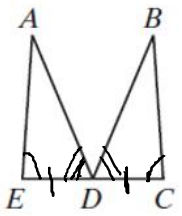
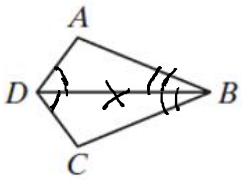
Section 3.3 Proofs

9. *Given*: $\angle E \cong \angle C$, $\angle EDA \cong \angle CDB$, and D is the midpoint of $\overline{EC}$.
Prove: $\triangle DAE \cong \triangle DBC$



Statement	Reason
1. $\angle E \cong \angle C$	1. Given
2. D is the midpont of $\overline{EC}$	2. Given
3. $\overline{ED} \cong \overline{CD}$	3. Definition of Midpoint
4. $\angle EDA \cong \angle CDB$	4. Given
3. $\Delta DAE \cong \Delta DBC$	3. ASA $\cong$ (steps 1,3,4)

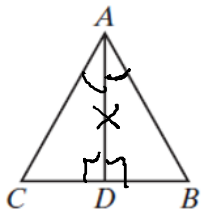
10. *Given*: $\overrightarrow{DB}$ bisects $\angle ADC$ and $\overrightarrow{BD}$ bisects $\angle ABC$.
Prove: $\triangle ABD \cong \triangle CBD$



Statement	Reason
1. $\overrightarrow{DB}$ bisects $\angle ADC$	1. Given
2. $\angle ADB \cong \angle CDB$	2. Definition of angle bisector
3. $\overline{DB} \cong \overline{DB}$	3. Reflexive property
4. $\overrightarrow{BD}$ bisects $\angle ABC$	4. Given
5. $\angle ABD \cong \angle CBD$	5. Definition of angle bisector
4. $\Delta ABD \cong \Delta CBD$	4. ASA $\cong$ (steps 2,3,5)

11. *Given*: $\overline{AD} \perp \overline{BC}$ and $\overrightarrow{AD}$ bisects $\angle BAC$.

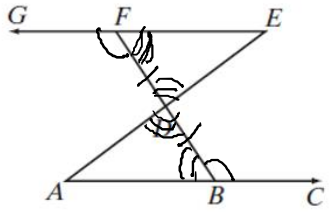
Prove: $\triangle ADC \cong \triangle ADB$



Statement	Reason
1. $\overline{AD} \perp \overline{BC}$	1. Given
2. $\angle CDA$ and $\angle BDA$ are right angles	2. Definition of perpendicular
3. $\angle CDA \cong \angle BDA$	3. If two angles are right angles, then they are congruent.
4. $\overline{AD} \cong \overline{AD}$	4. Reflexive Property
5. $\overrightarrow{AD}$ bisects $\angle BAC$	5. Given
6. $\angle CAD \cong \angle BAD$	6. Definition of angle bisector
7. $\Delta ADC \cong \Delta ADB$	7. ASA $\cong$ (steps 3,4,6)

12. *Given:* $\angle DBC \cong \angle GFD$ and $\overline{AE}$ bisects $\overline{FB}$ at D.

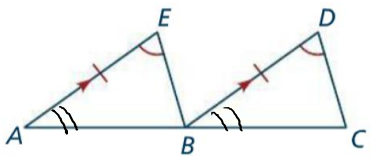
Prove: $\triangle DFE \cong \triangle DBA$



Statement	Reason
1. $\angle DBC \cong \angle GFD$	1. Given
2. $\angle GFD$ and $\angle DFE$ are supplementary $\angle CBD$ and $\angle ABD$ ares supplementary	2. If two angles are a linear pair, then they are supplementary.
3. $\angle ABD \cong \angle DFE$	3. The supplements of congruent angles are congruent.
4. D is the midpoint of $\overline{FB}$	4. Definition of segment bisector
5. $\overline{AE}$ bisects $\overline{FB}$ at D	5. Given
6. $\overline{FD} \cong \overline{BD}$	6. Definition of midpoint
7. $\angle ADB \cong \angle FDE$	7. Vertical angles are congruent
8. $\Delta DFE \cong \Delta DBA$	8. ASA $\cong$ (steps 3,6,7)

22. Given: $\overline{AE} \parallel \overline{BD}, \overline{AE} \cong \overline{BD}, \angle E \cong \angle D$

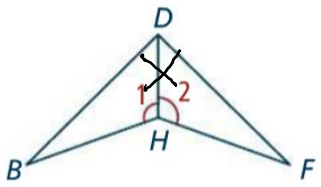
Prove: $\triangle AEB \cong \triangle BDC$



Statement	Reason
1. $\angle E \cong \angle D$	1. Given
2. $\overline{AE} \cong \overline{BD}$	2. Given
3. $\overline{AE} \parallel \overline{BD}$	3. Given
4. $\angle EAB \cong \angle DBC$	4. Corresponding angles are congruent
5. $\Delta AEB \cong \Delta BDC$	5. ASA $\cong$ (steps 1,2,4)

23. Given: $\angle 1 \cong \angle 2$, and $\overline{DH}$ bisects $\angle BDF$.

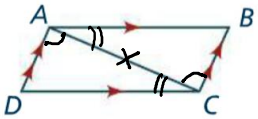
Prove: $\triangle BDH \cong \triangle FDH$



Statement	Reason
1. $\angle 1 \cong \angle 2$	1. Given
2. $\overline{DH} \cong \overline{DH}$	2. Reflexive property
3. $\overline{DH}$ bisects $\angle BDF$	3. Given
4. $\angle BDH \cong \angle FDH$	4. Definition of angle bisector
5. $\Delta BDH \cong \Delta FDH$	5. ASA $\cong$ (steps 1,2,4)

25. Given: $\overline{AB} \parallel \overline{DC}, \overline{DA} \parallel \overline{BC}$

Prove: $\triangle ABC \cong \triangle CDA$



Statement	Reason
1. $\overline{AB} \parallel \overline{DC}$	1. Given
2. $\angle BAC \cong \angle DCA$	2. Alternate Interior angles are congruent
3. $\overline{AC} \cong \overline{AC}$	3. Reflexive Property
4. $\overline{DA} \parallel \overline{DC}$	4. Given
5. $\angle DAC \cong \angle BCA$	5. Alternate Interior angles are congruent
6. $\Delta ABC \cong \Delta CDA$	6. ASA $\cong$ (steps 2,3,5)