

Notes 5.3-5.6B Showing Triangle Congruence; Triangle Proofs

Objective: I can prove $\Delta \cong \Delta$ by writing 2-column proofs.

In each example, answer each of the following questions.

- State the congruent parts.
- How are the triangles congruent?
- State the congruence.

1. a) $\overline{AB} \cong \overline{DE}$ S
 $\overline{BC} \cong \overline{EF}$ A
 $\overline{AC} \cong \overline{DF}$ S
 b) SAS
 c) $\Delta ABC \cong \Delta DEF$

2. a) ~~$\Delta SPR \cong \Delta RPA$~~ A S
 $\overline{PR} \cong \overline{PR}$ A
 ~~$\Delta SPR \cong \Delta RPA$~~ A
 b) ASA
 c) $\Delta PSR \cong \Delta PQR$

3. a) $\overline{EH} \cong \overline{FG}$ S
 $\overline{EF} \cong \overline{HG}$ S
 $\overline{HF} \cong \overline{HF}$ S
 b) SSS
 c) $\Delta EFH \cong \Delta GHF$

EXAMPLES: Mark the drawing to show the given information and fill in the blanks.

4. E is the midpoint of \overline{KW} .
 $\angle KEG \cong \angle WEH$, and $\angle K \cong \angle W$.

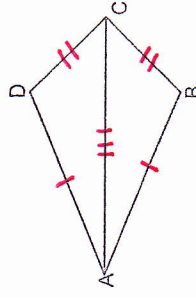
5. $\overline{VX} \cong \overline{ZX}$ and $\angle V \cong \angle Z$.

$\Delta KEG \cong \Delta WEH$ by ASA.
 $\Delta VXW \cong \Delta ZXY$ by ASA.

EXAMPLE 6:

Given: $\overline{AD} \cong \overline{AB}$
 $\overline{DC} \cong \overline{BC}$

Prove: $\Delta ADC \cong \Delta ABC$



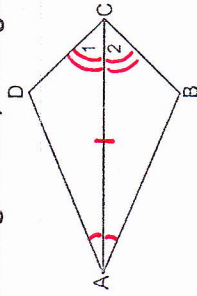
	STATEMENTS	REASONS
1	$\overline{AD} \cong \overline{AB}$ S	Given
2	$\overline{DC} \cong \overline{BC}$ S	Given
3	$\overline{AC} \cong \overline{AC}$ S	Reflexive
	$\Delta ADC \cong \Delta ABC$	SSS

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EXAMPLE 7:

Given: \overline{AC} bisects $\angle DAB$
 $\angle 1 \cong \angle 2$

Prove: $\triangle ABC \cong \triangle ADC$

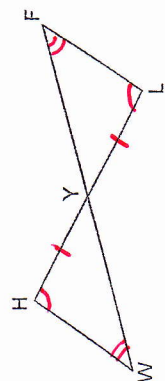


	STATEMENTS	REASONS
	\overline{AC} bisects $\angle DAB$	Given
1	$\angle DAC \cong \angle BAC$	Def. of \angle bisector
2	$\angle 1 \cong \angle 2$	Given
3	$\overline{AC} \cong \overline{AC}$	Reflexive
	$\triangle ABC \cong \triangle ADC$	ASA

EXAMPLE 8:

Given: $\overline{HY} \cong \overline{LY}$
 $\overline{WH} \parallel \overline{LF}$

Prove: $\triangle WHY \cong \triangle FLY$

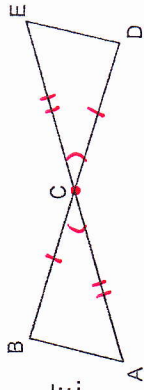


	STATEMENTS	REASONS
1	$\overline{HY} \cong \overline{LY}$	Given
	$\overline{WH} \parallel \overline{LF}$	Given
2	$\angle H \cong \angle F$	Alt. Int. \angle s
3	$\angle W \cong \angle L$	Alt. Int. \angle s
	$\triangle WHY \cong \triangle FLY$	AAS

EXAMPLE 9:

Given: C is the midpoint of \overline{BD} ; C is the midpoint of \overline{AE} .

Prove: $\triangle ABC \cong \triangle EDC$



	STATEMENTS	REASONS
	C is the mdpt of \overline{BD}	Given
1	$\overline{BC} \cong \overline{CD}$	Def. of mdpt
	C is the mdpt of \overline{AE}	Given
2	$\overline{AC} \cong \overline{CE}$	Def. of mdpt
3	$\angle BCA \cong \angle ECD$	Vertical \angle s \cong
	$\triangle ABC \cong \triangle EDC$	SAS