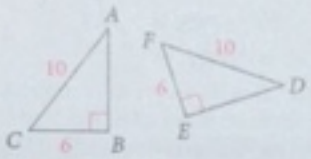
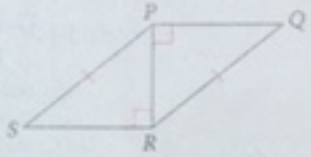
Developing Proof Write a short paragraph to explain why the two triangles are congruent.

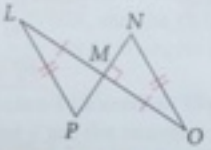
1.



2.



3.

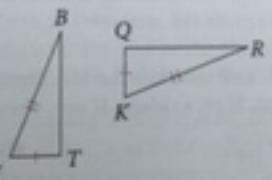


4.

B is the midpoint of $\overline{AD}$ and $\overline{EC}$.

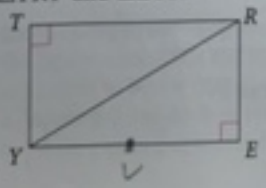
Developing Proof **What additional information do you need to prove the triangles congruent by the HL Theorem?**

5. $\triangle BLT$ and $\triangle RKQ$



6. $\triangle XRV$ and $\triangle TRV$

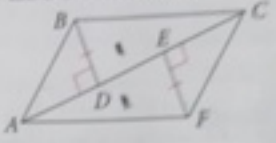
7. $\triangle TRY$ and $\triangle EYR$



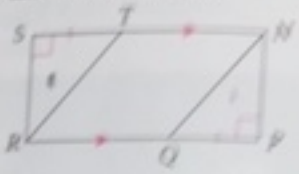
8. $\triangle ACQ$ and $\triangle GCJ$

Developing Proof **What additional information do you need to prove the triangles congruent by the HL Theorem?**

9. $\triangle BDC$ and $\triangle FEA$



10. $\triangle STR$ and $\triangle PQN$

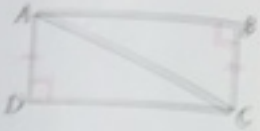


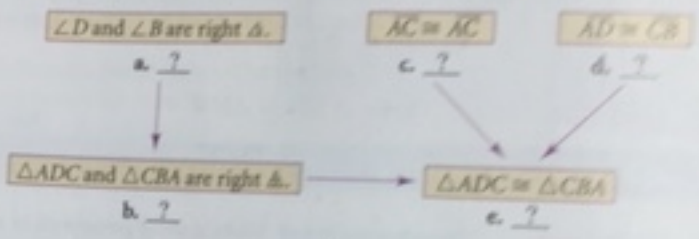
Example 2 (page 218)

Developing Proof **Complete each flow proof.**

11. Given: $\overline{AD} \cong \overline{CB}$, $\angle D$ and $\angle B$ are right angles.

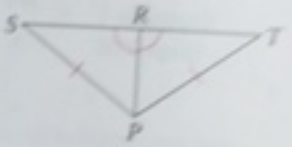
Prove: $\triangle ADC \cong \triangle CBA$

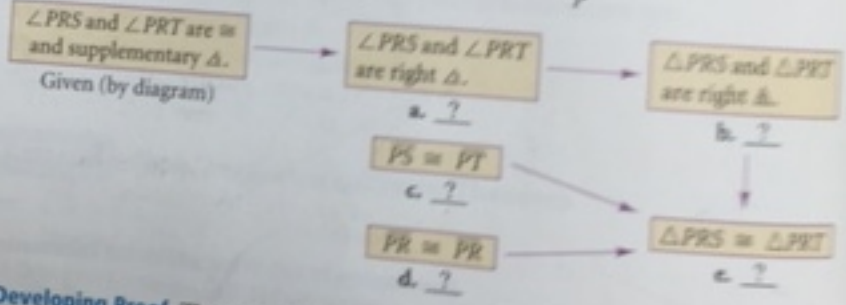




12. Given: $\overline{PS} \cong \overline{PT}$, $\angle PRS \cong \angle PRT$

Prove: $\triangle PRS \cong \triangle PRT$

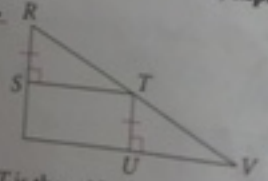




13. Developing Proof There is a different set of steps that will prove $\triangle PRS \cong \triangle PRT$ in Exercise 12. Decide what they are. Then write a short paragraph to explain the steps.

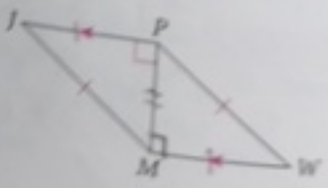
Developing Proof **Tell whether the HL Theorem can be used to prove the two triangles congruent. If so, explain. If not, write *not possible*.**

14.



T is the midpoint of $\overline{RV}$.

15.

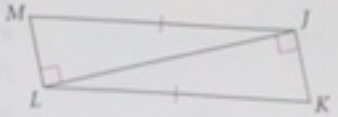


mple 3
ge 219)

Developing Proof **Complete each two-column proof.**

16. Given: $\overline{JL} \perp \overline{LM}$, $\overline{LJ} \perp \overline{JK}$, $\overline{MJ} \cong \overline{KL}$

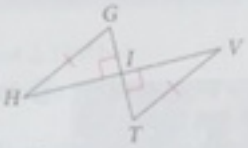
Prove: $\triangle JLM \cong \triangle LJK$



Statements	Reasons
1. $\overline{JL} \perp \overline{LM}$ and $\overline{LJ} \perp \overline{JK}$	a. ?
2. $\angle JLM$ and $\angle LJK$ are right angles.	b. ?
c. ?	3. Definition of a right triangle
4. $\overline{MJ} \cong \overline{KL}$	d. ?
e. ?	5. Reflexive Property of Congruence
6. $\triangle JLM \cong \triangle LJK$	f. ?

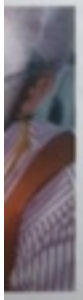
17. Given: $\overline{HV} \perp \overline{GT}$, $\overline{GH} \cong \overline{TV}$, I is the midpoint of $\overline{HV}$.

Prove: $\triangle IGH \cong \triangle ITV$



Statements	Reasons
1. $\overline{HV} \perp \overline{GT}$, $\overline{GH} \cong \overline{TV}$	a. ?
b. ? and $\triangle ITV$ are right triangles.	c. ?
d. ?	3. Given
4. $\overline{HI} \cong \overline{VI}$	e. ?
f. ?	5. HL Theorem

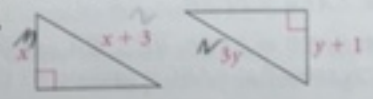
r Skills



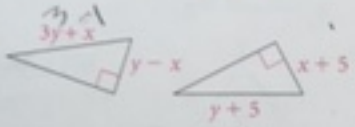
18. Antiques To repair an antique clock, a 12-toothed wheel has to be made by cutting right triangles out of a regular polygon that has twelve 4-cm sides. The hypotenuse of each triangle is a side of the regular polygon, and the shorter leg is 1 cm long. Explain why the 12 triangles must be congruent.

Algebra **In Exercises 19 and 20, for what values of x and y are the triangles congruent by HL?**

19.



20.



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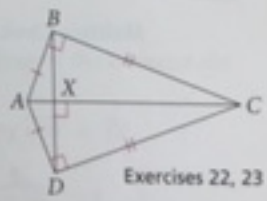
ir skills.

21. Critical Thinking While working for a landscape architect, you are told to lay out a flower bed in the shape of a right triangle with sides of 3 yd and 7 yd. Explain what else you need to know in order to make the flower bed.

22. Reasoning Polygon $ABCD$ has $AB = AD$, $BC = DC$, and right angles as marked. Name all the pairs of congruent right triangles in the figure. Explain why each pair is congruent.



Exercises 22, 23

23. Developing Proof You are given what is shown in the figure, except for the right angle at X, and you are asked to prove that $\angle AXD$ is a right angle.

a. Writing Explain how you could complete the proof without using HL.

b. Write a paragraph proof that $\angle AXD$ must be a right angle.