

Challenge: Skills and Applications

For use with pages 236–242

1. In the diagram, $\overline{AC} \cong \overline{BC}$, $\overline{BD} \cong \overline{CD}$, and \overline{CA} bisects $\angle BCD$.

NAME

- **a.** Find $m \angle B$.
- **b.** Write a paragraph proof for your result.
- **c.** Prove that AC = AD.
- 2. Write a two-column proof.
 Given: EF ≈ FH ≈ HG, FG ≈ GI
 Prove: EG ≈ HI



Given: $\overline{KM} \perp \overline{JL}, \overline{JN} \perp \overline{LK}, \overline{KM} \cong \overline{JN}$ Prove: $\overline{JL} \cong \overline{KL}$

4. Write a two-column proof of the Base Angles Theorem *without* drawing any additional segments or points.

Given: $\triangle ABC, \overline{AB} \cong \overline{AC}$ **Prove:** $\angle B \cong \angle C$

5. In this exercise, you will prove the HL Congruence Theorem. Write a paragraph proof (without using the HL Congruence Theorem).

Given: $\triangle PQR$ and $\triangle STU$, $\overline{QR} \cong \overline{TU}$, $\overline{PR} \cong \overline{SU}$,

 $\angle PQR$ and $\angle STU$ are right angles.

Prove: $\triangle PQR \cong \triangle STU$

(*Hint*: Extend \overline{ST} to V so that PQ = TV. Draw \overline{UV} . Prove that $\triangle PQR \cong \triangle VTU$ and $\triangle VTU \cong \triangle STU$.)



Date





