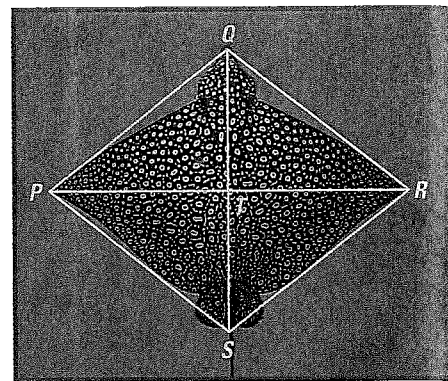


# GUIDED PRACTICE

## Concept Check ✓

In Exercises 1–3, use the photo of the eagle ray.

- To prove that  $\angle PQT \cong \angle RQT$ , which triangles might you prove to be congruent?
- If you know that the opposite sides of figure  $PQRS$  are parallel, can you prove that  $\triangle PQT \cong \triangle RST$ ? Explain.
- The statements listed below are not in order. Use the photo to order them as statements in a two-column proof. Write a reason for each statement.



## Skill Check ✓

**GIVEN**  $\overline{QS} \perp \overline{RP}$ ,  $\overline{PT} \cong \overline{RT}$

**PROVE**  $\overline{PS} \cong \overline{RS}$

A.  $\overline{QS} \perp \overline{RP}$

B.  $\triangle PTS \cong \triangle RTS$

C.  $\angle PTS \cong \angle RTS$

D.  $\overline{PS} \cong \overline{RS}$

E.  $\overline{PT} \cong \overline{RT}$

F.  $\overline{TS} \cong \overline{TS}$

G.  $\angle PTS$  and  $\angle RTS$  are right angles.

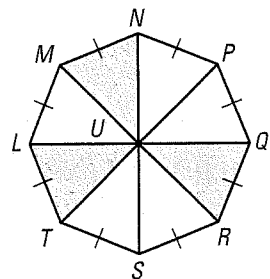
# PRACTICE AND APPLICATIONS

## STUDENT HELP

→ **Extra Practice**  
to help you master  
skills is on p. 810.

**STAINED GLASS WINDOW** The eight window panes in the diagram are isosceles triangles. The bases of the eight triangles are congruent.

- Explain how you know that  $\triangle NUP \cong \triangle PUQ$ .
- Explain how you know that  $\triangle NUP \cong \triangle QUR$ .
- Do you have enough information to prove that all the triangles are congruent? Explain.
- Explain how you know that  $\angle UNP \cong \angle UPQ$ .

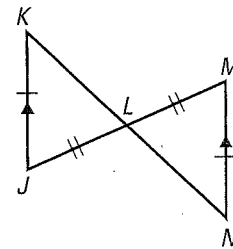
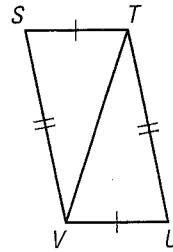
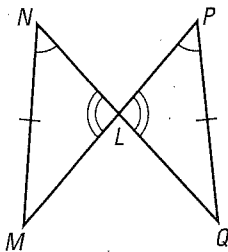


**DEVELOPING PROOF** State which postulate or theorem you can use to prove that the triangles are congruent. Then explain how proving that the triangles are congruent proves the given statement.

8. **PROVE**  $\overline{ML} \cong \overline{QL}$

9. **PROVE**  $\angle STV \cong \angle UVT$

10. **PROVE**  $KL = NL$



## STUDENT HELP

### → HOMEWORK HELP

**Example 1:** Exs. 4–14,  
17, 18

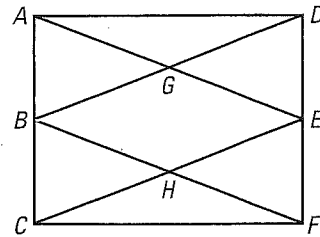
**Example 2:** Exs. 14, 17, 18

**Example 3:** Exs. 15, 16

**Example 4:** Exs. 19–21

**CAT'S CRADLE** Use the diagram of the string game Cat's Cradle and the information given below.

**GIVEN** ▶  $\triangle EDA \cong \triangle BCF$   
 $\triangle AGD \cong \triangle FHC$   
 $\triangle BFC \cong \triangle ECF$

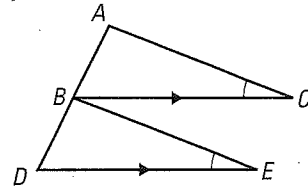


11. **PROVE** ▶  $\overline{GD} \cong \overline{HC}$   
 12. **PROVE** ▶  $\angle CBH \cong \angle FEH$   
 13. **PROVE** ▶  $\overline{AE} \cong \overline{FB}$

14. **DEVELOPING PROOF** Complete the proof that  $\angle BAC \cong \angle DBE$ .

**GIVEN** ▶  $B$  is the midpoint of  $\overline{AD}$ ,  
 $\angle C \cong \angle E$ ,  $\overline{BC} \parallel \overline{DE}$

**PROVE** ▶  $\angle BAC \cong \angle DBE$

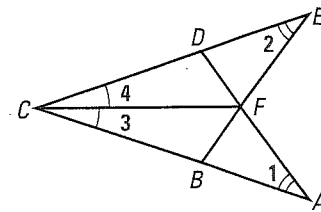


Statements	Reasons
1. $B$ is the midpoint of $\overline{AD}$ .	1. Given
2. $\overline{AB} \cong \overline{BD}$	2. ?
3. $\angle C \cong \angle E$	3. Given
4. $\overline{BC} \parallel \overline{DE}$	4. Given
5. $\angle EDB \cong \angle CBA$	5. ?
6. ?	6. AAS Congruence Theorem
7. $\angle BAC \cong \angle DBE$	7. ?

15. **DEVELOPING PROOF** Complete the proof that  $\triangle AFB \cong \triangle EFD$ .

**GIVEN** ▶  $\angle 1 \cong \angle 2$   
 $\angle 3 \cong \angle 4$

**PROVE** ▶  $\angle AFB \cong \angle EFD$



Statements	Reasons
1. $\angle 1 \cong \angle 2$	1. ?
2. $\angle 3 \cong \angle 4$	2. ?
3. ?	3. Reflexive Property of Congruence
4. $\triangle AFC \cong \triangle EFC$	4. ?
5. $\overline{AF} \cong \overline{EF}$	5. ?
6. ?	6. Vertical Angles Theorem
7. $\triangle AFB \cong \triangle EFD$	7. ?

**FOCUS ON CAREER**



**REAL LIFE CONSTRUCTION MANAGER**

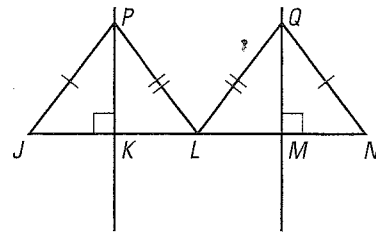
A construction manager plans and directs the work at a building site. Among other things, the manager reviews engineering specifications and architectural drawings to make sure that a project is proceeding according to plan.

**CAREER LINK**  
www.mcdougallittell.com

16. **BRIDGES** The diagram represents a section of the framework of the Kap Shui Mun Bridge shown in the photo on page 229. Write a two-column proof to show that  $\triangle PKJ \cong \triangle QMN$ .

**GIVEN**  $\triangleright$   $L$  is the midpoint of  $\overline{JN}$ ,  
 $\overline{PJ} \cong \overline{QN}$ ,  $\overline{PL} \cong \overline{QL}$ ,  
 $\angle PKJ$  and  $\angle QMN$  are right angles.

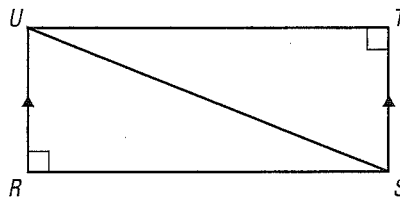
**PROVE**  $\triangleright$   $\triangle PKJ \cong \triangle QMN$



- PROOF** Write a two-column proof or a paragraph proof.

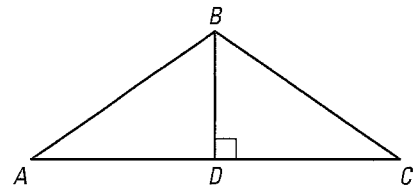
17. **GIVEN**  $\triangleright$   $\overline{UR} \parallel \overline{ST}$ ,  
 $\angle R$  and  $\angle T$  are right angles.

**PROVE**  $\triangleright$   $\angle RSU \cong \angle TUS$

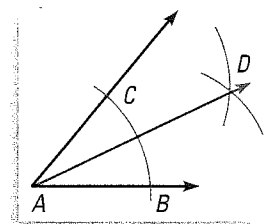
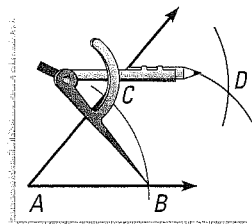
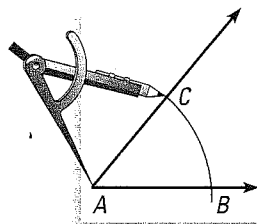


18. **GIVEN**  $\triangleright$   $\overline{BD} \perp \overline{AC}$ ,  
 $\overline{BD}$  bisects  $\overline{AC}$ .

**PROVE**  $\triangleright$   $\angle ABD$  and  $\angle BCD$  are complementary angles.



19. **PROVING A CONSTRUCTION** The diagrams below summarize the construction used to bisect  $\angle A$ . By construction, you can assume that  $\overline{AB} \cong \overline{AC}$  and  $\overline{BD} \cong \overline{CD}$ . Write a proof to verify that  $\overline{AD}$  bisects  $\angle A$ .



- 1 First draw an arc with center  $A$ . Label the points where the arc intersects the sides of the angle points  $B$  and  $C$ .
- 2 Draw an arc with center  $C$ . Using the same compass setting, draw an arc with center  $B$ . Label the intersection point  $D$ .
- 3 Draw  $\overline{AD}$ .  
 $\angle CAD \cong \angle BAD$

- PROVING A CONSTRUCTION** Use a straightedge and a compass to perform the construction. Label the important points of your construction. Then write a flow proof to verify the results.

20. Bisect an obtuse angle.
21. Copy an obtuse angle.

**STUDENT HELP**

**Look Back**  
For help with bisecting an angle, see p. 36.