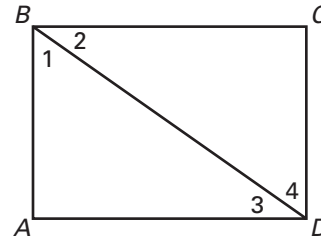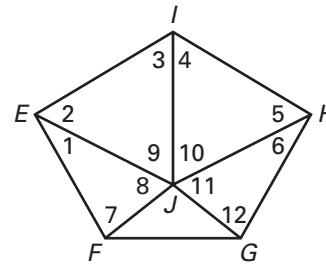NAME _____ DATE _____

# *Challenge: Skills and Applications*

For use with pages 220–227

1. Given: $\angle 1 \cong \angle 4$, $\angle ABC$ and $\angle CDA$ are right angles.

   a. Write a congruence statement for the triangles in the diagram.

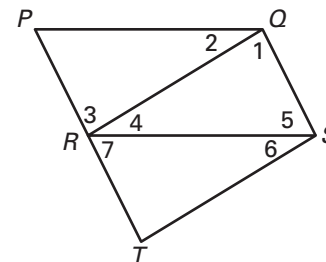   **b.** Write a two-column proof of your statement in part (a).

2. Write a paragraph proof.

   Given: $\overrightarrow{IJ}$ bisects $\angle EIH$, $\angle 7 \cong \angle 12$, $\overline{EF} \perp \overline{EI}$, $\overline{HG} \perp \overline{HI}$

   Prove: $\triangle EIJ \cong \triangle HIJ$

3. Given: $\overline{JL}$ bisects both $\angle KJM$ and $\angle KLM$,

      $\overline{KM}$ bisects both $\angle JKL$ and $\angle JML$.

   a. Name two pairs of triangles that can be proved congruent.

   b. Write a flow proof to prove your answers to part (a).
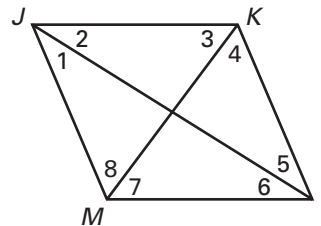
4. Write a flow proof.

   Given: $\overline{PQ} \parallel \overline{RS}$, $\overline{PT} \parallel \overline{QS}$, $\overline{QR} \parallel \overline{ST}$

   Prove: $\triangle PQR \cong \triangle RST$

5. Do you think there is an AAA Postulate or Theorem for congruent triangles? Explain why or why not. Use evidence from the real world, such as a model airplane, a map, or a photographic enlargement.

6. A vertical flagpole is supported by wire braces attached to the ground at several points that lie on a circle centered at the base of the flagpole. Each wire brace is attached to the flagpole at the same height. Use congruent triangles to explain why the braces will all be the same length. (You may assume that the ground is a horizontal plane.)

Lesson 4.4