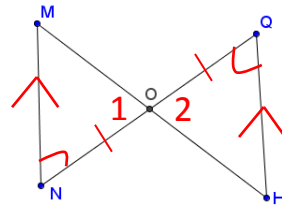


Geometry (G.CO.9)

Unit One B: Proofs with Parallels #1 (IC25)

1. Given: O is the midpoint of \overline{MN} ; $\overline{MN} \parallel \overline{QH}$

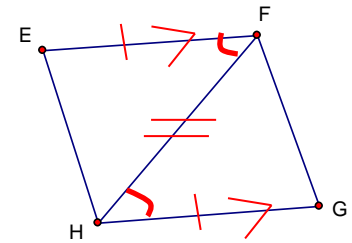
Prove: $\overline{MN} \cong \overline{QH}$



2.

Given: $\overline{EF} \parallel \overline{HG}$; $\overline{EF} \cong \overline{GH}$

Prove: $\angle E \cong \angle G$



Statements

Reasons

- | | |
|--|--|
| <ol style="list-style-type: none"> 1) O is the midpoint of \overline{MN} 2) $\overline{MO} \cong \overline{ON}$ 3) $\overline{MN} \parallel \overline{QH}$ 4) $\angle 1 \cong \angle 2$ 5) $\angle N \cong \angle Q$ 6) $\triangle MON \cong \triangle HOQ$ 7) $\overline{MN} \cong \overline{QH}$ | <ol style="list-style-type: none"> 1) Given 2) Def of midpoint 3) Given 4) Vertical \angle 5) \parallel lines \rightarrow Alt Int \angle's \cong 6) ASA 7) CPCTC |
|--|--|

* Could also eliminate #4 and do a second pair of alt. int. \angle 's

* Could also use $\angle M \cong \angle H$ instead of $\angle N \cong \angle Q$

Statements

Reasons

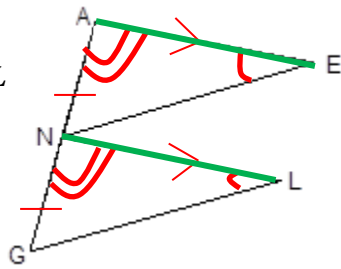
- | | |
|--|---|
| <ol style="list-style-type: none"> 1) $\overline{EF} \parallel \overline{HG}$ 2) $\angle EFH \cong \angle FHG$ 3) $\overline{EF} \cong \overline{GH}$ 4) $\overline{HF} \cong \overline{HF}$ 5) $\triangle FEH \cong \triangle HGF$ 6) $\angle E \cong \angle G$ | <ol style="list-style-type: none"> 1) Given 2) \parallel lines \rightarrow Alt Int \angle's \cong 3) Given 4) Reflexive prop. 5) SAS 6) CPCTC |
|--|---|

Name: _____

Date: _____ Period: _____

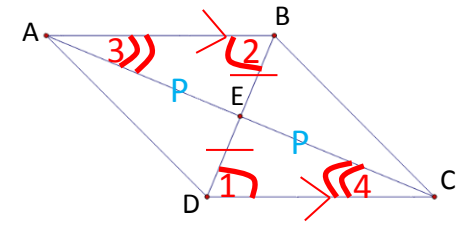
3. Given: $\overline{AE} \parallel \overline{NL}$; \overline{NL} bisects \overline{AG} ; $\angle E \cong \angle L$

Prove: $\overline{EN} \cong \overline{LG}$



4. Given: \overline{AC} bisects \overline{BD} ; $\overline{AB} \parallel \overline{DC}$

Prove: E is the midpoint of \overline{AC}



Statements	Reasons
1) $\overline{AE} \parallel \overline{NL}$	1) Given
2) $\angle 1 \cong \angle 2$	2) \parallel lines \rightarrow Corr \angle 's \cong
3) \overline{NL} bisects \overline{AG}	3) Given
4) $\overline{AN} \cong \overline{NG}$	4) Def. seg. Bisector
5) $\angle E \cong \angle L$	5) Given
6) $\triangle NEA \cong \triangle GLN$	6) AAS
7) $\overline{EN} \cong \overline{LG}$	7) CPCTC

Statements	Reasons
1) \overline{AC} bisects \overline{BD}	1) Given
2) $\overline{BE} \cong \overline{DE}$	2) Def. seg. Bisector
3) $\overline{AB} \parallel \overline{DC}$	3) Given
4) $\angle 1 \cong \angle 2$ and $\angle 3 \cong \angle 4$	4) \parallel lines \rightarrow Alt Int \angle 's \cong
5) $\triangle ABE \cong \triangle CDE$	5) AAS
6) $\overline{AE} \cong \overline{CE}$	6) CPCTC
7) E is the midpoint of \overline{AC}	7) Def of midpoint

- Could also use only one pair of alt int \angle 's from #4 and then also include vertical \angle 's. Shortcut would be AAS or ASA depending on which pair of alt. int. \angle 's you chose.