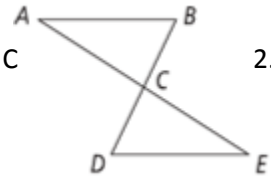
Name_____ Geometry Chapter 4 Proofs Part 1

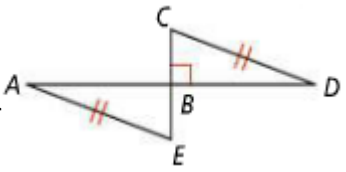
Complete each proof.

1. . **Given:** $\overline{AE}$ and $\overline{BD}$ bisect each other at C
Prove: $\Delta ACB \cong \Delta ECD$



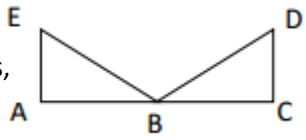
Statements	Reason
1. $\overline{AE}$ and $\overline{BD}$ bisect each other at C	1.
2. $\overline{AC} \cong \overline{CE}, \overline{BC} \cong \overline{CD}$	2.
3.	3. VAT
4. $\Delta ACB \cong \Delta ECD$	4.

2. **Given:** $\overline{CD} \cong \overline{EA}$, $\overline{AD}$ is the perpendicular bisector of $\overline{CE}$
Prove: $\Delta CBD \cong \Delta EBA$



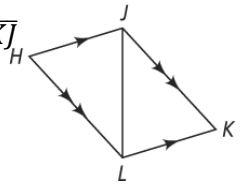
Statements	Reasons
1. $\overline{CD} \cong \overline{EA}$	1.
2. $\overline{AD} \perp bisector\ of\ \overline{CE}$	2.
3.	3. Def $\perp$ *bisector*
4. ΔCBD and ΔEBA are rt $\Delta's$	4.
5. $\Delta CBD \cong \Delta EBA$	5.

3. **Given:** $\overline{EA} \cong \overline{DC}$,
$\angle A$ and $\angle C$ are right angles,
B is the midpoint of $\overline{AC}$
Prove: $\Delta EBA \cong \Delta DBC$



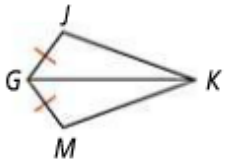
Statements	Reasons
1. $\overline{EA} \cong \overline{DC}$	1.
2. $\angle A$ and $\angle C$ are right angle	2.
3. $\angle A \cong \angle C$	3.
4. B is the midpoint of $\overline{AC}$	4.
5.	5. Def midpoint
6. $\Delta EBA \cong \Delta DBC$	6.

4. **Given:** $\overline{HJ} \parallel \overline{KL}, \overline{HL} \parallel \overline{KJ}$
Prove: $\Delta HJL \cong \Delta KLJ$



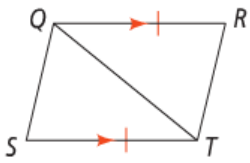
Statements	Reasons
1. $\overline{HJ} \parallel \overline{KL}$	1.
2.	2. ∥, alt int $\angle's \cong$
3.	3. given
4. $\angle HLJ \cong \angle KJL$	4.
5.	5.
6. $\Delta HJL \cong \Delta KLJ$	6.

5. **Given:** $\overline{GK}$ bisects $\angle JGM$, $\overline{GJ} \cong \overline{GM}$
Prove: $\Delta GJK \cong \Delta GMK$



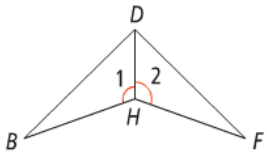
Statements	Reasons
1. $\overline{GK}$ bisects $\angle JGM$	1.
2. $\angle JGK \cong \angle MGK$	2.
3. $\overline{GK} \cong \overline{GK}$	3.
4. $\Delta GJK \cong \Delta GMK$	4.

6. **Given:** $\overline{QR} \cong \overline{TS}, \overline{QR} \parallel \overline{TS}$
Prove: $\Delta QRT \cong \Delta TSQ$



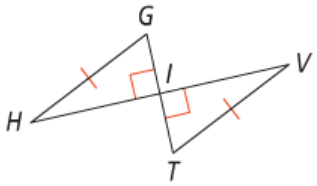
Statements	Reasons
1.	1.Given
2. $\overline{QT} \cong \overline{QT}$	2.
3. $\angle RQT \cong \angle STQ$	3.
4. $\Delta QRT \cong \Delta TSQ$	4.

7. **Given:** $\angle 1 \cong \angle 2$, $\overline{DH}$ bisects $\angle BDF$
Prove: $\Delta BDH \cong \Delta FDH$



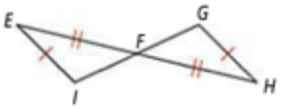
Statements	Reasons
1. $\angle 1 \cong \angle 2$	1.
2.	2. Given
3. ∠BDH≅∠FDH	3.
4.	4. Reflexive
5. ΔBDH≅ΔFDH	5.

8. **Given:** $\overline{HV} \perp \overline{GT}$, $\overline{GH} \cong \overline{TV}$
I is the midpoint of $\overline{HV}$
Prove: $\Delta IGH \cong \Delta ITV$



Statements	Reasons
1. $\overline{GH} \cong \overline{TV}$	1.
2. $\overline{HV} \perp \overline{GT}$	2.
3. $\angle GIH$ *and* $\angle TIV$ are rt $\angle's$	3.
4.	4. Def rt $\Delta's$
5.	5. Given
6. $\overline{HI} \cong \overline{IV}$	6.
7. $\Delta IGH \cong \Delta ITV$	7.

9. **Given:** $\overline{IE} \cong \overline{GH}, \overline{EF} \cong \overline{HF}$
F is the midpoint of $\overline{GI}$
Prove: $\Delta EFI \cong \Delta HFG$



Statements	Reasons
1. $\overline{IE} \cong \overline{GH}, \overline{EF} \cong \overline{HF}$	1.
2. *F* is the midpoint of $\overline{GI}$	2.
3. $\overline{GF} \cong \overline{FI}$	3.
4. $\Delta EFI \cong \Delta HFG$	4.