

Name Schlansky
Mr. Schlansky

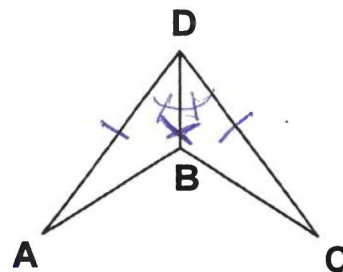
Date _____
Geometry



Triangle Proofs with CPCTC

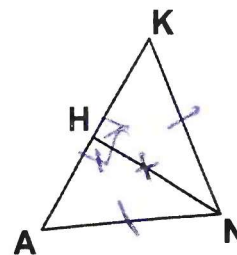
1. Given: $\overline{BD}$ bisects $\angle ADC$
 $\overline{AD} \cong \overline{DC}$

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



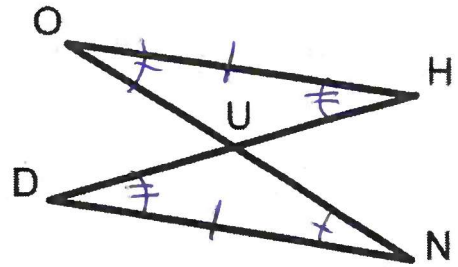
Statements	Reasons
① $\overline{BD}$ bisects $\angle ADC$	① given
② $\angle ADB \cong \angle CDB$	② an angle bisector creates two congruent angles
③ $\overline{AD} \cong \overline{DC}$	③ given
④ $\overline{DB} \cong \overline{DB}$	④ Reflexive Property
⑤ $\triangle DBA \cong \triangle DBC$	⑤ SAS $\cong$ SAS
⑥ $\overline{AB} \cong \overline{BC}$	⑥ CPCTC

2. Given: $\overline{HN} \perp \overline{KA}$, $\overline{KN} \cong \overline{AN}$
Prove: $\angle HAN \cong \angle HKN$



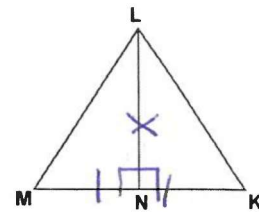
Statements	Reasons
① $\overline{HN} \perp \overline{KA}$	① given
② $\angle KHN \cong \angle AHN$	② Perpendicular lines create congruent right angles
③ $\overline{KN} \cong \overline{AN}$	③ given
④ $\overline{HN} \cong \overline{HN}$	④ Reflexive Property
⑤ $\triangle KHN \cong \triangle AHN$	⑤ HL $\cong$ HL
⑥ $\angle HAN \cong \angle HKN$	⑥ CPCTC

3. Given: $\overline{OH} \parallel \overline{DN}$, $\overline{OH} \cong \overline{DN}$
 Prove: $\overline{OU} \cong \overline{UN}$



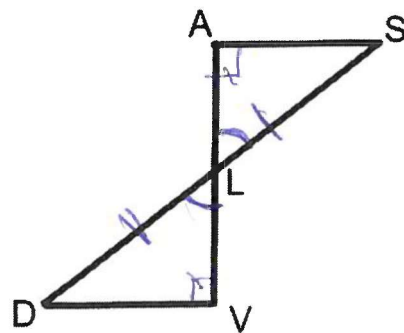
Statements	Reasons
① $\overline{OH} \parallel \overline{DN}$	① Given
② $\angle HOU \cong \angle DNU$ $\angle OHU \cong \angle UDN$	② Parallel lines cut by a transversal create congruent alternate interior angles
③ $\overline{OH} \cong \overline{DN}$	③ Given
④ $\triangle OUH \cong \triangle DNU$	④ ASA $\cong$ ASA
⑤ $\overline{OU} \cong \overline{UN}$	⑤ CPCTC

4. Given: $\overline{LN}$ is the perpendicular bisector of $\overline{MK}$
 Prove: $\overline{NM} \cong \overline{NK}$



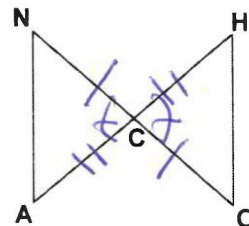
Statements	Reasons
① $\overline{LN}$ is the perpendicular bisector of $\overline{MK}$	① Given
② $\angle LNM \cong \angle LNK$ $\angle LNM \cong \angle LNK$	② Perpendicular lines form congruent right angles
③ $\overline{MN} \cong \overline{NK}$	③ A line bisector creates two congruent segments
④ $\overline{LN} \cong \overline{LN}$	④ Reflexive Property
⑤ $\triangle MNL \cong \triangle KNL$	⑤ SAS $\cong$ SAS
⑥ $\overline{NM} \cong \overline{NK}$	⑥ CPCTC

5. Given: $\overline{SA} \perp \overline{AV}$, $\overline{DV} \perp \overline{VA}$, L is the midpoint of $\overline{DS}$
 Prove: $\angle ASL \cong \angle VDL$



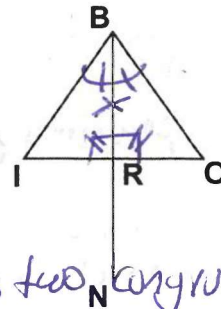
Statements	Reasons
① $\overline{SA} \perp \overline{AV}$, $\overline{DV} \perp \overline{VA}$	① given
② $\angle SAL \cong \angle DVL$	② Perpendicular lines form congruent right angles
③ L is the midpoint of $\overline{DS}$	③ given
④ $\overline{DL} \cong \overline{LS}$	④ A midpoint creates two congruent segments
⑤ $\angle ALS \cong \angle VLD$	⑤ vertical angles are congruent
⑥ $\triangle DVL \cong \triangle SAL$	⑥ AAS $\cong$ AAS
⑦ $\angle ASL \cong \angle VDL$	⑦ CPCTC

6. Given: $\overline{NO}$ and $\overline{HA}$ bisect each other
 Prove: $\overline{NA} \cong \overline{HO}$



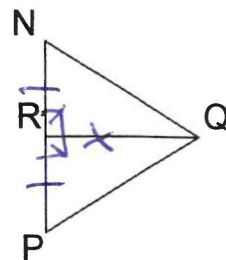
Statements	Reasons
① $\overline{NO}$ and $\overline{HA}$ bisect each other	① given
② $\overline{NC} \cong \overline{CO}$ $\overline{AC} \cong \overline{CH}$	② A line bisector creates two congruent segments
③ $\angle NCA \cong \angle HCO$	③ vertical angles are congruent
④ $\triangle NCA \cong \triangle OCH$	④ SAS $\cong$ SAS
⑤ $\overline{NA} \cong \overline{HO}$	⑤ CPCTC

7. Given: $\overline{NB}$ bisects $\angle IBO$, $\overline{BR} \perp \overline{IO}$
 Prove: $\angle BIO \cong \angle BOI$



Statements	Reasons
① $\overline{NB}$ bisects $\angle IBO$	① given
② $\angle IBR \cong \angle OBR$	② An angle bisector creates two congruent angles
③ $\overline{BR} \perp \overline{IO}$	③ given
④ $\angle BRI \cong \angle BRO$	④ perpendicular lines form congruent right angles
⑤ $\overline{BR} \cong \overline{BR}$	⑤ Reflexive Property
⑥ $\triangle BRI \cong \triangle BRO$	⑥ ASA $\cong$ ASA
⑦ $\angle BIO \cong \angle BOI$	⑦ CPCTC

8. Given: $\overline{QR}$ is the perpendicular bisector of $\overline{NP}$
 Prove: $\angle NQR \cong \angle PQR$



Statements	Reasons
① $\overline{QR}$ is the perpendicular bisector of $\overline{NP}$	① given
② $\angle QRN \cong \angle QRP$	② Perpendicular lines form congruent right angles
③ $\overline{NR} \cong \overline{RP}$	③ A line bisector creates two congruent segments
④ $\overline{QR} \cong \overline{QR}$	④ reflexive property
⑤ $\triangle QRN \cong \triangle QRP$	⑤ SAS $\cong$ SAS
⑥ $\angle NQR \cong \angle PQR$	⑥ CPCTC