

Chapter 4

Written Exercises, Pages 120–121

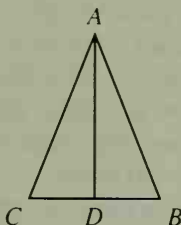
1. $\angle T$ 3. CA 5. $\triangle ATC$ 7. $\angle E, \angle F, \angle S, \angle T$ 9. $\angle L \cong \angle F, \angle X \cong \angle N, \angle R \cong \angle E, \overline{LX} \cong \overline{FN}, \overline{XR} \cong \overline{NE}, \overline{LR} \cong \overline{FE}$ 11. a. $\triangle RLA$ b. \overline{RL} c. $\angle 3$, CPCT; \overline{LR} . If 2 lines are cut by a trans. and alt. int. \angle s are \cong , then the lines are \parallel . d. $\angle 4$, CPCT; $\overline{PL}, \overline{AR}$. If 2 lines are cut by a trans. and alt. int. \angle s are \cong , then the lines are \parallel . 13. $C(7, -1)$ 15. $\triangle ABC \cong \triangle EDF$ 17. $\triangle ABC \cong \triangle FDE$ 19. $F(2, 5), F(6, 1)$ 21. a. Since $\overline{NERO} \cong \overline{MARO}, \overline{NO} \cong \overline{OM}$. By the def. of midpt., O is the midpt. of \overline{NM} . b. $\angle NOR$ and $\angle MOR$ are corr. \angle s of \cong quads. c. If 2 lines form \cong adj. \angle s, then the lines are \perp . 23. Yes; yes; yes

Mixed Review Exercises, Page 121

1. 1. $\overline{AD} \perp \overline{BC}; \overline{BA} \perp \overline{AC}$ (Given) 2. $\angle BDA$ and $\angle BAC$ are rt. \angle s. (Def. of \perp lines) 3. $\triangle ABC$ and $\triangle DBA$ are rt. \triangle s. (Def. of rt. \triangle) 4. $\angle 1$ and $\angle B$ are comp.; $\angle 2$ and $\angle B$ are comp. (The acute \angle s of a rt. \triangle are comp.) 5. $\angle 1 \cong \angle 2$ (If 2 \angle s are comp. of the same \angle , then the 2 \angle s are \cong .) 2. 1. \overline{FC} and \overline{SH} bis. each other at A . (Given) 2. A is the midpt. of \overline{FC} and \overline{SH} . (Def. of bis.) 3. $SA = \frac{1}{2}SH$ and $AC = \frac{1}{2}FC$ (Midpt. Thm.) 4. $FC = SH$ (Given) 5. $\frac{1}{2}FC = \frac{1}{2}SH$ (Mult. Prop. of $=$) 6. $SA = AC$ (Substitution Prop.)

Written Exercises, Pages 124–127

1. $\triangle ABC \cong \triangle NPY$; ASA 3. $\triangle ABC \cong \triangle CKA$; SSS 5. No \cong can be deduced. 7. $\triangle ABC \cong \triangle PQC$; SAS 9. $\triangle ABC \cong \triangle AGC$; ASA 11. $\triangle ABC \cong \triangle BST$; ASA 13. No \cong can be deduced. 15. $\triangle ABC \cong \triangle MNC$; ASA 17. 1. Given 2. T ; Def. of \perp lines 3. Def. of $\cong \angle$ s 4. Given 5. \overline{VT} ; Def. of midpt. 6. \overline{UVT} ; Vert. \angle s are \cong . 7. RSV, UTV ; ASA Post. 19. 1. E is the midpt. of \overline{TP} and \overline{MR} . (Given) 2. $\overline{TE} \cong \overline{PE}; \overline{ME} \cong \overline{RE}$ (Def. of midpt.) 3. $\angle TEM \cong \angle PER$ (Vert. \angle s are \cong .) 4. $\triangle TEM \cong \triangle PER$ (SAS Post.) 21. 1. Plane M bis. \overline{AB} . (Given) 2. $\overline{AO} \cong \overline{BO}$ (Def. of bis.) 3. $\overline{PO} \perp \overline{AB}$ (Given) 4. $\angle POA \cong \angle POB$ (If 2 lines are \perp , then they form \cong adj. \angle s.) 5. $\overline{PO} \cong \overline{PO}$ (Refl. Prop.) 6. $\triangle POA \cong \triangle POB$ (SAS Post.) 23. Given: Isos. $\triangle ABC$ with $\overline{AC} \cong \overline{AB}$;
 D is the midpt. of \overline{CB} .
Prove: $\triangle ACD \cong \triangle ABD$
Proof: 1. $\overline{AC} \cong \overline{AB}$; D is the midpt. of \overline{CB} . (Given)
2. $\overline{CD} \cong \overline{BD}$ (Def. of midpt.)
3. $\overline{AD} \cong \overline{AD}$ (Refl. Prop.)
4. $\triangle ACD \cong \triangle ABD$ (SSS Post.)



27. SSS

Written Exercises, Pages 130–132

1. 1. Given 2. Given 3. Def. of midpt. 4. Vert. \angle s are \cong . 5. ASA Post. 6. CPCT 7. Def. of midpt. 3. 1. $\overline{WO} \cong \overline{ZO}; \overline{XO} \cong \overline{YO}$ (Given) 2. $\angle WOX \cong \angle ZOY$ (Vert. \angle s are \cong .) 3. $\triangle WOX \cong \triangle ZOY$ (SAS Post.) 4. $\angle W \cong \angle Z$ (CPCT) 5. 1. $\overline{SK} \parallel \overline{NR}; \overline{SN} \parallel \overline{KR}$ (Given) 2. $\angle 1 \cong \angle 3; \angle 2 \cong \angle 4$ (If 2 \parallel lines are cut by a trans., then alt. int. \angle s are \cong .) 3. $\overline{SR} \cong \overline{SR}$ (Refl. Prop.) 4. $\triangle SKR \cong \triangle RNS$ (ASA Post.) 5. $\overline{SK} \cong \overline{NR}; \overline{SN} \cong \overline{KR}$ (CPCT) 7. 1. $\overline{AD} \parallel \overline{ME}; \overline{MD} \parallel \overline{BE}$ (Given) 2. $\angle A \cong \angle EMB; \angle DMA \cong \angle B$ (If 2 \parallel lines are cut by a trans., then corr. \angle s are \cong .) 3. M is the midpt. of \overline{AB} . (Given) 4. $\overline{AM} \cong \overline{MB}$ (Def. of midpt.) 5. $\triangle ADM \cong \triangle MEB$ (ASA Post.) 6. $\overline{MD} \cong \overline{BE}$ (CPCT) 9. Either (a) $\angle 1 \cong \angle 2$ or (b) $\overline{QR} \cong \overline{SR}$ can be omitted. a. 1. $\overline{PQ} \cong \overline{PS}; \overline{QR} \cong \overline{SR}$ (Given) 2. $\overline{PR} \cong \overline{PR}$ (Refl. Prop.) 3. $\triangle PQR \cong \triangle PSR$ (SSS Post.) 4. $\angle 3 \cong \angle 4$ (CPCT) b. 1. $\overline{PQ} \cong \overline{PS}; \angle 1 \cong \angle 2$ (Given) 2. $\overline{PR} \cong \overline{PR}$ (Refl. Prop.) 3. $\triangle PQR \cong \triangle PSR$ (SAS Post.) 4. $\angle 3 \cong \angle 4$ (CPCT) 11. 1, 2 13. 1. $\overline{RS} \perp$ plane Y (Given) 2. $\overline{RS} \perp \overline{ST}; \overline{RS} \perp \overline{SV}$ (Def. of a line \perp to a plane.) 3. $m\angle RST = 90; m\angle RSV = 90$ (Def. of \perp lines) 4. $\angle RST \cong \angle RSV$ (Def. of $\cong \angle$ s) 5. $\angle TRS \cong \angle VRS$ (Given) 6. $\overline{RS} \cong \overline{RS}$ (Refl. Prop.) 7. $\triangle RST \cong \triangle RSV$ (ASA Post.) 8. $\overline{RT} \cong \overline{RV}$ (CPCT) 9. $\triangle RTV$ is isos. (Def. of isos. \triangle) 15. The wires are of equal length, so $PA = PB = PC$. The stakes are equidistant from the base of the tree, so $TA = TB = TC$. $PT = PT = PT$ by the Refl. Prop. and $\triangle PTA \cong \triangle PTB \cong \triangle PTC$ by SSS. The \angle s that 3 wires make with the ground are \cong parts of $\cong \angle$ s.