

Written Exercises, Pages 63–65

1. Seg. Add. Post. 3. Vertical \triangle are \cong . 5. Def. of \angle bis. 7. Def. of \perp lines 9. Def. of comp. \triangle
11. If 2 lines are \perp , then they form \cong adj. \triangle . 13. Def. of \perp lines 15. 1. $\angle 5$ are supplementary; Given
2. Def. of supp. \triangle 3. Substitution Prop. 5. Subtr. Prop. of = 17. a. 1. Given 2. If the ext. sides of
2 adj. acute \triangle are \perp , then the \triangle are comp. 3. Given 4. If 2 \triangle are comp. of \cong \triangle , then the 2 \triangle are \cong .
b. Show that $\angle 3$ and $\angle 6$ are supps. of \cong \triangle . 19. 1. $\angle 2 \cong \angle 3$ (Given) 2. $\angle 1 \cong \angle 2$ (Vert. \triangle are \cong .)
3. $\angle 1 \cong \angle 3$ (Substitution Prop.) 4. $\angle 3 \cong \angle 4$ (Vert. \triangle are \cong .) 5. $\angle 1 \cong \angle 4$ (Trans. Prop.)
21. 1. $\overline{AC} \perp \overline{BC}$ (Given) 2. $\angle 2$ is comp. to $\angle 1$. (If the ext. sides of 2 adj. acute \triangle are \perp , then the 2 \triangle are
comp.) 3. $\angle 3$ is comp. to $\angle 1$ (Given) 4. $\angle 3 \cong \angle 2$ (If 2 \triangle are comp. of the same \angle , then the 2 \triangle are \cong .)
23. \overrightarrow{OF} bisects $\angle COD$. Proof: 1. \overrightarrow{OE} bisects $\angle AOB$. (Given) 2. $\angle 1 \cong \angle 2$ (Def. of \angle bis.) 3. $\angle 2 \cong \angle 3$
(Vert. \triangle are \cong .) 4. $m\angle 1 = m\angle 3$ (Trans. Prop.) 5. $m\angle 1 = m\angle 4$ (Vert. \triangle are \cong .) 6. $m\angle 3 = m\angle 4$
(Substitution Prop.) 7. \overrightarrow{OF} bisects $\angle COD$. (Def. of \angle bis.)

Self-Test 2, Page 65

1. Answers may vary; $90 \leq m\angle HOK < 180$ 2. a. 15 b. 40 3. 53; 37; 53 4. $m\angle 4 = 90 - t$,
 $m\angle 5 = t$, $m\angle 6 = 90 - t$ 5. Def. of \perp lines 6. Vert. \triangle are \cong . 7. If the ext. sides of 2 adj. \triangle are
 \perp , then the \triangle are comp. 8. Show that $\angle 1 \cong \angle 2$, so $j \perp k$. 9. 1. $\angle 1$ is supp. to $\angle 3$; $\angle 2$ is supp. to
 $\angle 3$ (Given) 2. $\angle 1 \cong \angle 2$ (If 2 \triangle are supp. of the same \angle , the 2 \triangle are \cong .) 3. $j \perp k$ (If 2 lines form \cong adj.
 \triangle , then the lines are \perp .)

Extra, Page 66

1. None of it; one 3. 2; the result is 2 non-Möbius (2-sided) bands linked together. 5. The result is a
rectangular frame.

Chapter Review, Pages 67–68

1. H: $m\angle 1 = 120$, C: $\angle 1$ is obtuse 3. Answers may vary; $m\angle 1 = 100$ 5. Substitution Prop.
7. Div. Prop. of = 9. Def. of midpt. 11. \angle Bis. Thm. 13. $\angle BOA$ or $\angle DOE$ 15. Def. of \perp
lines 17. If 2 lines are \perp , then they form \cong adj. \triangle . 19. Show that $\angle 3$ and $\angle 4$ are supp. of \cong \triangle .

Algebra Review, Page 69

1. $x = 3$, $y = 9$ 3. $x = -16$, $y = -8$ 5. $x = 28$, $y = 4$ 7. $x = 1$, $y = 6$ 9. $x = 5$, $y = 4$
11. $x = -2$, $y = 3$ 13. $x = 4$, $y = 1$ 15. $x = 6$, $y = 2$ 17. $x = 11$, $y = 16$

Preparing for College Entrance Exams, Page 70

1. C 2. C 3. D 4. E 5. D 6. B 7. E 8. C

Cumulative Review, Page 71

1. Div. Prop. of = 3. Def. of \perp lines 5. Subtr. Prop. of = 7. If 2 planes int., then their int. is a
line. 9. Seg. Add. Post. 11. True 13. False 15. False; 3 collinear pts. 17. True 19. True
21. $x = 36$ 23. $x = 10$ 25. $x = 31$

Chapter 3

Written Exercises, Pages 76–77

1. alt. int. \triangle 3. s-s. int. \triangle 5. corr. \triangle 7. \overleftrightarrow{PQ} , \overleftrightarrow{SR} ; \overleftrightarrow{SQ} 9. \overleftrightarrow{PQ} , \overleftrightarrow{SR} ; \overleftrightarrow{PS} 11. \overleftrightarrow{PQ} , \overleftrightarrow{SR} ; \overleftrightarrow{QR}
13. corr. \triangle 15. s-s. int. \triangle 17. corr. \triangle 19. Alt. int. \triangle are \cong . 21. a. Answers may vary.
b. Same as $m\angle 1 + m\angle 2$ c. Same as $m\angle 1 + m\angle 2$ d. When 2 nonparallel lines are cut by trans., the sum
of the meas. of s-s. int. \triangle is a constant. 23. \overleftrightarrow{BH} , \overleftrightarrow{CI} , \overleftrightarrow{DJ} , \overleftrightarrow{EK} , \overleftrightarrow{FL} 25. Answers may vary. \overleftrightarrow{FL} , \overleftrightarrow{EK} , \overleftrightarrow{DJ} ,
 \overleftrightarrow{CI} , \overleftrightarrow{GL} , \overleftrightarrow{LK} , \overleftrightarrow{JI} , \overleftrightarrow{IH} 27. $ABHG$, $BCIH$, $CDJI$, $DEKJ$ 29. If the top and bottom lie in \parallel planes, then \overleftrightarrow{CD}
and \overleftrightarrow{IJ} are the lines of intersection of $DCIJ$ with 2 \parallel planes, and are therefore \parallel . 31. sometimes 33. always
35. sometimes 37. always 39. sometimes

Written Exercises, Pages 80–82

1. $\angle 3$, $\angle 6$, $\angle 8$ 3. $\angle 4$, $\angle 5$, $\angle 7$, $\angle 10$, $\angle 12$, $\angle 13$, $\angle 15$ 5. 110, 70 7. $x = 60$, $y = 61$
9. $x = 60$, $y = 18$ 11. $x = 14$, $y = 9$ 13. 1. Given 2. Def. of \perp lines 3. $l \parallel n$ 4. If 2 \parallel lines are
cut by a trans., then corr. \triangle are \cong . 5. $m\angle 2 = 90$ 6. Def. of \perp lines 15. $x = 70$, $y = 12$, $z = 38$