$  Thm.  
**42.**  $\overline{PL} \parallel \overline{NA}$  by Conv. of Same-Side Int.  $\sphericalangle$  Thm.

**Answers for Lesson 3-2, pp. 137–139 Exercises (cont.)**

43. none

44.  $\overline{PN} \parallel \overline{LA}$  by Conv. of Same-Side Int.  $\sphericalangle$ s Thm.

45. a. Answers may vary. Sample:



b. Given:  $a \parallel b$  with transversal  $e$ ,  $c$  bisects  $\angle AOB$ ,  $d$  bisects  $\angle AXZ$ .

c. Prove:  $c \parallel d$

d. To prove that  $c \parallel d$ , show that  $\angle 1 \cong \angle 3$ .  $\angle 1 \cong \angle 3$  if  $\angle AOB \cong \angle OXZ$ .  $\angle AOB \cong \angle OXZ$  by the Corr.  $\sphericalangle$ s Post.

- e.
1.  $a \parallel b$  (Given)
  2.  $\angle AOB \cong \angle AXZ$  (Corr.  $\sphericalangle$ s Post.)
  3.  $m\angle AOB = m\angle AXZ$  (Def. of  $\cong \sphericalangle$ s)
  4.  $m\angle AOB = m\angle 1 + m\angle 2$ ;  $m\angle AXZ = m\angle 3 + m\angle 4$  ( $\sphericalangle$  Add. Post.)
  5.  $c$  bisects  $\angle AOB$ ;  $d$  bisects  $\angle AXZ$ . (Given)
  6.  $m\angle 1 = m\angle 2$ ;  $m\angle 3 = m\angle 4$  (Def. of  $\sphericalangle$  bisector)
  7.  $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$  (Trans. Prop. of  $\cong$ )
  8.  $m\angle 1 + m\angle 1 = m\angle 3 + m\angle 3$  (Subst.)
  9.  $2m\angle 1 = 2m\angle 3$  (Add. Prop.)
  10.  $m\angle 1 = m\angle 3$  (Div. Prop.)
  11.  $c \parallel d$  (Conv. of Corr.  $\sphericalangle$ s Post.)