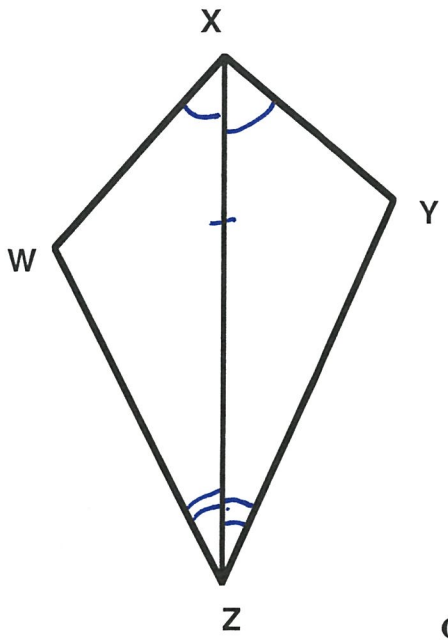
Test on Two Column Proofs (in-class) Name_____

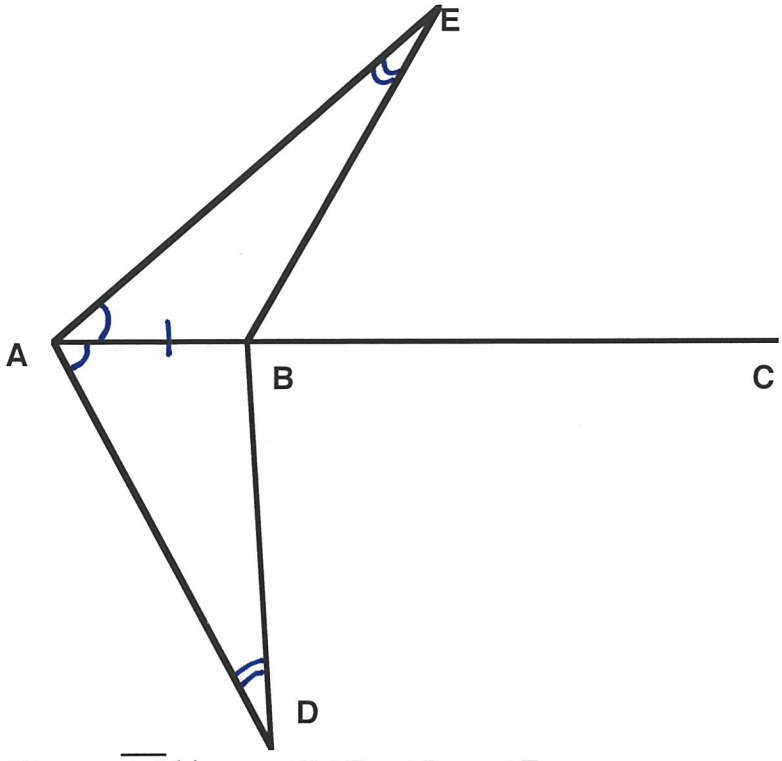
Complete all six proofs



Given: $\overline{XZ}$ bisects $\angle WXY$ AND $\angle WZY$, $\overline{WX} \perp \overline{WZ}$

Prove: $\angle Y = 90^\circ$

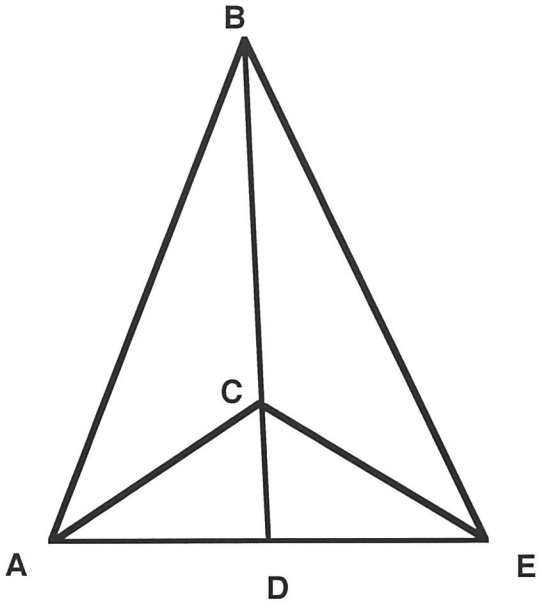
Statements	Reasons
1. $\overline{XZ}$ bisects $\angle WXY$ AND $\angle WZY$	1. GIVEN
2. $\angle WXZ \cong \angle YXZ$	2. DFN ANGLE BISECTOR
3. $\angle WZX \cong \angle YZX$	3. DFN ANGLE BISECTOR
4. $\overline{XZ} \cong \overline{ZX}$	4. Reflexive property
5. $\triangle XWZ \cong \triangle XYZ$	5. By A–S–A
6. $\overline{WX} \perp \overline{WZ}$	6. GIVEN
7. $\angle W = 90^\circ$	7. DFN RIGHT ANGLE ($\perp$)
8. $\angle W \cong \angle Y$	8. CPCTC
9. $\angle Y = 90^\circ$	9. Transitive / Substitution Property



Given: $\overline{AC}$ bisects $\angle DAE$, $\angle D \cong \angle E$

Prove: $\overline{AC}$ bisects $\angle DBE$

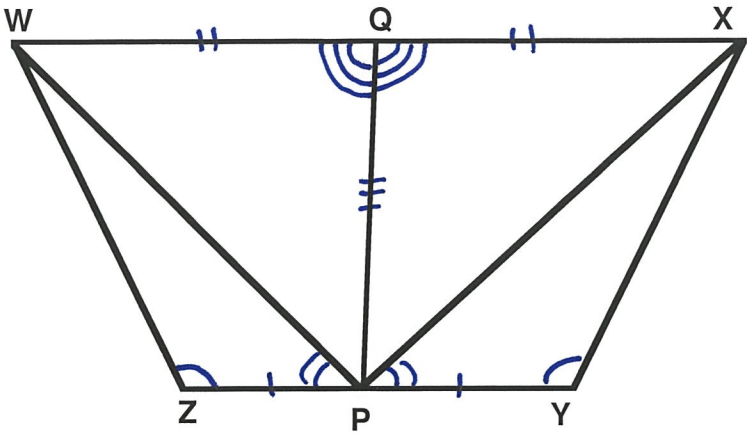
Statements	Reasons
1. $\overline{AC}$ bisects $\angle DAE$	1. GIVEN
2. $\angle EAB \cong \angle DAB$	2. DFN of angle bisector
3. $\angle D \cong \angle E$	3. GIVEN
4. $\overline{AB} \cong \overline{AB}$	4. Reflexive property
5. $\triangle ABD \cong \triangle ABE$	5. By A–A–S
6. $\angle ABE \cong \angle ABD$	6. CPCTC
7. $\angle DBC \cong \angle EBC$	7. SUPPLEMENTAL $\angle$S TO $\cong$ $\angle$S ARE $\cong$
8. $\overline{AC}$ BISECTS $\angle DBE$	8. DFN of angle bisector



Given: $\Delta ABC \cong \Delta EBC$, $\overline{DB}$ is a median to ΔABE

Prove: $\Delta ACD \cong \Delta ECD$

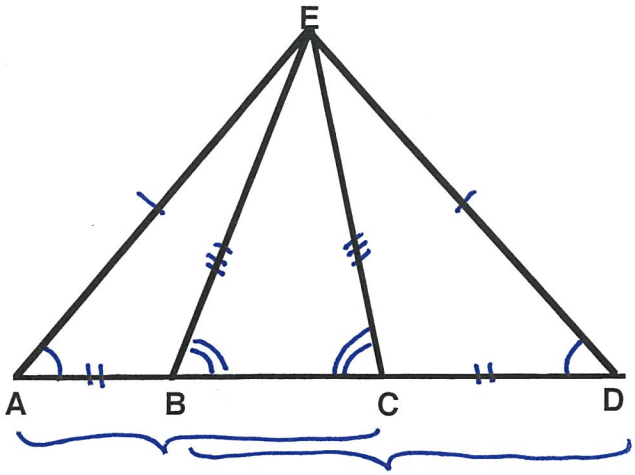
Statements	Reasons
1. $\Delta ABC \cong \Delta EBC$	1. GIVEN
2. $\overline{DB}$ is a median to ΔABE	2. GIVEN
3. $\overline{AD} \cong \overline{DE}$	3. DFN of median
4. $\overline{CD} \cong \overline{DC}$	4. Reflexive property
5. $\overline{AC} \cong \overline{CE}$	5. CPCTC
6. $\Delta ACD \cong \Delta ECD$	6. By S-S-S



Given: $\overline{PQ}$ bisects $\overline{ZY}$, Q is the midpoint of $\overline{WX}$, $\angle Z \cong \angle Y$, $\angle WPZ \cong \angle XPY$

Prove: $\angle WQP \cong \angle XQP$

Statements	Reasons
1. $\overline{PQ}$ bisects $\overline{ZY}$	1. GIVEN
2. $\overline{ZP} \cong \overline{PY}$	2. DFN of segment bisector
3. $\angle Z \cong \angle Y$	3. GIVEN
4. $\angle WPZ \cong \angle XPY$	4. GIVEN
5. $\triangle WZP \cong \triangle XYP$	5. By A–S–A
6. Q is the midpoint of $\overline{WX}$	6. GIVEN
7. $\overline{WQ} \cong \overline{QX}$	7. DFN of midpoint
8. $\overline{QP} \cong \overline{QP}$	8. Reflexive property
9. $\overline{WP} \cong \overline{XP}$	9. CPCTC
10. $\Delta WQP \cong \Delta XQP$	10. By S-S-S
11. $\angle WQP \cong \angle XQP$	11. CPCTC



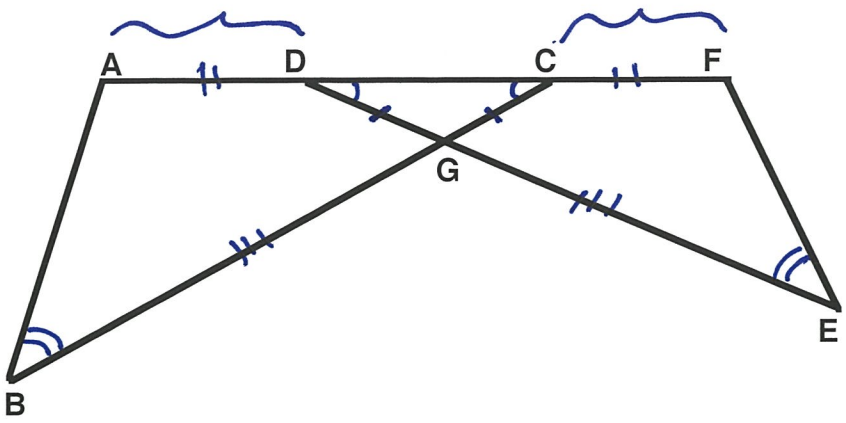
Given: ΔAED is an isosceles with vertex at E , $\overline{AC} \cong \overline{BD}$

Prove: $\angle EBC \cong \angle ECB$

Statements	Reasons
1. ΔAED is an isosceles with vertex at E	1. GIVEN
2. $\overline{AE} \cong \overline{DE}$	2. DFN of isosceles triangle
3. $\angle A \cong \angle D$	3. ISOSCELES Δ THEOREM
4. $\overline{AC} \cong \overline{BD}$	4. GIVEN
5. $\overline{BC} \cong \overline{CB}$	5. Reflexive
6. $\overline{AC} - \overline{BC} \cong \overline{BD} - \overline{BC}$	6. Subtraction property of equality
7. $\overline{AB} \cong \overline{CD}$	7. SUBSTITUTION / TRANSITIVE
8. $\Delta AEB \cong \Delta DEC$	8. By S–A–S
9. $\overline{BE} \cong \overline{EC}$	9. CPCTC
10. $\angle EBC \cong \angle ECB$	10. ISOSCELES Δ THEOREM

ALTERNATIVE PROOF:

9. $\angle ABE \cong \angle DCE$	9. CPCTC
10. $\angle EBC \cong \angle ECB$	10. SUPPLEMENTARY $\angle$'S TO $\cong$ $\angle$'S ARE $\cong$



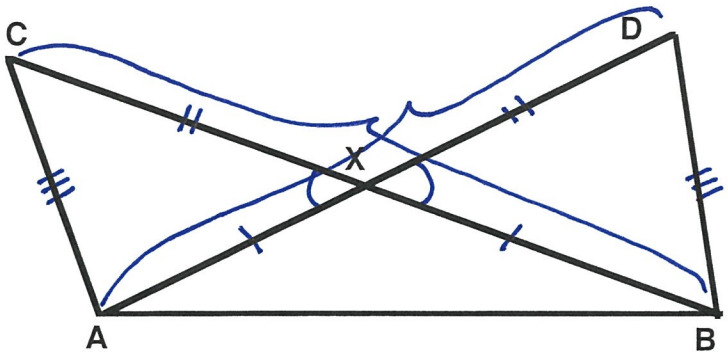
Given: $\overline{DG} \cong \overline{CG}$, $\overline{AD} \cong \overline{FC}$, $\overline{BC} \cong \overline{ED}$

Prove: $\angle B \cong \angle E$

Statements	Reasons
1. $\overline{DG} \cong \overline{CG}$	1. GIVEN
2. $\angle GDC \cong \angle GCD$	2. Isosceles triangle theorem
3. $\overline{AD} \cong \overline{FC}$	3. GIVEN
4. $\overline{DC} \cong \overline{DC}$	4. Reflexive
5. $\overline{AD} + \overline{DC} \cong \overline{FC} + \overline{CD}$	5. Addition property of equality
6. $\overline{AC} \cong \overline{FD}$	6. Transitive / substitution
7. $\overline{BC} \cong \overline{ED}$	7. Given
8. $\triangle ACB \cong \triangle FDE$	8. By S–A–S
9. $\angle B \cong \angle E$	9. CPCTC

Test on Two Column Proofs (Take-Home) Name_____

*Complete **five of the seven** proofs*



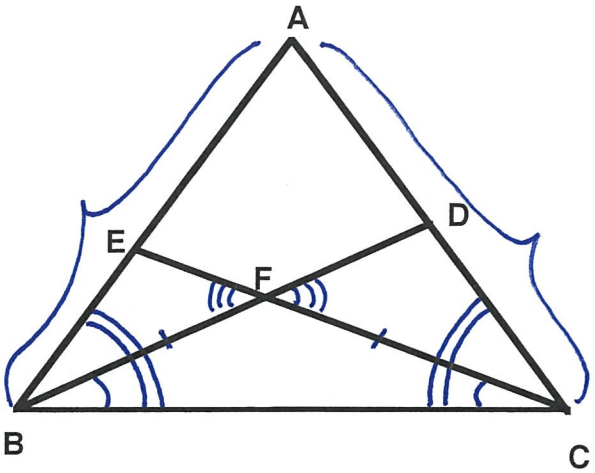
(10 steps)

Given: $\overline{AX} \cong \overline{BX}$, $\overline{CX} \cong \overline{DX}$

Prove: $\angle CAB \cong \angle DBA$

Statements	Reasons
1. $\overline{AX} \cong \overline{BX}$	1. GIVEN
2. $\overline{CX} \cong \overline{DX}$	2. GIVEN
3. $\angle CXA \cong \angle DXB$	3. VERTICAL ANGLES
4. $\triangle CXA \cong \triangle DXB$	4. By S-A-S
5. $\overline{CX} + \overline{XB} \cong \overline{DX} + \overline{XA}$	5. ADDITION PROP of EQUALITY
6. $\overline{CB} \cong \overline{DA}$	6. SUBSTITUTION / TRANSITIVE
7. $\overline{CA} \cong \overline{DB}$	7. CPCTC
8. $\overline{AB} \cong \overline{BA}$	8. REFLEXIVE
9. $\triangle BCA \cong \triangle ADB$	9. By S-S-S
10. $\angle CAB \cong \angle DBA$	10. CPCTC
11.	11.
12.	12.

*There may be more lines than actually needed with the statements and reasons.



(9 steps)

Given: $\overline{AB} \cong \overline{AC}$, $\angle ECB \cong \angle DBC$

Prove: $\angle AEF \cong \angle ADF$

Statements	Reasons
1. $\overline{AB} \cong \overline{AC}$	1. GIVEN
2. $\angle ECB \cong \angle DBC$	2. GIVEN
3. $\overline{BF} \cong \overline{CF}$	3. CONVERSE OF ISOSCELES Δ THEOREM
4. $\angle ABC \cong \angle ACB$	4. ISOSCELES Δ THEOREM
5. $\angle ABC - \angle DBC \cong \angle ACB - \angle ECB$	5. SUBTRACTION PROP OF EQUALITY
6. $\angle EFB \cong \angle DFC$	6. VERTICAL ANGLES
7. $\Delta EFB \cong \Delta DFC$	7. BY A-S-A
8. $\angle BEF \cong \angle CDF$	8. CPCTC
9. $\angle AEF \cong \angle ADF$	9. SUPPLEMENTAL $\angle$'S TO $\cong$ $\angle$'S ARE $\cong$
10.	10.
11.	11.
12.	12.

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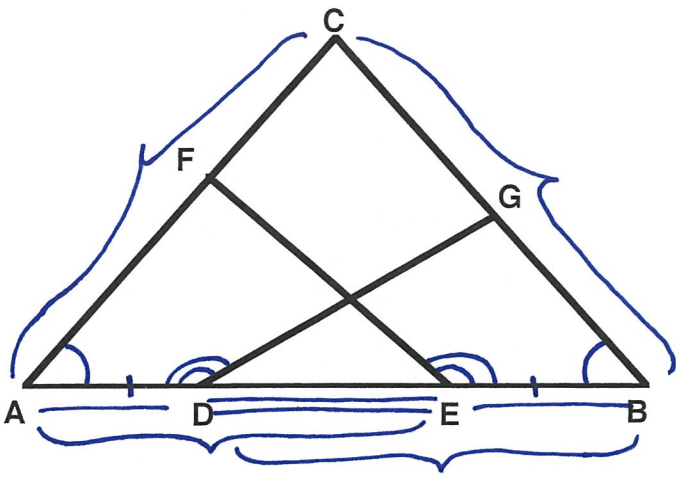

(11 steps)

Given: ΔABC is isosceles with vertex C, $\overline{AD} \cong \overline{BE}$, $\angle ADG \cong \angle BEF$

Prove: $\angle AFE \cong \angle BGD$

Statements	Reasons
1. ΔABC IS Isosceles WITH Vertex C	1. GIVEN
2. $\overline{AC} \cong \overline{CB}$	2. DFN of Isosceles
3. $\angle A \cong \angle B$	3. Isosceles Δ THEOREM
4. $\angle ADG \cong \angle BEF$	4. GIVEN
5. $\angle BDG \cong \angle AEF$	5. Supplemental $\angle$'s to $\cong$ $\angle$'s are $\cong$
6. $\overline{AD} \cong \overline{BE}$	6. GIVEN
7. $\overline{DE} \cong \overline{ED}$	7. REFLEXIVE
8. $\overline{AD} + \overline{DE} \cong \overline{BE} + \overline{ED}$	8. ADDITION PROP of EQUALITY
9. $\overline{AE} \cong \overline{BD}$	9. SUBSTITUTION / TRANSITIVE
10. $\Delta AFE \cong \Delta BGD$	10. By A-S-A
11. $\angle AFE \cong \angle BGD$	11. CPCTC
12.	12.

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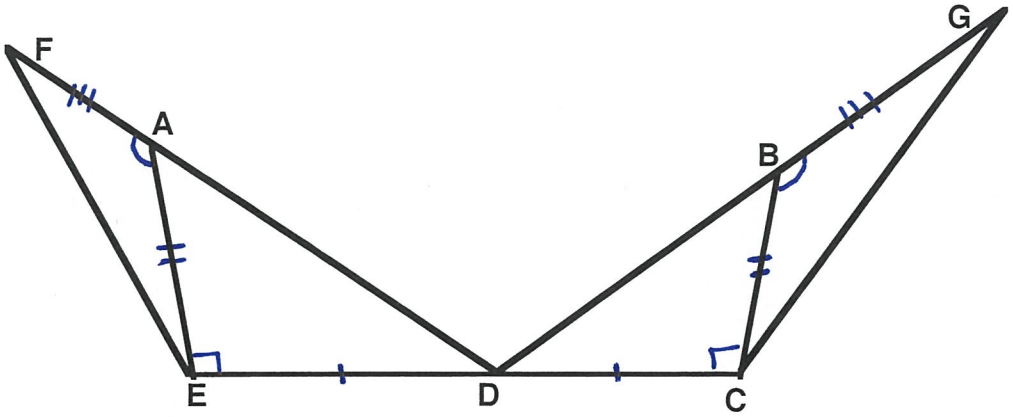

(12 steps)

Given: $\overline{BC} \perp \overline{CD}$, $\overline{AE} \perp \overline{ED}$, D is the midpoint of $\overline{EC}$, $\overline{AD} \cong \overline{BD}$, $\overline{AF} \cong \overline{BG}$

Prove: $\angle F \cong \angle G$

Statements	Reasons
1. $\overline{BC} \perp \overline{CD}$	1. GIVEN
2. $\overline{AE} \perp \overline{ED}$	2. GIVEN
3. D IS MIDPOINT OF $\overline{EC}$	3. GIVEN
4. $\overline{ED} \cong \overline{DC}$	4. DFN OF MIDPOINT
5. $\overline{AD} \cong \overline{BD}$	5. GIVEN
6. $\triangle AED \cong \triangle BCD$	6. By HL
7. $\angle EAD \cong \angle CBD$	7. CPCTC
8. $\angle EAF \cong \angle CBG$	8. SUPP $\angle$'S TO $\cong \angle$'S ARE $\cong$
9. $\overline{AE} \cong \overline{BC}$	9. CPCTC
10. $\overline{AF} \cong \overline{BG}$	10. GIVEN
11. $\triangle FAE \cong \triangle GBC$	11. By S-A-S
12. $\angle F \cong \angle G$	12. CPCTC

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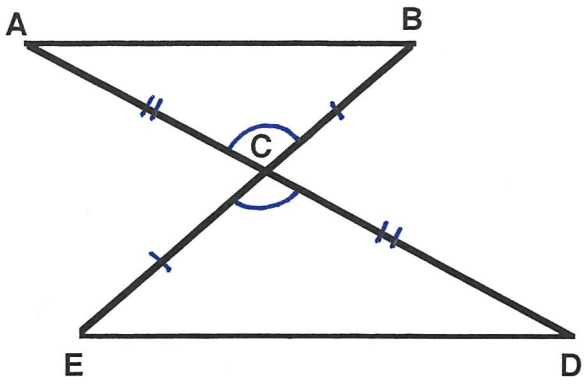

(8 steps)

Given: $\overline{AD}$ bisects $\overline{EB}$ at C, $\overline{EB}$ bisects $\overline{AD}$ at C,
Prove: $\overline{AB}$ // $\overline{ED}$

Statements	Reasons
1. $\overline{AD}$ BISECTS $\overline{EB}$ AT C	1. GIVEN
2. $\overline{EC} \cong \overline{CB}$	2. DFN SEGMENT BISECTOR
3. $\overline{EB}$ BISECTS $\overline{AD}$ AT C	3. GIVEN
4. $\overline{AC} \cong \overline{CD}$	4. DFN SEGMENT BISECTOR
5. $\angle ACB \cong \angle ECD$	5. VERTICAL ANGLES
6. $\triangle ACB \cong \triangle DCE$	6. By S-A-S
7. $\angle B \cong \angle E$	7. CPCTC
8. $\overline{AB} \parallel \overline{ED}$	8. ALT INTERIOR ANGLES ARE $\cong$
9.	9.
10.	10.
11.	11.
12.	12.

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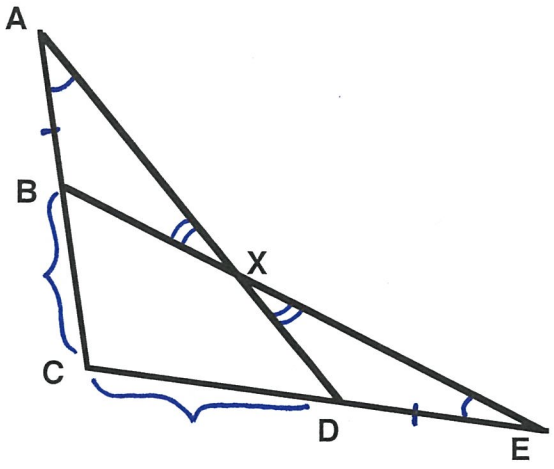

(9 steps)

Given: $\overline{BC} \cong \overline{CD}$, $\overline{AC} \cong \overline{EC}$

Prove: $\Delta DXE \cong \Delta BXA$

Statements	Reasons
1. $\overline{BC} \cong \overline{CD}$	1. GIVEN
2. $\overline{AC} \cong \overline{EC}$	2. GIVEN
3. $\angle C \cong \angle C$	3. REFLEXIVE
4. $\Delta ACD \cong \Delta ECB$	4. By S-A-S
5. $\overline{AC} - \overline{BC} \cong \overline{EC} - \overline{DC}$	5. SUBTRACTION PROP of EQUALITY
6. $\overline{AB} \cong \overline{DE}$	6. SUBSTITUTION / TRANSITIVE
7. $\angle A \cong \angle E$	7. CPCTC
8. $\angle AXB \cong \angle EXD$	8. VERTICAL ANGLES
9. $\Delta DXE \cong \Delta BXA$	9. By S-A-A
10.	10.
11.	11.
12.	12.

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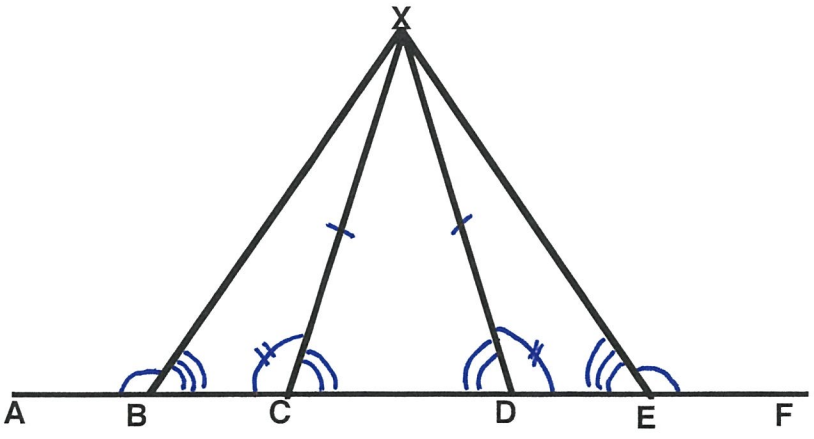

(11 steps)

Given: $\angle ABX \cong \angle FEX$, ΔCDX is isosceles with vertex at X

Prove: $\overline{BD} \cong \overline{EC}$

Statements	Reasons
1. $\angle ABX \cong \angle FEX$	1. GIVEN
2. ΔCDX IS ISOSCELES WITH VERTEX AT C	2. GIVEN
3. $\overline{CX} \cong \overline{DX}$	3. DFN of ISOSCELES
4. $\angle XCD \cong \angle XDC$	4. ISOSCELES Δ THEOREM
5. $\angle XBC \cong \angle XED$	5. Supp $\angle$'s To $\cong$ $\angle$'s ARE $\cong$
6. $\angle XCB \cong \angle XDE$	6. Supp $\angle$'s To $\cong$ $\angle$'s ARE $\cong$
7. $\Delta XBC \cong \Delta XED$	7. By A-A-S
8. $\overline{BC} \cong \overline{DE}$	8. CPCTC
9. $\overline{CD} \cong \overline{DC}$	9. REFLEXIVE
10. $\overline{BC} + \overline{CD} \cong \overline{ED} + \overline{DC}$	10. ADDITION PROP of EQUALITY
11. $\overline{BD} \cong \overline{EC}$	11. SUBSTITUTION / TRANSITIVE
12.	12.

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