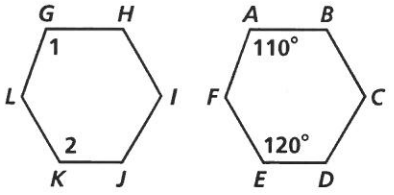
Name _____ Class _____ Date _____

Practice 4-1

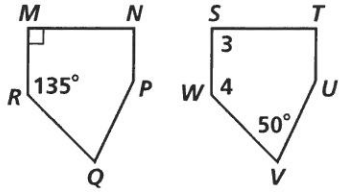
Congruent Figures and Corresponding Parts

Each pair of polygons is congruent. Find the measures of the numbered angles.

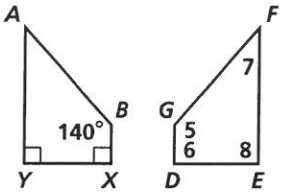
1.



2.



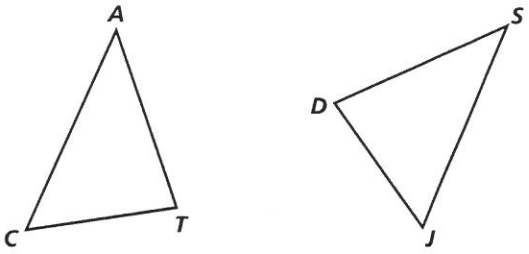
3.



$\triangle CAT \cong \triangle JSD$. List each of the following.

4. three pairs of congruent sides

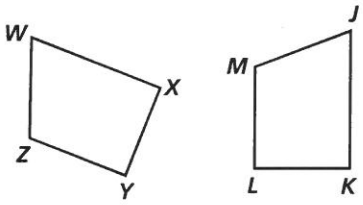
5. three pairs of congruent angles



***WXYZ* ≅ *JKLM*. List each of the following.**

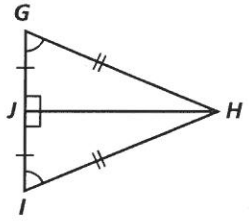
6. four pairs of congruent sides

7. four pairs of congruent angles

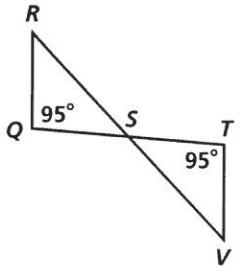


State whether the pairs of figures are congruent. Explain.

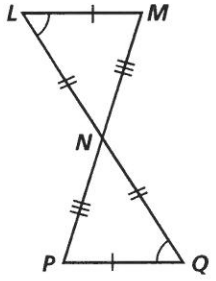
8. $\triangle GHJ$ and $\triangle IHJ$



9. $\triangle QRS$ and $\triangle TVS$



10. Developing Proof Use the information given in the diagram. Give a reason that each statement is true.



a. $\angle L \cong \angle Q$

b. $\angle LNM \cong \angle PNQ$

c. $\angle M \cong \angle P$

d. $\overline{LM} \cong \overline{QP}$, $\overline{LN} \cong \overline{QN}$, $\overline{MN} \cong \overline{PN}$

e. $\triangle LNM \cong \triangle QNP$

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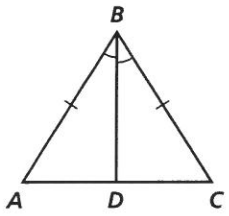
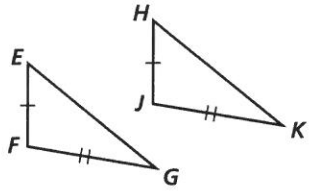
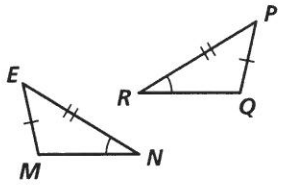
Practice 4-2

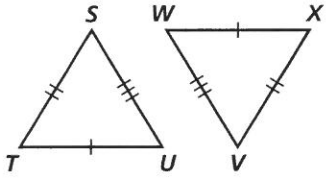
Triangle Congruence by SSS and SAS

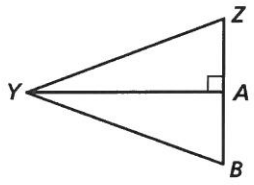
Decide whether you can use the SSS or SAS Postulate to prove the triangles congruent. If so, write the congruence statement, and identify the postulate. If not, write *not possible.*

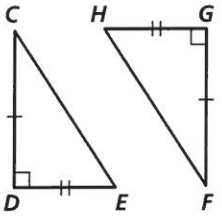
1. 

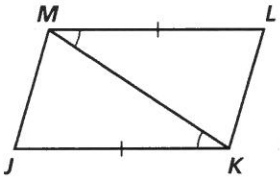
2. 

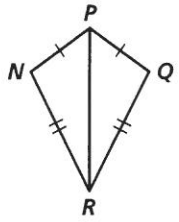
3. 

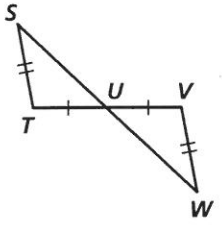
4. 

5. 

6. 

7. 

8. 

9. 

Draw a triangle. Label the vertices *A*, *B*, and *C*.

10. What angle is between $\overline{BC}$ and $\overline{AC}$?

11. What sides include $\angle B$?

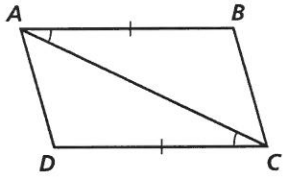
12. What angles include $\overline{AB}$?

13. What side is included between $\angle A$ and $\angle C$?

14. Developing Proof Supply the reasons in this proof.

Given: $\overline{AB} \cong \overline{DC}$, $\angle BAC \cong \angle DCA$

Prove: $\triangle ABC \cong \triangle CDA$

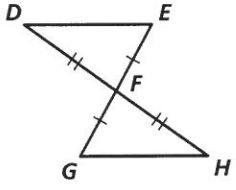


Statements	*Reasons*
1. $\overline{AB} \cong \overline{DC}$, $\angle BAC \cong \angle DCA$	**a.** ?
2. $\overline{AC} \cong \overline{CA}$	**b.** ?
3. $\triangle ABC \cong \triangle CDA$	**c.** ?

15. Write a proof.

Given: $\overline{EF} \cong \overline{FG}$, $\overline{DF} \cong \overline{FH}$

Prove: $\triangle DFE \cong \triangle HFG$



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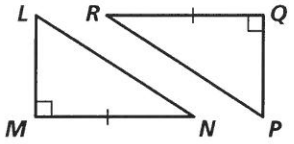
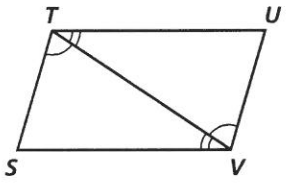
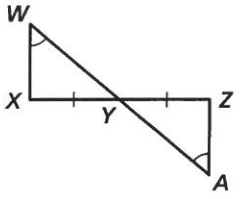
Practice 4-3

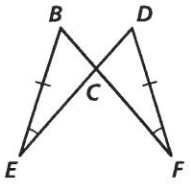
Triangle Congruence by ASA and AAS

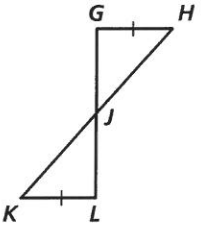
Tell whether the ASA Postulate or the AAS Theorem can be applied directly to prove the triangles congruent. If the triangles cannot be proved congruent, write *not possible.*

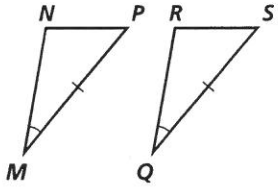
1. 

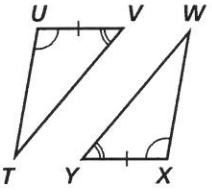
2. 

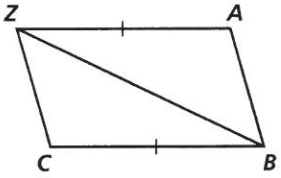
3. 

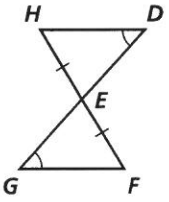
4. 

5. 

6. 

7. 

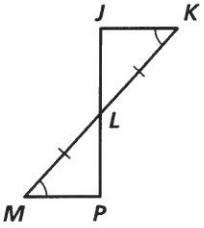
8. 

9. 

10. Write a two-column proof.

Given: $\angle K \cong \angle M$, $\overline{KL} \cong \overline{ML}$

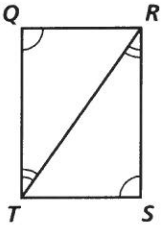
Prove: $\triangle JKL \cong \triangle PML$



11. Write a flow proof.

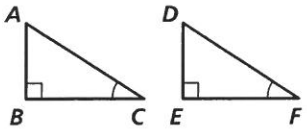
Given: $\angle Q \cong \angle S$, $\angle TRS \cong \angle RTQ$

Prove: $\triangle QRT \cong \triangle STR$

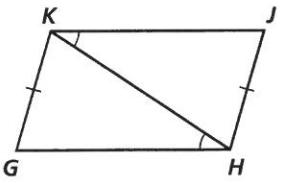


What else must you know to prove the triangles congruent for the reason shown?

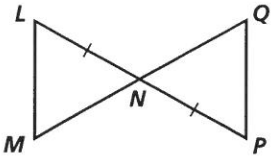
12. ASA



13. AAS



14. ASA



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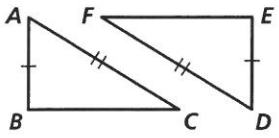
Practice 4-6

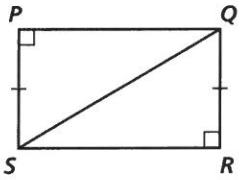
Congruence in Right Triangles

Write a two-column proof.

1. Given: $\overline{AB} \perp \overline{BC}$, $\overline{ED} \perp \overline{FE}$, $\overline{AB} \cong \overline{ED}$, $\overline{AC} \cong \overline{FD}$
Prove: $\triangle ABC \cong \triangle DEF$

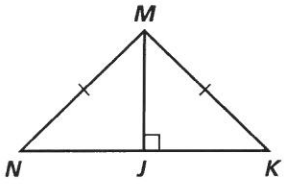


2. Given: $\angle P$ and $\angle R$ are right angles, $\overline{PS} \cong \overline{QR}$
Prove: $\triangle PQS \cong \triangle RSQ$

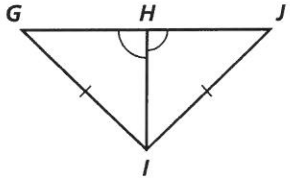


Write a flow proof.

3. Given: $\overline{MJ} \perp \overline{NK}$, $\overline{MN} \cong \overline{MK}$
Prove: $\triangle MJN \cong \triangle MJK$

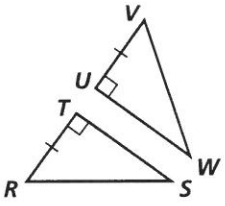


4. Given: $\overline{GI} \cong \overline{JI}$, $\angle GHI \cong \angle JHI$
Prove: $\triangle IHG \cong \triangle IHJ$



What additional information do you need to prove each pair of triangles congruent by the HL Theorem?

5.



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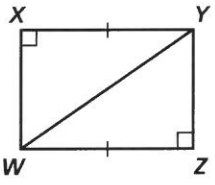

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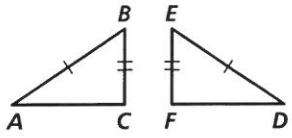

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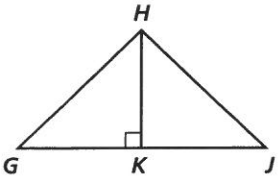

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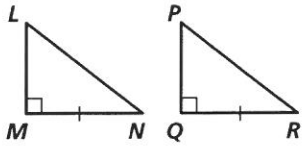

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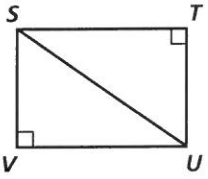

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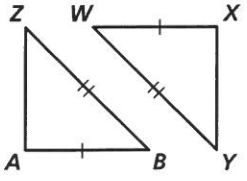
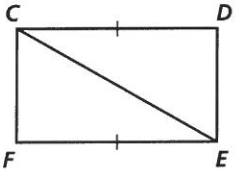
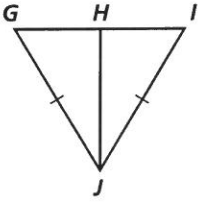


12.



13.



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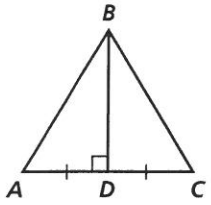
Practice 4-4

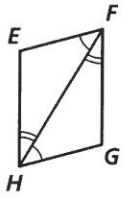
Using Congruent Triangles: CPCTC

Explain how you can use SSS, SAS, ASA, or AAS with CPCTC to prove each statement true.

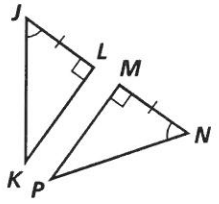
1. $\angle A \cong \angle C$



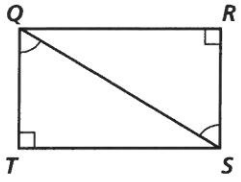
2. $\overline{HE} \cong \overline{FG}$



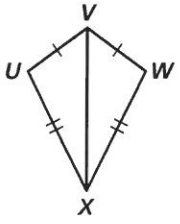
3. $\angle K \cong \angle P$



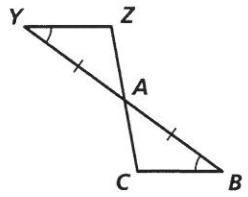
4. $\angle QST \cong \angle SQR$



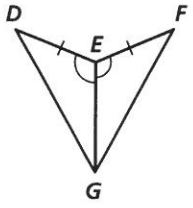
5. $\angle U \cong \angle W$



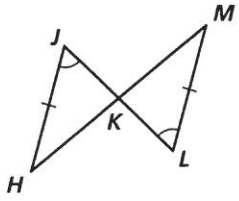
6. $\overline{ZA} \cong \overline{AC}$



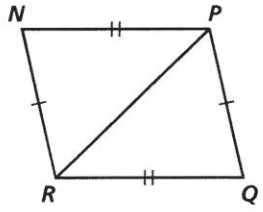
7. $\overline{FG} \cong \overline{DG}$



8. $\overline{JK} \cong \overline{KL}$

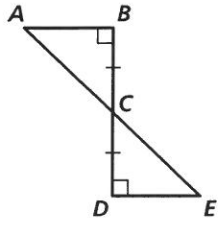


9. $\angle N \cong \angle Q$

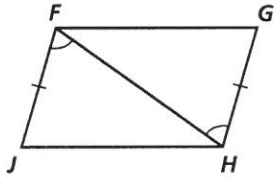


Write a Plan for Proof.

10. Given: $\overline{BD} \perp \overline{AB}$, $\overline{BD} \perp \overline{DE}$, $\overline{BC} \cong \overline{CD}$
Prove: $\angle A \cong \angle E$



11. Given: $\overline{FJ} \cong \overline{GH}$, $\angle JFH \cong \angle GHF$
Prove: $\overline{FG} \cong \overline{JH}$



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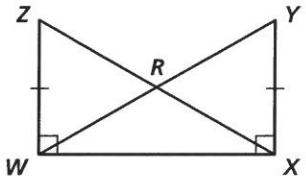
Practice 4-7

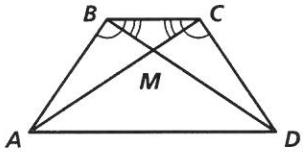
Using Corresponding Parts of Congruent Triangles

Name a pair of overlapping congruent triangles in each diagram. State whether the triangles are congruent by SSS, SAS, ASA, AAS, or HL.

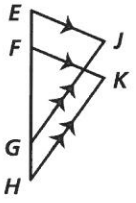
1. Given: $\overline{ZW} \cong \overline{XY}$, $\angle YXW$ and $\angle ZWX$ are right $\angle$s



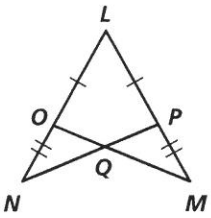
2. Given: $\angle ABC \cong \angle DCB$, $\angle CBD \cong \angle BCA$



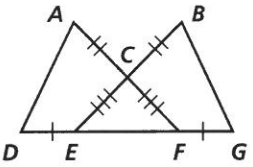
3. Given: $\overline{EJ} \parallel \overline{FK}$, $\overline{GJ} \parallel \overline{HK}$, $\overline{EG} \cong \overline{HF}$



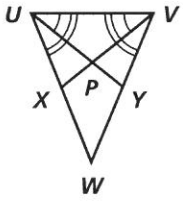
4. Given: $\overline{LP} \cong \overline{LO}$, $\overline{PM} \cong \overline{ON}$



5. Given: $\overline{DE} \cong \overline{FG}$, $\overline{AC} \cong \overline{CB}$, $\overline{EC} \cong \overline{FC}$

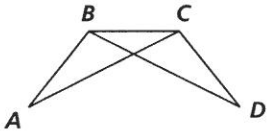


6. Given: $\angle YUV \cong \angle XVU$, $\angle WUV \cong \angle WVU$

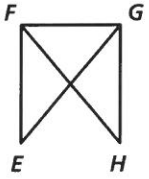


Separate and redraw the indicated triangles. Identify any common angles or sides.

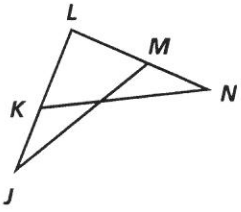
7. $\triangle ABC$ and $\triangle DCB$



8. $\triangle EFG$ and $\triangle HGF$



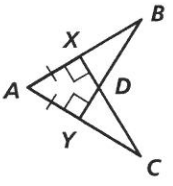
9. $\triangle JML$ and $\triangle NKL$



Write a two-column proof, a paragraph proof, or a flow proof.

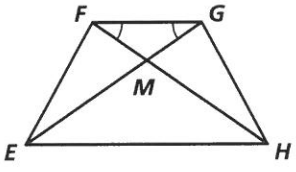
10. Given: $\overline{AX} \cong \overline{AY}$, $\overline{CX} \perp \overline{AB}$, $\overline{BY} \perp \overline{AC}$

Prove: $\triangle BYA \cong \triangle CXA$



11. Given: $\overline{FH} \cong \overline{GE}$, $\angle HFG \cong \angle EGF$

Prove: $\triangle GEH \cong \triangle FHE$

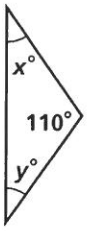


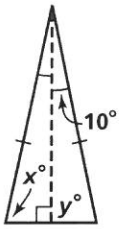
Name _____ Class _____ Date _____

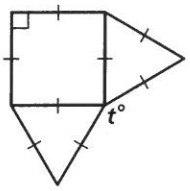
Practice 4-5

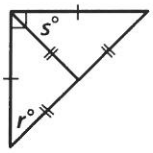
Isosceles and Equilateral Triangles

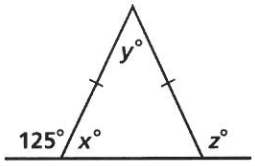
Find the values of the variables.

1. 

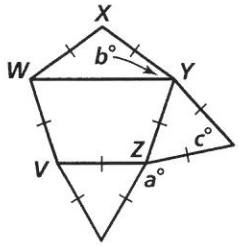
2. 

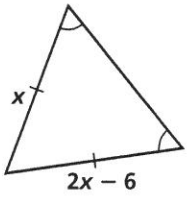
3. 

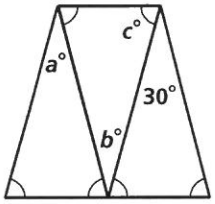
4. 

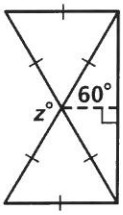
5. 

6. *WXYZV* is a regular polygon.



7. 

8. 

9. 

Complete each statement. Explain why it is true.

10. $\overline{AF} \cong$?

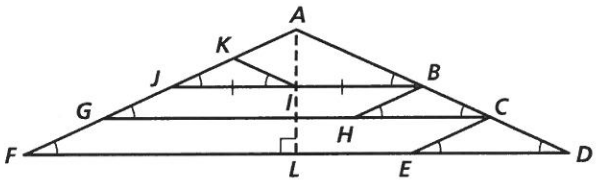
11. $\overline{CA} \cong$?

12. $\overline{KI} \cong$?

13. $\overline{EC} \cong$?

14. $\overline{JA} \cong$?

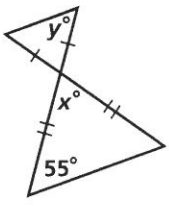
15. $\overline{HB} \cong$?

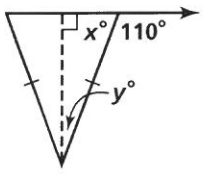


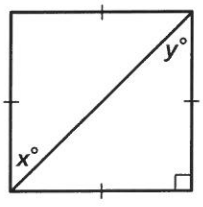
Given $m\angle D = 25$, find the measure of each angle.

16. $\angle JAB$ 17. $\angle FAL$ 18. $\angle JKI$ 19. $\angle DLA$

Find the values of x and y.

20. 

21. 

22. 

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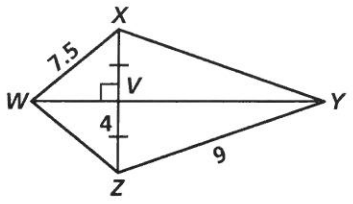
Practice 5-2

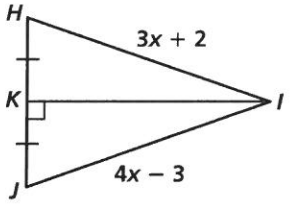
Bisectors in Triangles

Use the figure at the right for Exercises 1–5.



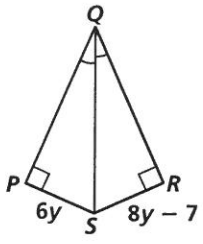
1. How is $\overline{WY}$ related to $\overline{XZ}$?
2. Find XV.
3. Find WZ.
4. Find XY.
5. What kind of triangle is $\triangle WXV$?

Use the figure at the right for Exercises 6–10.



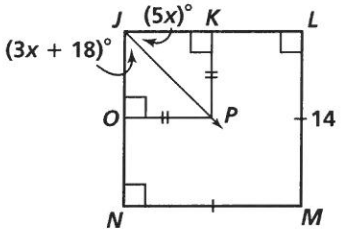
6. Find the value of x.
7. Find HI.
8. Find JL.
9. If L lies on $\overline{KI}$, then L is _?_ from H and J.
10. What kind of triangle is $\triangle HIJ$?

Use the figure at the right for Exercises 11–14.



11. Find the value of y.
12. Find PS.
13. Find RS.
14. What kind of triangle is $\triangle PQS$?

Use the figure at the right for Exercises 15–21.



15. How is $\overrightarrow{JP}$ related to $\angle LJN$?
16. Find the value of x.
17. Find $m\angle KJP$.
18. Find $m\angle OJP$.
19. Find NM.
20. Write a conclusion about point M.
21. What kind of triangle is $\triangle JOP$?