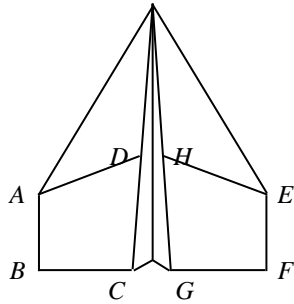


Ch 4.1-4.4 Study Guide

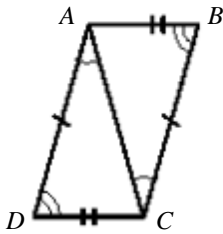
Know the 4 types of triangle congruence theorems: SSS, SAS, ASA, and AAS. Know the definition of congruent figures. Know how to set up two-column proof.

1. If $BCDE$ is congruent to $OPQR$, then \overline{DE} is congruent to ?.
2. In the paper airplane, $ABCD \cong EFGH$, $m\angle B = m\angle C = 90$, and $m\angle BAD = 131$. Find $m\angle GHE$.

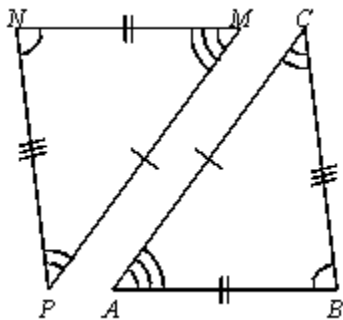


Drawing not to scale

3. Use the information given in the diagram. Tell why $\overline{AC} \cong \overline{AC}$ and $\angle BCA \cong \angle DAC$.



4. $\angle ABC \cong$?

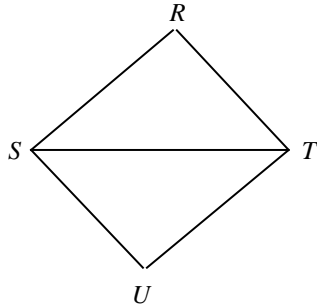


5. Given $\triangle QRS \cong \triangle TUV$, $\underline{QS = 3v + 2}$, and $TV = 7v - 6$, find the length of QS and TV .
6. Given $\triangle ABC \cong \triangle PQR$, $\underline{m\angle B = 3v + 4}$, and $m\angle Q = 8v - 6$, find $m\angle B$ and $m\angle Q$.

7. Justify the last two steps of the proof.

Given: $\overline{RS} \cong \overline{UT}$ and $\overline{RT} \cong \overline{US}$

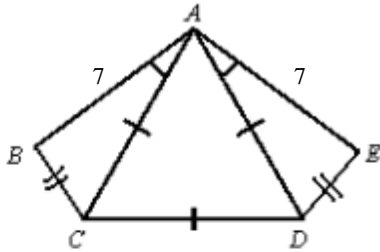
Prove: $\triangle RST \cong \triangle UTS$



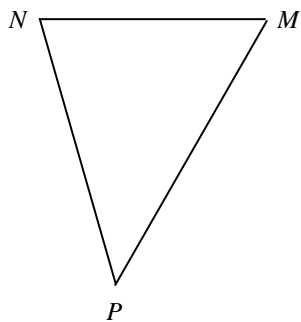
Proof:

- | | |
|--|-------------|
| 1. $\overline{RS} \cong \overline{UT}$ | 1. Given |
| 2. $\overline{RT} \cong \overline{US}$ | 2. Given |
| 3. $\overline{ST} \cong \overline{TS}$ | 3. <u>?</u> |
| 4. $\triangle RST \cong \triangle UTS$ | 4. <u>?</u> |

8. State whether $\triangle ABC$ and $\triangle AED$ are congruent. Justify your answer.



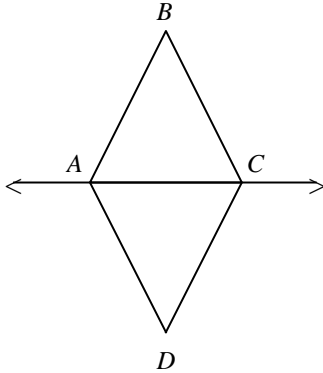
9. Name the angle included by the sides \overline{PN} and \overline{NM} .



10. What is the missing reason in the two-column proof?

Given: \overrightarrow{AC} bisects $\angle DAB$ and \overrightarrow{CA} bisects $\angle DCB$

Prove: $\triangle DAC \cong \triangle BAC$



Statements

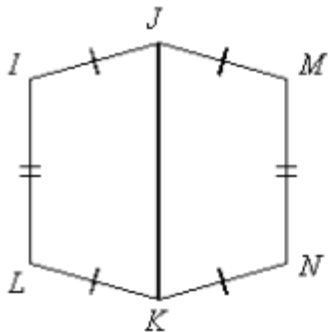
1. \overrightarrow{AC} bisects $\angle DAB$
2. $\angle DAC \cong \angle BAC$
3. $\overline{AC} \cong \overline{AC}$
4. \overrightarrow{CA} bisects $\angle DCB$
5. $\angle DCA \cong \angle BCA$
6. $\triangle DAC \cong \triangle BAC$

Reasons

1. Given
2. Definition of angle bisector
3. Reflexive property
4. Given
5. Definition of angle bisector
6. ?

11. For the two quadrilaterals below, $\angle I \cong \angle M$, $\angle IJK \cong \angle MJK$, $\angle LKJ \cong \angle NKJ$, and $\angle L \cong \angle N$. Complete this congruence statement for the two quadrilaterals.

$LKJI \cong \underline{\hspace{1cm} ? \hspace{1cm}}$



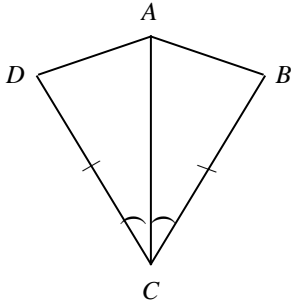
12. Based on the given information, can you conclude that $\triangle QRS \cong \triangle TUV$? Explain.

Given: $\overline{QR} \cong \overline{TU}$, $\overline{QS} \cong \overline{TV}$, and $\angle R \cong \angle U$

13. Write a two-column proof.
(hint: use SSS, SAS, ASA or AAS with CPCTC)

Given: the diagram

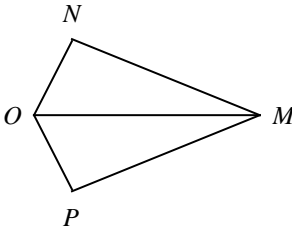
Prove: $\angle D \cong \angle B$



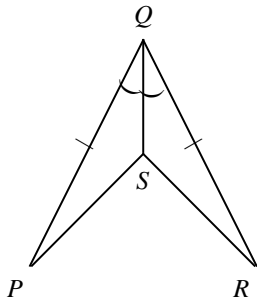
14. Write a two-column proof.
(hint: use SSS, SAS, ASA, or AAS, with CPCTC to complete)

Given: $\overline{ON} \cong \overline{OP}$, $\angle NOM \cong \angle POM$

Prove: $\overline{NM} \cong \overline{PM}$



15. Is there enough information to prove the two triangles congruent? If yes, write the congruence statement and name the postulate you would use. If no, write *not possible* and tell what other information you would need.

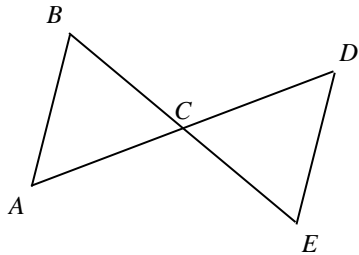


16. For $\triangle RST$ and $\triangle UVW$, $\angle R \cong \angle U$, $\overline{ST} \cong \overline{VW}$, and $\angle S \cong \angle V$. Explain how you can prove $\triangle RST \cong \triangle UVW$ by ASA.

17. Write a two-column proof.

Given: $\overline{BC} \cong \overline{EC}$ and $\overline{AC} \cong \overline{DC}$

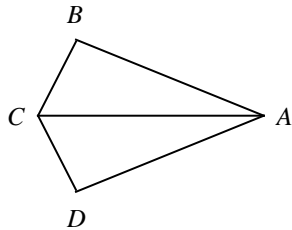
Prove: $\overline{BA} \cong \overline{ED}$



18. Write a two-column proof:

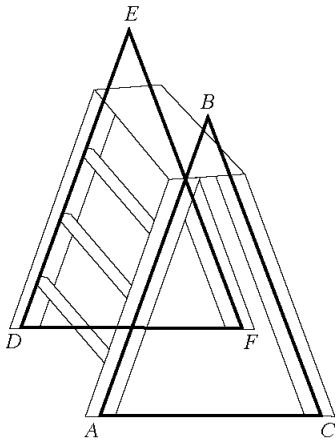
Given: $\angle BAC \cong \angle DAC$, $\angle DCA \cong \angle BCA$

Prove: $\overline{BC} \cong \overline{CD}$



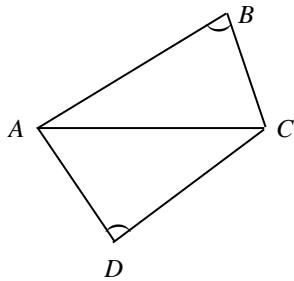
19. Find the measures of $\angle PMN$ and $\angle NMR$ if \overrightarrow{MN} bisects $\angle PMR$. The measure of $\angle PMR$ is 136° . Draw a sketch that shows the given information. Explain your answer.

20. When you open a stepladder, you use a brace on each side of the ladder to lock the legs in place. Explain why the triangles formed on each side by the legs and the ground ($\triangle ABC$ and $\triangle DEF$ in the diagram) are congruent.

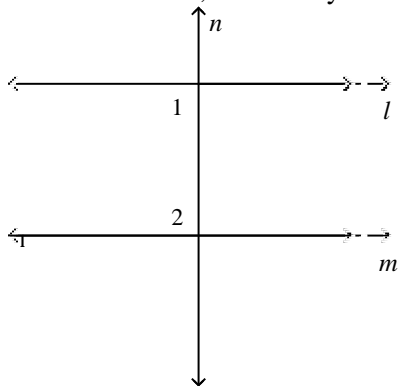


21. Is there enough information to prove the two triangles congruent by AAS? If yes, write the congruence statement and explain. If no, write *not possible* and tell what other information you would need.

Given: $\angle B \cong \angle D$



22. Given $m\angle 1 = m\angle 2$, what can you conclude about the lines l , m , and n ? Explain.



23. Line p contains points $A(-1, 4)$ and $B(3, -5)$. Line q is parallel to line p . Line r is perpendicular to line q . What is the slope of line r ? Explain.

24. Write a two-column proof.

Given: $\neg y = 8x - 14; y = 6$

Prove: $x = 7$