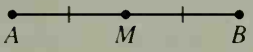
Written Exercises, Pages 148–151

1. a. SSS **b.** CPCT **c.** SAS **d.** CPCT **3. a.** AAS **b.** CPCT **c.** SAS **d.** CPCT **5. a.** SAS **b.** CPCT **c.** HL **d.** CPCT **7. a.** 1. $\triangle FLA \cong \triangle FKA$ (SSS) 2. $\angle 1 \cong \angle 2$ (CPCT) 3. $\triangle FLJ \cong \triangle FKJ$ (SAS) 4. $\overline{LJ} \cong \overline{KJ}$ (CPCT) **b.** 1. $\overline{LF} \cong \overline{KF}$; $\overline{LA} \cong \overline{KA}$ (Given) 2. $\overline{FA} \cong \overline{FA}$ (Refl. Prop.) 3. $\triangle FLA \cong \triangle FKA$ (SSS) 4. $\angle 1 \cong \angle 2$ (CPCT) 5. $\overline{FJ} \cong \overline{FJ}$ (Refl. Prop.) 6. $\triangle FLJ \cong \triangle FKJ$ (SAS) 7. $\overline{LJ} \cong \overline{KJ}$ (CPCT) **9.** Key steps of proof: 1. $\overline{ST} \cong \overline{YZ}$; $\angle T \cong \angle Z$; $\angle RST \cong \angle XYZ$ (CPCT) 2. $m\angle KST = \frac{1}{2}m\angle RST$; $m\angle LYZ = \frac{1}{2}m\angle XYZ$ ($\angle$ Bis. Thm.) 3. $m\angle KST = m\angle LYZ$ (Substitution Prop.) 4. $\triangle KST \cong \triangle LYZ$ (ASA) 5. $\overline{SK} \cong \overline{YL}$ (CPCT) **11.** Key steps of proof: 1. $\triangle GDE \cong \triangle EFG$ (SSS) 2. $\angle DEH \cong \angle FGK$ (CPCT) 3. $\triangle HDE \cong \triangle KFG$ (ASA) 4. $\overline{DH} \cong \overline{FK}$ (CPCT) **17.** isos.; $\overline{AX} \cong \overline{AY}$, $\overline{AZ} \cong \overline{AZ}$, and $\angle XAZ \cong \angle YAZ$, so $\triangle XAZ \cong \triangle YAZ$ by SAS. Then $\overline{XZ} \cong \overline{YZ}$ (CPCT) and $\triangle XYZ$ is isos.

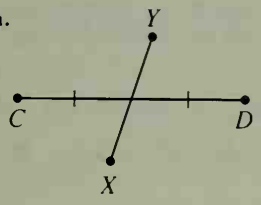
Mixed Review Exercises, Page 151

1. Two sides of a $\triangle$ are $\cong$ if and only if the $\measuredangle$ opp. those sides are $\cong$. **2.** sometimes **3.** sometimes **4.** always **5. a.**

b.



6. a.



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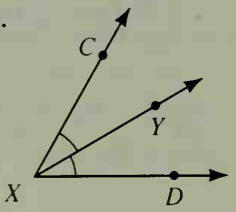
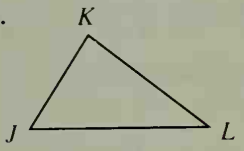


7. a.



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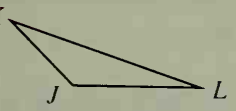

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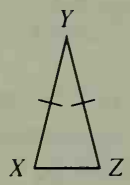
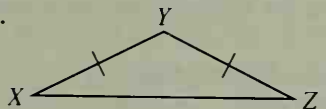


b.



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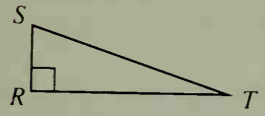

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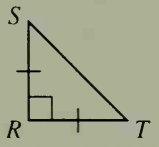
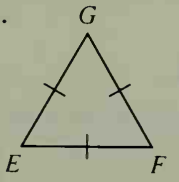


10. a.



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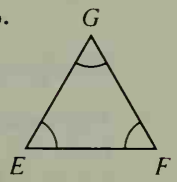

11. 1. $\overline{BE} \cong \overline{CD}$; $\overline{BD} \cong \overline{CE}$ (Given) 2. $\overline{BC} \cong \overline{BC}$ (Refl. Prop.) 3. $\triangle EBC \cong \triangle DCB$ (SSS) 4. $\angle EBC \cong \angle DCB$ (CPCT) 5. $\overline{AB} \cong \overline{AC}$ (If 2 $\measuredangle$ of a $\triangle$ are $\cong$, then the sides opp. those $\measuredangle$ are $\cong$.) 6. $\triangle ABC$ is isos. (Def. of isos. $\triangle$)

Written Exercises, Pages 156–158

Sketches may vary in Exs. 1–5. **1. b.** No **5.** Yes; at the midpt. of the hyp. **7.** $\overrightarrow{KS}$, $\overrightarrow{KN}$ **9.** bis. of $\angle S$ **11.** A, F **13.** 1. P is on the $\perp$ bisectors of $\overline{AB}$ and $\overline{BC}$. (Given) 2. $PA = PB$; $PB = PC$ (If a pt. lies on the $\perp$ bis. of a seg., then it is equidistant from the end pts. of the seg.) 3. $PA = PC$ (Trans. Prop.) **15.** Key steps of proof: 1. Let X be the midpt. of $\overline{BC}$. (Ruler Post.) 2. $\triangle AXB \cong \triangle AXC$ (SSS) 3. $\angle 1 \cong \angle 2$ (CPCT) 4. $\overline{AX} \perp \overline{BC}$ (If 2 lines form $\cong$ adj. $\measuredangle$, then the lines are $\perp$.) 5. $\overline{AX}$ is the $\perp$ bis. of $\overline{BC}$. (Def. of $\perp$ bis.) **17.** Key steps of proof: 1. $\overline{PX} \perp \overrightarrow{BA}$; $\overline{PY} \perp \overrightarrow{BC}$; $PX = PY$ (Given) 2. $\triangle PXB \cong \triangle PYB$ (HL) 3. $\angle PBX \cong \angle PBY$ (CPCT) 4. $\overrightarrow{BP}$ bis. $\angle ABC$. (Def. of $\angle$ bis.)