

21. a. Key steps of proof: 1.  $\overline{AB} \cong \overline{AC}$ ;  $\overline{BD} \perp \overline{AC}$ ;  $\overline{CE} \perp \overline{AB}$  (Given) 2.  $\triangle ADB \cong \triangle AEC$  (AAS)  
3.  $\overline{BD} \cong \overline{CE}$  (CPCT) b. The altitudes drawn to the legs of an isos.  $\triangle$  are  $\cong$ . 23.  $Q$  is on the  $\perp$  bis. of  $\overline{PS}$ ,  
so  $PQ = SQ$ .  $S$  is on the  $\perp$  bis. of  $\overline{QT}$ , so  $QS = TS$ . Then  $PQ = TS$  by the Trans. Prop. 25. a.  $\overline{OD}$  is a  
 $\perp$  bis. of  $\overline{AB}$ , so  $\overline{AD} \cong \overline{BD}$ . b.  $\overline{OC}$  is a  $\perp$  bis. of  $\overline{AB}$ , so  $\overline{AC} \cong \overline{BC}$ . c. By parts (a) and (b) above,  $\overline{AD} \cong \overline{BD}$   
and  $\overline{AC} \cong \overline{BC}$ . Then since  $\overline{CD} \cong \overline{CD}$ ,  $\triangle CAD \cong \triangle CBD$  by SSS and  $\angle CAD \cong \angle CBD$  (CPCT).

### Self-Test 3, Page 159

1.  $\overline{EA} \cong \overline{DB}$  and  $\angle AEB \cong \angle BDA$  2. 1.  $\triangle MPQ \cong \triangle PMN$  (Given) 2.  $\overline{MN} \cong \overline{QP}$ ;  $\angle MPQ \cong \angle PMN$   
(CPCT) 3.  $\overline{MS} \cong \overline{PR}$  (Given) 4.  $\triangle MSN \cong \triangle PRQ$  (SAS) 3. a.  $\overline{LJ}$  or  $\overline{KJ}$  b.  $\overline{KZ}$  4. No 5. If a  
pt. lies on the bis. of an  $\angle$ , then the pt. is equidistant from the sides of the  $\angle$ . 6. If a pt. is equidistant from  
the endpts. of a seg., then the pt. lies on the  $\perp$  bis. of the seg.

### Chapter Review, Pages 160–161

1.  $\triangle QPR$  3.  $\angle W$  5. Yes; SSS 7. Yes; ASA 9. 1.  $\overline{JM} \cong \overline{LM}$ ;  $\overline{JK} \cong \overline{LK}$  (Given) 2.  $\overline{MK} \cong \overline{MK}$   
(Refl. Prop.) 3.  $\triangle MJK \cong \triangle MLK$  (SSS) 4.  $\angle MJK \cong \angle MLK$  (CPCT) 11.  $\overline{ER}$ ,  $\overline{EV}$  13. 25  
15. 1.  $\overline{GH} \perp \overline{HJ}$ ;  $\overline{KJ} \perp \overline{HJ}$  (Given) 2.  $m\angle GHJ = 90$ ;  $m\angle KJH = 90$  (Def. of  $\perp$  lines) 3.  $\angle GHJ \cong \angle KJH$   
(Def. of  $\cong \triangle$ ) 4.  $\angle G \cong \angle K$  (Given) 5.  $\overline{HJ} \cong \overline{HJ}$  (Refl. Prop.) 6.  $\triangle GHJ \cong \triangle KJH$  (AAS)  
17. 1. ASA 2. CPCT 3. HL 4. CPCT 5. If 2 lines are cut by a trans. and alt. int.  $\angle$ s are  $\cong$ , then the lines  
are  $\parallel$ . 19. If a pt. lies on the  $\perp$  bis. of a seg., then the pt. is equidistant from the endpts. of the seg.

### Algebra Review, Page 163

1. -6, 1 3. -2, 9 5. 0, 13 7. -13, 13 9. -0.2, 0.2 11. 3 13. -6, -2 15. 5  
17. -4, 5 19.  $\frac{-3 \pm \sqrt{57}}{6}$  21.  $\frac{-5 \pm \sqrt{17}}{2}$  23.  $\frac{5 \pm \sqrt{13}}{2}$  25. 1, 9 27. -7, 2 29. 20  
31. 1 33. 1.5

### Preparing for College Entrance Exams, Page 164

1. A 2. C 3. D 4. C 5. B 6. C 7. E 8. D 9. B

### Cumulative Review, Page 165

1. Seg. Add. Post. 3. obtuse 5. 16 7. 10 9. SSS 11.  $m\angle 5 = 90$ ,  $m\angle 6 = 54$ ,  $m\angle 7 = 36$ ,  
 $m\angle 8 = 54$  13. No 15. Yes;  $a \parallel b$  17. Key steps of proof: 1.  $\overline{MO} \perp \overline{NP}$ ,  $\overline{NO} \cong \overline{PO}$  (Given)  
2.  $\triangle NQO \cong \triangle PQO$  (HL) 3.  $\angle NOQ \cong \angle POQ$  (CPCT) 4.  $\triangle MNO \cong \triangle MPO$  (SAS) 5.  $\overline{MN} \cong \overline{MP}$   
(CPCT)

## Chapter 5

### Written Exercises, Pages 169–171

1.  $\overline{CR}$ ,  $\overline{CE}$  3.  $\overline{ER}$ ,  $\overline{RC}$ ,  $\overline{CW}$  5.  $a = 8$ ,  $b = 10$ ,  $x = 118$ ,  $y = 62$  7.  $a = 5$ ,  $b = 3$ ,  $x = 120$ ,  
 $y = 22$  9.  $a = 8$ ,  $b = 8$ ,  $x = 56$ ,  $y = 68$  11. 60 17. (3, 2) 19.  $x = 3$ ,  $y = 5$  21.  $x = 13$ ,  
 $y = 5$  23.  $x = 5$ ,  $y = 4$  25. 5, 2 27. 10, 70 29. 1.  $PQRS$  is a  $\square$ ;  $\overline{PJ} \cong \overline{RK}$  (Given)  
2.  $\angle P \cong \angle R$  (Thm. 5-2) 3.  $\overline{SP} \cong \overline{QR}$  (Thm. 5-1) 4.  $\triangle SPJ \cong \triangle QRK$  (SAS) 5.  $\overline{SJ} \cong \overline{QK}$  (CPCT)  
31. 1.  $ABCD$  is a  $\square$ ;  $\overline{CD} \cong \overline{CE}$  (Given) 2.  $\overline{AB} \parallel \overline{CD}$  (Def. of  $\square$ ) 3.  $\angle CDE \cong \angle A$  (If lines  $\parallel$ , corr.  $\angle$ s  $\cong$ .)  
4.  $\angle CDE \cong \angle E$  (Isos.  $\triangle$  Thm.) 5.  $\angle A \cong \angle E$  (Subst.) 35. (6, 0), (0, 8), (12, 8)

### Written Exercises, Pages 174–176

1. Def. of  $\square$  3. Thm. 5-5 5. Thm. 5-6 7. Thm. 5-7 9. a. Thm. 5-4 b. Thm. 5-6  
c. Thm. 5-7 15.  $m\angle DAB = m\angle BCD$ , so  $m\angle NAM = \frac{1}{2}m\angle DAB = \frac{1}{2}m\angle BCD = m\angle NCM$ .  $m\angle DNA =$   
 $m\angle NAM = m\angle NCM$ , so  $\overline{AN}$  and  $\overline{CM}$  are  $\parallel$ .  $\overline{CN}$  and  $\overline{AM}$  are  $\parallel$  because  $ABCD$  is a  $\square$ . Then  $AMCN$  is a  $\square$ , by  
def. of  $\square$ . 17. Draw  $\overline{AC}$  int.  $\overline{DB}$  at  $Z$ . Since  $DZ = ZB$  and  $DE = FB$ ,  $EZ = DZ - DE = ZB - FB = ZF$ .  
Also,  $AZ = ZC$ . If the diags. of a quad. bis. each other, then the quad. is a  $\square$ . So  $AFCE$  is a  $\square$ .  
19.  $x = 18$ ,  $y = 14$  21.  $x = 10$ ,  $y = 2$  23. Key steps of proof: 1.  $\triangle DAE \cong \triangle BCF$  (AAS)  
2.  $\overline{DE} \cong \overline{BF}$  (CPCT) 3.  $\overline{DE} \parallel \overline{BF}$  (Thm. 3-7) 4.  $DEBF$  is a  $\square$ . (Thm. 5-5)