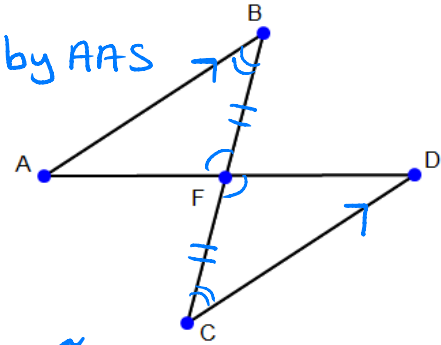


Triangle Congruence Proof Practice

Given: $\overline{AB} \parallel \overline{DC}$, F is the midpoint of BC
 Prove: $\triangle ABF \cong \triangle DCF$

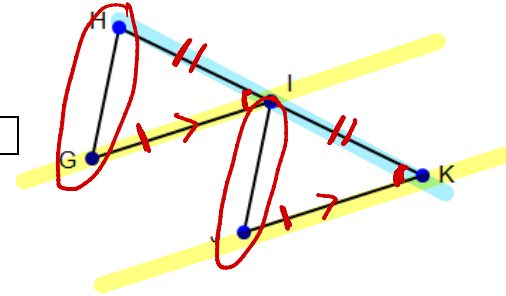
★ One way to prove you could also prove by AAS



Statements	Reasons
A ① $\angle BFA \cong \angle CFD$	① Vertical \angle s are \cong
② F is the midpoint of BC	② Given
S ③ $\overline{BF} \cong \overline{CF}$	③ Defn. of midpoint
④ $\overline{AB} \parallel \overline{DC}$	④ Given
A ⑤ $\angle B \cong \angle C$	⑤ Alternate Interior \angle s are \cong
⑥ $\triangle ABF \cong \triangle DCF$	⑥ ASA

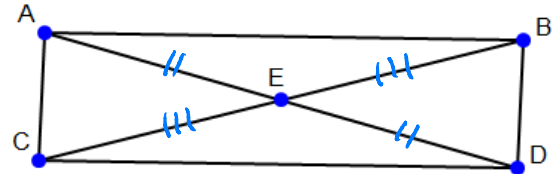
Given: $\overline{GI} \parallel \overline{JK}$, $\overline{GI} \cong \overline{JK}$, I is the midpoint of \overline{HK}
 Prove: $\overline{HG} \cong \overline{IJ}$

$\triangle GIH \cong \triangle JKI$ by SAS



Statements	Reasons
S ① $\overline{GI} \cong \overline{JK}$	① Given
② $\overline{GI} \parallel \overline{JK}$	② Given
A ③ $\angle GIH \cong \angle JKI$	③ Corresponding \angle s \cong
④ I is the midpt. of \overline{HK}	④ Given
S ⑤ $\overline{HI} \cong \overline{IK}$	⑤ Defn. of midpt.
⑥ $\triangle GIH \cong \triangle JKI$	⑥ SAS
⑦ $\overline{HG} \cong \overline{IJ}$	⑦ CPCTC

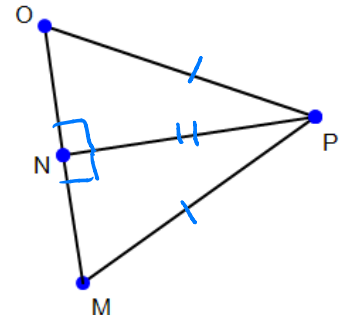
Given: E is the midpoint of \overline{AD} and \overline{BC}
 Prove: $\triangle ACE \cong \triangle DBE$



Statements	Reasons
① E is the midpoint of \overline{AD} and \overline{BC}	① Given
② $\overline{AE} \cong \overline{DE}$, $\overline{CE} \cong \overline{BE}$	② Defn. of midpoint
③ $\angle AEC \cong \angle DEB$	③ Vertical \angle s are \cong

Given: $\overline{OM} \perp \overline{NP}$, $\overline{OP} \cong \overline{MP}$
 Prove: $\triangle ONP \cong \triangle MNP$

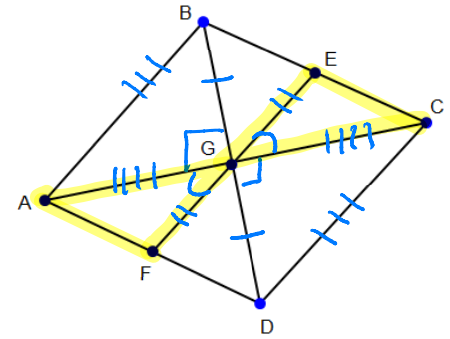
Prove right Δ s ✓
 • HL ✓



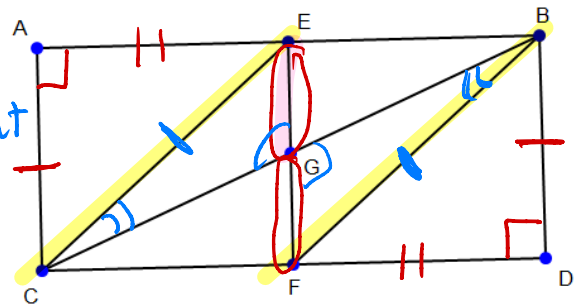
Statements	Reasons
① $\overline{OM} \perp \overline{NP}$	① Given
② $\angle ONP$ & $\angle MNP$ are rt. \angle s	② Defn. of \perp
✓ ③ $\triangle ONP$ & $\triangle MNP$ are rt Δ s.	③ Defn. of right Δ s
H ④ $\overline{OP} \cong \overline{MP}$	④ Given
L ⑤ $\overline{NP} \cong \overline{NP}$	⑤ Reflexive Prop.
⑥ $\triangle ONP \cong \triangle MNP$	⑥ HL

Given: $\overline{AC} \perp \overline{BD}$, G is the midpoint of \overline{FE} and \overline{BD} , $\overline{BA} \cong \overline{DC}$

Prove: $\triangle AGF \cong \triangle CGE$



Statements	Reasons
① $\overline{AC} \perp \overline{BD}$	① Given
② $\angle BGA$ & $\angle DGC$ are rt \angle s	② Defn. of \perp
③ $\triangle BGA$ & $\triangle DGC$ are rt \triangle s	③ Defn. of right \triangle
④ $\overline{BA} \cong \overline{DC}$	④ Given
⑤ G is the midpoint of \overline{FE} & \overline{BD}	⑤ Given
⑥ $\overline{BG} \cong \overline{DG}$	⑥ Defn. of midpoint
⑦ $\triangle BGA \cong \triangle DGC$	⑦ HL
⑧ $\overline{AG} \cong \overline{CG}$	⑧ CPCTC
⑨ $\angle EGC \cong \angle FGA$	⑨ Vertical \angle s \cong
⑩ $\overline{EG} \cong \overline{FG}$	⑩ defn. of midpoint
⑪ $\triangle AGF \cong \triangle CGE$	⑪ SAS



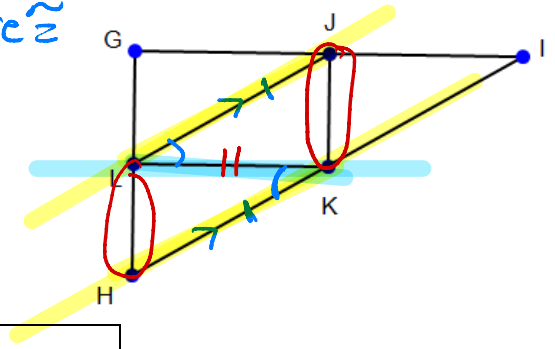
Given: $\angle CAE$ and $\angle BDF$ are right angles, $\overline{FD} \cong \overline{EA}$, $\overline{BD} \cong \overline{CA}$, $\overline{CE} \parallel \overline{BF}$

Prove: $\overline{EG} \cong \overline{FG}$

Statements	Reasons
① $\overline{BD} \cong \overline{CA}$, $\overline{FD} \cong \overline{EA}$	① Given
② $\angle CAE$ and $\angle BDF$ are rt. \angle s	② Given
③ $\triangle EAC \cong \triangle FDB$	③ SAS
④ $\overline{EC} \cong \overline{FB}$	④ CPCTC
⑤ $\angle BGF \cong \angle CGE$	⑤ Vertical \angle s are \cong
⑥ $\overline{CE} \parallel \overline{BF}$	⑥ Given
⑦ $\angle ECG \cong \angle FCG$	⑦ Alt. int. \angle s \cong
⑧ $\triangle ECG \cong \triangle FCG$	⑧ AAS
⑨ $\overline{EG} \cong \overline{FG}$	⑨ CPCTC

Given: $\overline{LJ} \parallel \overline{HI}$, $\overline{LJ} \cong \overline{KH}$

Prove: $\overline{JK} \cong \overline{HL}$



Statements	Reasons
① $\overline{LJ} \cong \overline{KH}$	① Given
② $\overline{LJ} \parallel \overline{HI}$	② Given
③ $\angle JLK \cong \angle HKL$	③ Alt. int. \angle s \cong
④ $\overline{LK} \cong \overline{KL}$	④ Reflexive Property
⑤ $\triangle JLK \cong \triangle HKL$	⑤ SAS
⑥ $\overline{JK} \cong \overline{HL}$	⑥ CPCTC