

**Objective**

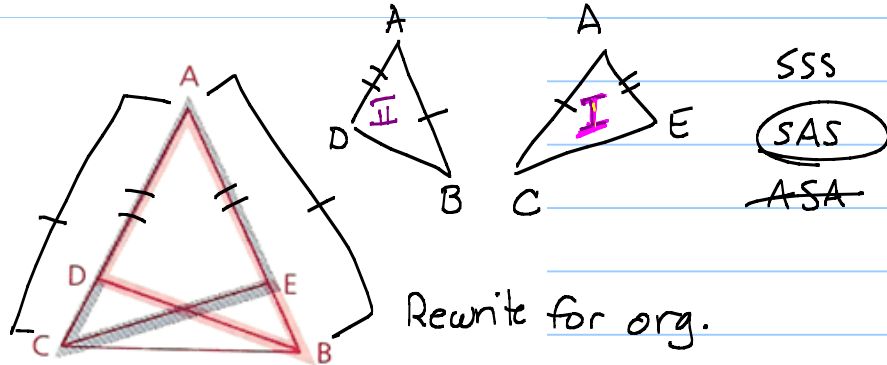
After studying this section, you will be able to

- Use overlapping triangles in proofs

Postulates  $\cong \triangle$ : SSS, SAS, ASA

**Problem 1**

Given:  $\overline{AC} \cong \overline{AB}$ ,  
 $\overline{AE} \cong \overline{AD}$   
 Conclusion:  $\overline{CE} \cong \overline{BD}$



Rewrite for org.

**Proof**

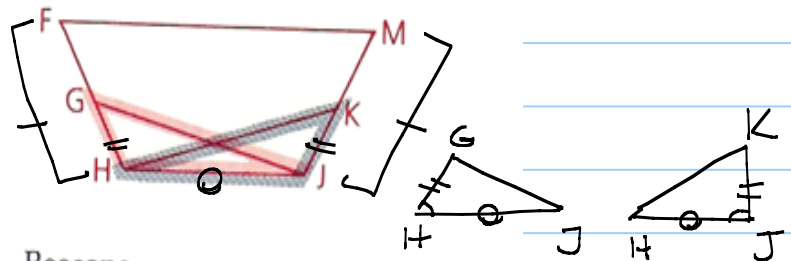
org.  
 chronology

Statements	Reasons	S	R
S 1 $\overline{AC} \cong \overline{AB}$	1	① $\overline{AC} \cong \overline{AB}$	1. Given
A 2 $\overline{AE} \cong \overline{AD}$	2	② $\angle A \cong \angle A$	2. Ref
S 3 $\angle A \cong \angle A$	3	③ $\overline{AE} \cong \overline{AD}$	3. Given
4 $\triangle ACE \cong \triangle ABD$	4	4. $\triangle ACE \cong \triangle ABD$	4. SAS (1,2,3)
5 $\overline{CE} \cong \overline{BD}$	5	5. $\overline{CE} \cong \overline{BD}$	5. CPCTC (4)

watch chronology also

**Problem 2**

Given:  $\overline{FH} \cong \overline{MJ}$ ;  
 G is the midpt. of  $\overline{FH}$ .  
 K is the midpt. of  $\overline{MJ}$ .  
 $\angle GHJ \cong \angle KJH$   
 Prove:  $\overline{GJ} \cong \overline{HK}$



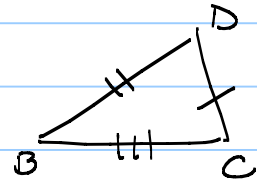
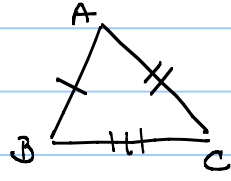
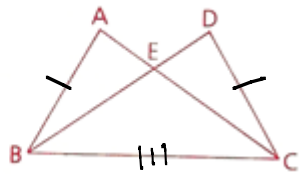
**Proof**

Statements	Reasons
1 $\overline{FH} \cong \overline{MJ}$	1 Given
2 G is the midpt. of $\overline{FH}$ .	2 Given
3 K is the midpt. of $\overline{MJ}$ .	3 Given
S 4 $\overline{GH} \cong \overline{KJ}$	4 $\frac{1}{2}$
5 $\angle GHJ \cong \angle KJH$	5 Given
6 $\overline{HJ} \cong \overline{HJ}$	6 Ref
7 $\triangle GHJ \cong \triangle KJH$	7 SAS (4,5,6)
8 $\overline{GJ} \cong \overline{HK}$	8 CPCTC (7)

**Problem Set A**

1 Given:  $\overline{AB} \cong \overline{DC}$ ,  
 $\overline{AC} \cong \overline{DB}$

Prove:  $\triangle ABC \cong \triangle DCB$



S

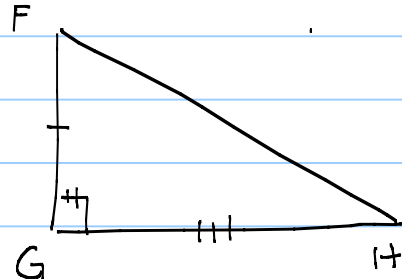
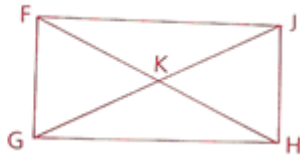
1.  $\overline{AB} \cong \overline{DC}$
2.  $\overline{AC} \cong \overline{DB}$
3.  $\overline{BC} \cong \overline{CB}$
4.  $\triangle ABC \cong \triangle DCB$

R.

1. Given
2. Given
3. Ref
4. SSS (123)

2 Given:  $\angle FGH$  is a right  $\angle$ .  
 $\angle JHG$  is a right  $\angle$ .  
 $\overline{FG} \cong \overline{JH}$

Prove:  $\triangle FGH \cong \triangle JHG$



S

R

- S 1.  $\overline{FG} \cong \overline{JH}$
2.  $\angle FGH$  &  $\angle JHG$  rt  $\angle$ s
- A 3.  $\angle FGH \cong \angle JHG$
- S 4.  $\overline{GH} \cong \overline{HG}$
5.  $\triangle FGH \cong \triangle JHG$

1. Given
2. Given
3. rt  $\angle$ s  $\Rightarrow \cong \angle$ s
4. Ref
5. SAS (134)

