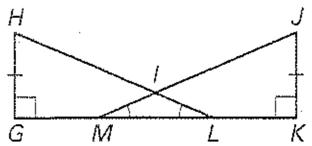
Adv. Geometry 4.6

Name key

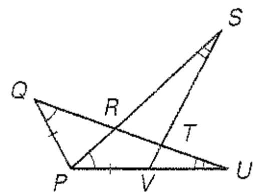
Tell which triangles you can show are congruent in order to prove the statement. What postulate or theorem would you use? Must be in corresponding order.

1. $\angle H \cong \angle J$



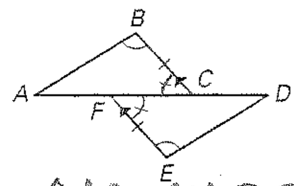
$\triangle HGL \cong \triangle JKM$
AAS

2. $\overline{QU} \cong \overline{PS}$



$\triangle QPU \cong \triangle PVS$
AAS

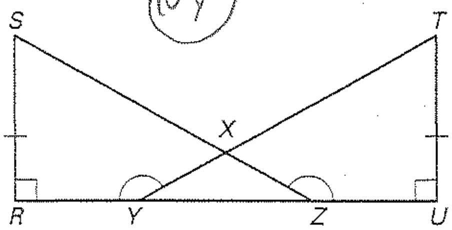
3. $\angle A \cong \angle D$



$\triangle ABC \cong \triangle DEF$
ASA

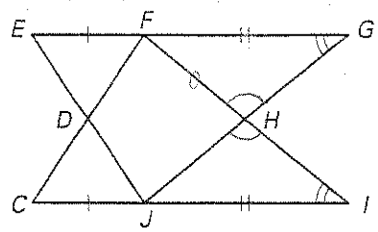
Use the diagram to write a plan for the proof. (what $\triangle$'s are $\cong$ and how did you get them $\cong$)

4. PROVE: $\overline{RZ} \cong \overline{YU}$ (UY)



$\angle TYU \cong \angle S \cong R$
$\triangle SRZ \cong \triangle TUY$ (AAS)
$\overline{RZ} \cong \overline{UY}$

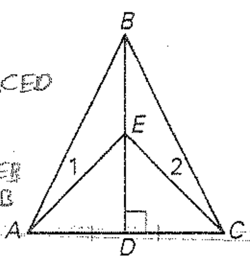
5. PROVE: $\overline{FH} \cong \overline{JH}$



$\angle FHG \cong \angle JHI$
$\triangle FHG \cong \triangle JHI$ (AAS)
$\overline{FH} \cong \overline{JH}$

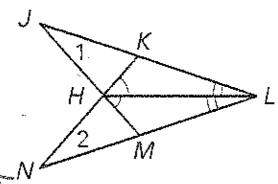
Use the information given in the diagram to write a plan for proving that $\angle 1 \cong \angle 2$.

6.



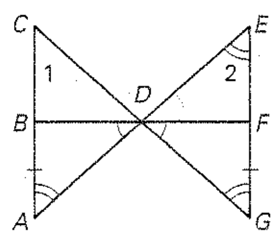
$\overline{ED} \cong \overline{ED}$
$\triangle AED \cong \triangle CED$
$\overline{AE} \cong \overline{CE}$
$\overline{BE} \cong \overline{BE}$
$\angle AEB \cong \angle CEB$
$\triangle AEB \cong \triangle CEB$
$\angle 1 \cong \angle 2$

7.



$\overline{HL} \cong \overline{HL}$
$\triangle KHL \cong \triangle MHL$
$\overline{KH} \cong \overline{MH}$
$\angle JKH \cong \angle NMH$
$\angle JHK \cong \angle NHM$
$\triangle JHK \cong \triangle NHM$
$\angle 1 \cong \angle 2$

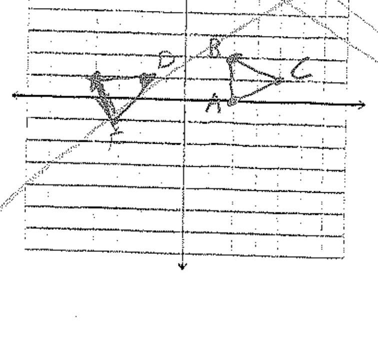
8.



$\triangle ABD \cong \triangle GFD$
$\overline{BD} \cong \overline{FD}$
$\angle BDA \cong \angle EDF$
$\angle GDF \cong \angle CDB$
$\angle CDB \cong \angle EDF$
$\triangle CDB \cong \triangle EFD$
$\angle 1 \cong \angle 2$

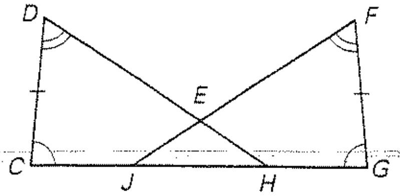
Use the vertices of $\triangle ABC$ and $\triangle DEF$ to show that $\angle C \cong \angle F$.

9. $A(2, 0)$, $B(2, 2)$, $C(4, 1)$, $D(-2, 1)$, $E(-\cancel{3}\,4, 1)$, $F(-3, -1)$



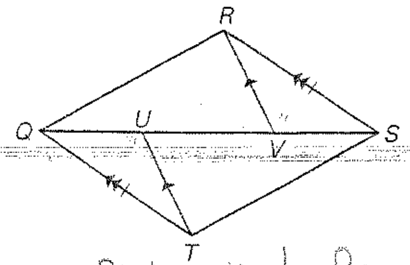
Use the information given in the diagram to write a proof.

11. **PROVE:** $\angle CJF \cong \angle GHE$



Statements	Reasons
① $\angle C \cong \angle G$; $\angle D \cong \angle F$; $\overline{CD} \cong \overline{GF}$	① Given
② $\triangle CDH \cong \triangle GFJ$	② ASA
③ $\angle FJG \cong \angle DHC$	③ CPCTC
④ $\angle CJF$ & $\angle FJG$ are supplementary; $\angle GHE$ & $\angle CHD$ are supplementary	④ Def. of supp.
⑤ $\angle CJF \cong \angle GHE$	⑤ Congruent supplements Theorem

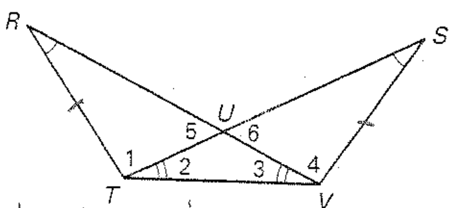
12. **PROVE:** $\angle UTS \cong \angle VRQ$



Statements	Reasons
①	① Given
② $\angle TUS \cong \angle RVQ$	② Alternate Interior $\angle$'s $\cong$
③ $\angle QUT$ & $\angle TUS$ are supplementary; $\angle RVQ$ & $\angle RVS$ are supplementary	③ Def. of supp.
④ $\angle QUT \cong \angle RVS$	④ Congruent supplements Theorem
⑤ $\angle TQU \cong \angle RSV$	⑤ Alternate Interior $\angle$'s $\cong$
⑥ $\triangle QUT \cong \triangle SVR$	⑥ AAS
⑦ $\overline{QU} \cong \overline{SV}$	⑦ CPCTC
⑧ $\overline{UV} \cong \overline{UV}$	⑧ Reflexive Prop.
⑨ $\overline{QU} + \overline{UV} = \overline{SV} + \overline{UV}$	⑨ Addition Prop. of Eq.
⑩ $\overline{QU} + \overline{UV} = \overline{QV}$; $\overline{SV} + \overline{UV} = \overline{SU}$	⑩ Segment Addition Post.
⑪ $\overline{UT} \cong \overline{VR}$	⑪ CPCTC
⑫ $\triangle QVR \cong \triangle SUT$	⑫ SAS
⑬ $\angle UTS \cong \angle VRQ$	⑬ CPCTC

4. **GIVEN:** $\angle R \cong \angle S$, $\angle 2 \cong \angle 3$

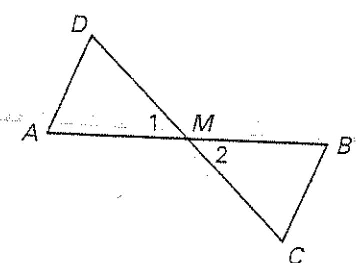
PROVE: $\overline{RU} \cong \overline{SU}$



Statement	Reason
① $\angle R \cong \angle S$; $\angle 2 \cong \angle 3$	① Given
② $\overline{TV} \cong \overline{TV}$	② Reflexive
③ $\triangle STV \cong \triangle RVT$	③ AAS
④ $\overline{SV} \cong \overline{RT}$	④ CPCTC
⑤ $\angle 5 \cong \angle 6$	⑤ Vertical $\angle$'s $\cong$
⑥ $\triangle RTU \cong \triangle SVU$	⑥ AAS
⑦ $\overline{RU} \cong \overline{SU}$	⑦ CPCTC

6. **GIVEN:** $\overline{AB}$ and $\overline{CD}$ bisect each other at point M.

PROVE: $\overline{AD} \parallel \overline{BD}$



Statement	Reason
① $\overline{AB}$ & $\overline{CD}$ bisect each other @ point M	① Given
② $\overline{DM} \cong \overline{CM}$; $\overline{AM} \cong \overline{BM}$	② Def. of Midpoint
③ $\angle 1 \cong \angle 2$	③ Vertical $\angle$'s $\cong$
④ $\triangle ADM \cong \triangle BCM$	④ SAS
⑤ $\angle D \cong \angle C$	⑤ CPCTC
⑥ $\overline{AD} \parallel \overline{BC}$	⑥ Alternate Interior Angle $\cong \Rightarrow$ Parallel lines