

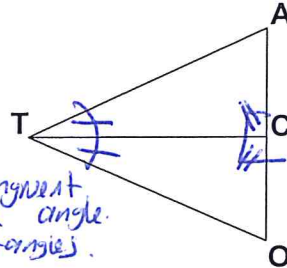
Name Schlansky
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Date _____
Geometry

Similar Triangles Proofs

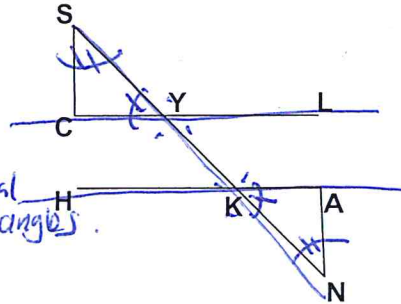
1. Given: Altitude \overline{TC} bisects $\angle ATO$
Prove: $\triangle TCA \sim \triangle TCO$

Statements	Reasons
① Altitude \overline{TC} bisects $\angle ATO$	① Given
② $\angle ATC \cong \angle OTC$	② An angle bisector creates two congruent angles.
③ $\angle ACT \cong \angle OCT$	③ An altitude creates two congruent right angles.
④ $\triangle TCA \sim \triangle TCO$	④ AA



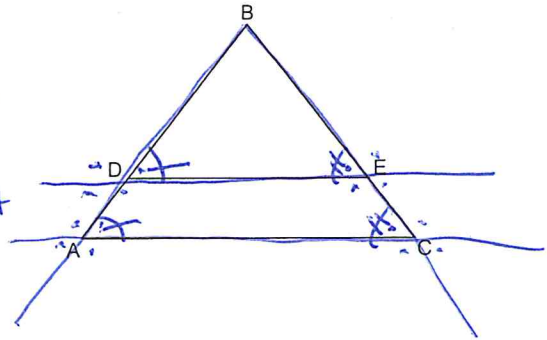
2. Given: $\overline{CL} \parallel \overline{HA}$, $\angle CSY \cong \angle ANK$
Prove: $\triangle SCY \sim \triangle NAK$

Statements	Reasons
① $\overline{CL} \parallel \overline{HA}$	① Given
② $\angle SCY \cong \angle ANK$	② Parallel lines cut by a transversal create congruent alternate exterior angles.
③ $\angle CSY \cong \angle ANK$	③ Given
④ $\triangle SCY \sim \triangle NAK$	④ AA



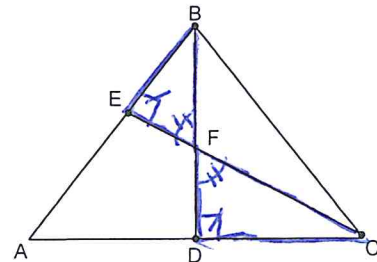
3. Given: $\overline{DE} \parallel \overline{AC}$
Prove: $\triangle BDE \sim \triangle BAC$

Statements	Reasons
① $\overline{DE} \parallel \overline{AC}$	① Given
② $\angle BDE \cong \angle BAC$ $\angle BED \cong \angle BCA$	② Parallel lines cut by a transversal create congruent corresponding angles.
③ $\triangle BDE \sim \triangle BAC$	③ AA



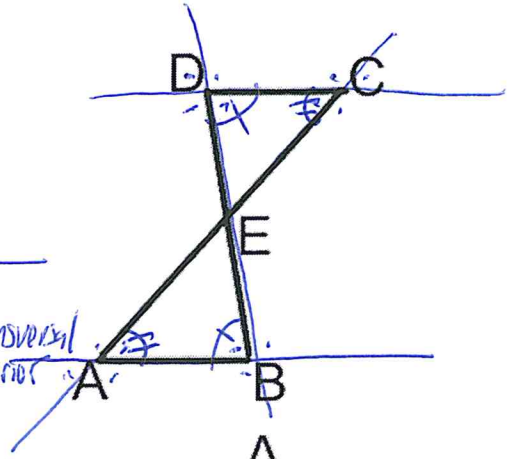
4. Given: Altitudes $\overline{CE} \perp \overline{AB}$ and $\overline{BD} \perp \overline{AC}$
Prove: $\triangle DFC \sim \triangle FBE$

Statements	Reasons
① $\overline{CE} \perp \overline{AB}$, $\overline{BD} \perp \overline{AC}$	① Given
② $\angle BEF \cong \angle CDF$	② Perpendicular lines create congruent right angles.
③ $\angle BFE \cong \angle CFD$	③ Vertical angles are congruent
④ $\triangle DFC \sim \triangle FBE$	④ AA



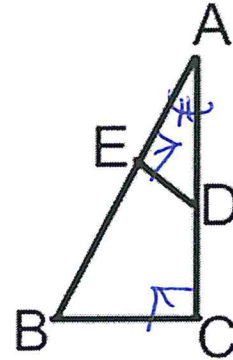
5. Given $\overline{AB} \parallel \overline{DC}$
 Prove: $\triangle ABE \sim \triangle CDE$

Statements	Reasons
① $\overline{AB} \parallel \overline{DC}$	① Given
② $\angle CDE \cong \angle ABE$ $\angle DCE \cong \angle BAE$	② Parallel lines cut by a transversal create congruent alternate interior angles.
③ $\triangle ABE \sim \triangle CDE$	③ AA



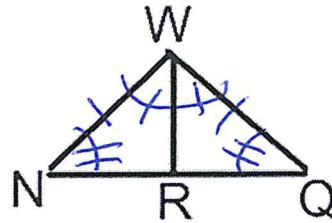
6. Given: $\overline{BC} \perp \overline{AC}$
 $\overline{DE} \perp \overline{AB}$
 Prove: $\triangle ABC \sim \triangle ADE$

Statements	Reasons
① $\overline{BC} \perp \overline{AC}, \overline{DE} \perp \overline{AB}$	① Given
② $\angle BCA \cong \angle AED$	② Perpendicular lines create congruent right angles.
③ $\angle EAD \cong \angle EAD$	③ Reflexive Property
④ $\triangle ABC \sim \triangle ADE$	④ AA



7. Given: \overline{WR} bisects $\angle NWQ$
 $\overline{WN} \cong \overline{WQ}$
 Prove: $\triangle RWN \sim \triangle RWQ$

Statements	Reasons
① \overline{WR} bisects $\angle NWQ$	① Given
② $\angle NWR \cong \angle QWR$	② An angle bisector creates two congruent angles.
③ $\overline{WN} \cong \overline{WQ}$	③ Given
④ $\angle WRN \cong \angle WRQ$	④ Isosceles Triangle Theorem
⑤ $\triangle RWN \sim \triangle RWQ$	⑤ AA



8. Given: \overline{CD} is an altitude
 $\overline{BC} \perp \overline{AC}$
 Prove: $\triangle ADC \sim \triangle ACB$

Statements	Reasons
① \overline{CD} is an altitude $\overline{BC} \perp \overline{AC}$	① Given
② $\angle ACB \cong \angle ADC$	② An altitude and perpendicular lines create congruent right angles.
③ $\angle CAD \cong \angle CAD$	③ Reflexive Property
④ $\triangle ADC \sim \triangle ACB$	④ AA

