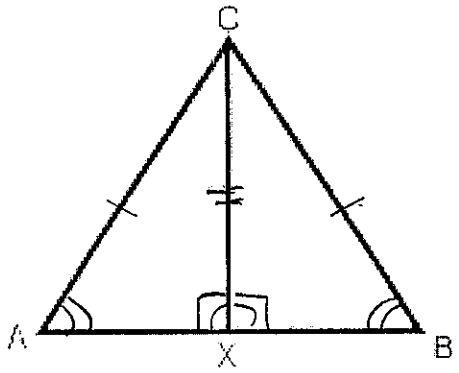
Honors Geometry
Chapter 4 Proofs

Name Key

Given: $\overline{CX} \perp \overline{AB}$; $AC = BC$

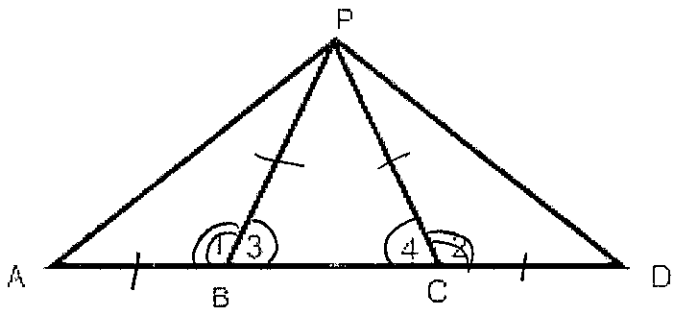
Prove: $\Delta ACX \cong \Delta BCX$



Statements	Reasons
1. $\overline{CX} \perp \overline{AB}$	1. Given
2. $\angle CXA \cong \angle CXB$	2. $\perp$ lines $\rightarrow \cong$ adj. $\angle$s
3. $AC = BC$	3. Given
4. $\overline{AC} \cong \overline{BC}$	4. def. $\cong$
5. $\angle A \cong \angle B$	5. isosc. Δ thm.
6. $\Delta ACX \cong \Delta BCX$	6. AAS
OR	
2. $\angle CXA + \angle CXB$ rt. $\angle$s	2. $\perp$ lines $\rightarrow$ rt. $\angle$s
3. $\Delta ACX + \Delta BCX$ rt. Δs	3. def. rt. Δ
4. $\overline{CX} \cong \overline{CX}$	4. reflexive
5. $\overline{AC} \cong \overline{BC}$	5. def. $\cong$
6. $\Delta ACX \cong \Delta BCX$	6. HL

Given: $m\angle 3 = m\angle 4;\ AB = DC$

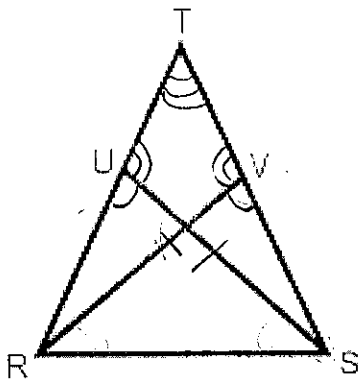
Prove: $\Delta ABP \cong \Delta DCP$



Statements	Reasons
1. $m\angle 3 = m\angle 4$; $AB = DC$	1. Given
2. $\angle 3 \cong \angle 4$; $\overline{AB} \cong \overline{DC}$	2. def. $\cong$
3. $\overline{BP} \cong \overline{CP}$	3. 2 $\angle$s of $\Delta \cong$ → sides opp. $\cong$
4. $m\angle 1 + m\angle 3 = 180$; $m\angle 4 + m\angle 2 = 180$	4. $\angle$ Addn, post.
5. $\angle 1 + \angle 3$ are supp.; $\angle 4 + \angle 2$ are supp.	5. def. supp.
6. $\angle 1 \cong \angle 2$	6. 2 $\angle$s supp. to $\cong \angle$s are $\cong$
7. $\Delta ABP \cong \Delta DCP$	7. SAS

Given: $\overline{RV} \cong \overline{US}$; $\angle RUS \cong \angle SVR$

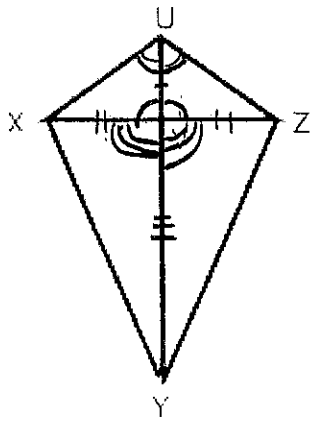
Prove: $\Delta RTV \cong \Delta STU$



Statements	Reasons
1. $\overline{RV} \cong \overline{US}$; $\angle RUS \cong \angle SVR$	1. Given
2. $m\angle TUS + m\angle RUS = 180$; $m\angle TVR + m\angle RVS = 180$	2. Angle Add. Post.
3. $\angle TUS$ & $\angle RUS$ supp.; $\angle TVR$ & $\angle RVS$ supp.	3. def. supp.
4. $\angle TUS \cong \angle TVR$	4. 2 $\angle$s supp. to $\cong \angle$s $\cong$
5. $\angle T \cong \angle T$	5. Reflexive
6. $\Delta RTV \cong \Delta STU$	6. AAS

Given: $\overline{UY} \perp \overline{XZ}$; $\overline{UY}$ bisects $\angle XUZ$

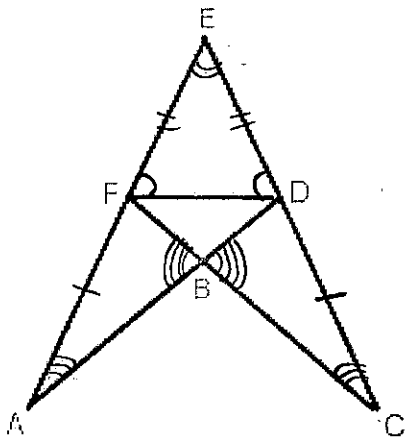
Prove: $\overline{XY} \cong \overline{ZY}$

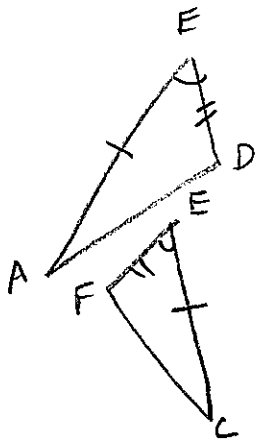


Statements	Reasons
1. $\overline{UY} \perp \overline{XZ}$; $\overline{UY}$ bisects $\angle XUZ$	1. given
2. $\angle UVX \cong \angle UVZ$; $\angle XVY \cong \angle ZVY$	2. $\perp$ lines $\rightarrow \cong$ adj. $\angle$s
3. $\overline{UV} \cong \overline{UV}$	3. Reflexive
4. $\angle XUV \cong \angle VUZ$	4. def. $\angle$ bisector
5. $\triangle XVU \cong \triangle ZVU$	5. ASA
6. $\overline{XU} \cong \overline{ZU}$	6. CPCTC
7. $\overline{VY} \cong \overline{VY}$	7. Reflexive
8. $\triangle XYV \cong \triangle ZYV$	8. SAS
9. $\overline{XY} \cong \overline{ZY}$	9. CPCTC

Given: $\overline{FA} \cong \overline{DC}$; $\angle EFD \cong \angle EDF$

Prove: $\Delta AFB \cong \Delta CDB$

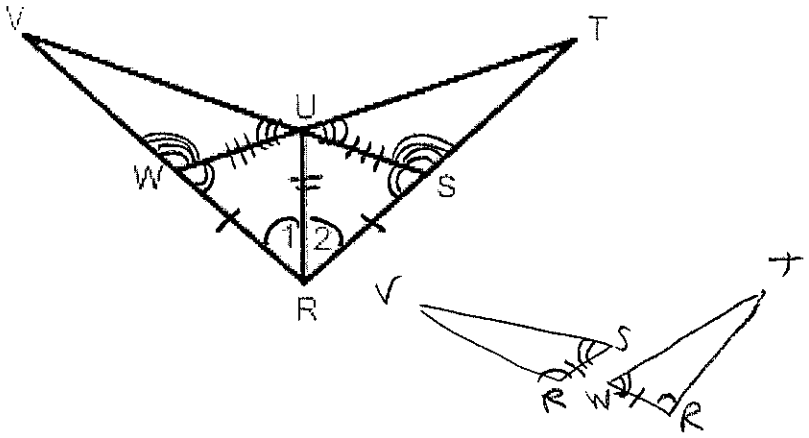




Statements	Reasons
1. $\overline{FA} \cong \overline{DC}$; $\angle EFD \cong \angle EDF$	1. Given
2. $\overline{FE} \cong \overline{DE}$	2. 2 $\angle$s $\Delta \cong$ → Sides opp. $\angle$s $\cong$
3. $FA = DC$; $FE = DE$	3. def. $\cong$
4. $FA + FE = DC + DE$	4. addn. prop.
5. $FA + FE = AE$; $DC + DE = CE$	5. Seg. add'n post.
6. $AE = CE$	6. Substitution
7. $\overline{AE} \cong \overline{CE}$	7. def. $\cong$
8. $\angle E \cong \angle E$	8. Reflexive
9. $\Delta EDA \cong \Delta EFC$	9. SAS
10. $\angle A \cong \angle C$	10. CPCTC
11. $\angle FBA \cong \angle DBC$	11. Vert. $\angle$s $\cong$
12. $\Delta AFB \cong \Delta CDB$	12. AAS

Given: $\angle 1 \cong \angle 2$; $\overline{RW} \cong \overline{RS}$

Prove: $\overline{VU} \cong \overline{TU}$



Statements	Reasons
1. $\angle 1 \cong \angle 2$; $\overline{RW} \cong \overline{RS}$	1. Given
2. $\overline{UR} \cong \overline{UR}$	2. Reflexive
3. $\triangle RUW \cong \triangle RUS$	3. SAS
4. $\angle UWR \cong \angle USR$; $\overline{WU} \cong \overline{SU}$	4. CPCTC
5. $m\angle VWU + m\angle UWR = 180$; $m\angle TSU + m\angle USR = 180$	5. $\angle$ Add'n Post.
6. $\angle VWU + \angle UWR$ supp.; $\angle TSU + \angle USR$ supp.	6. def. supp.
7. $\angle VWU \cong \angle TSU$	7. 2 $\angle$s supp. $\cong$ $\angle$s are $\cong$
8. $\angle VUW \cong \angle TUS$	8. Vert. $\angle$s $\cong$
9. $\triangle VWU \cong \triangle TSU$	9. ASA
10. $\overline{VU} \cong \overline{TU}$	10. CPCTC