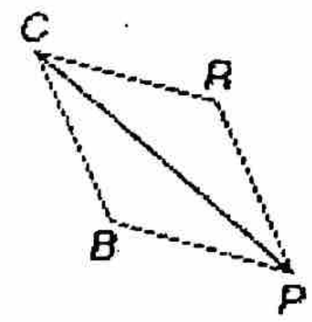
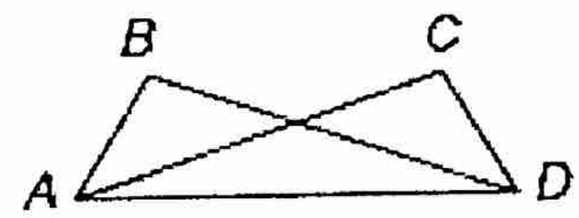
#1) **Given:** $\overline{CP}$ bisects $\angle BCR$ and $\angle BPR$.

Prove: $\triangle BCP \cong \triangle RCP$



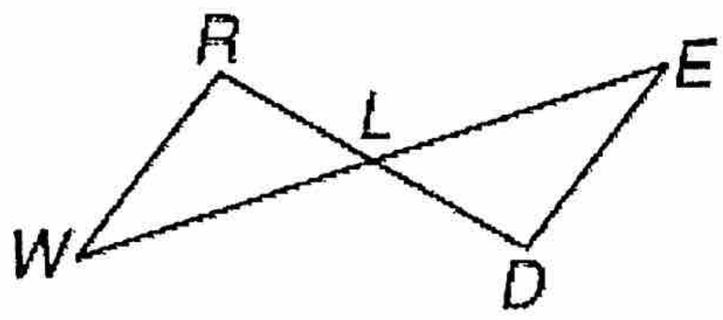
#2) **Given:** $\angle CAD \cong \angle BDA$ and $\angle CDA \cong \angle BAD$

Prove: $\triangle ABD \cong \triangle DCA$



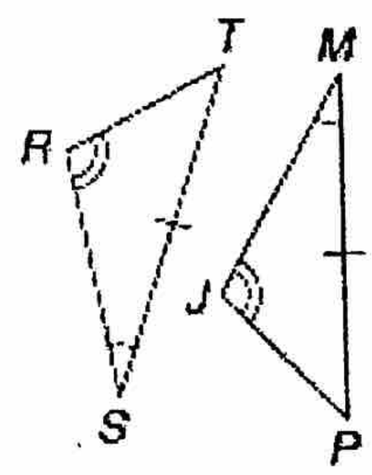
#3) **Given:** L is the midpoint of $\overline{WE}$.
$\overline{WR} \parallel \overline{ED}$

Prove: $\triangle WRL \cong \triangle EDL$



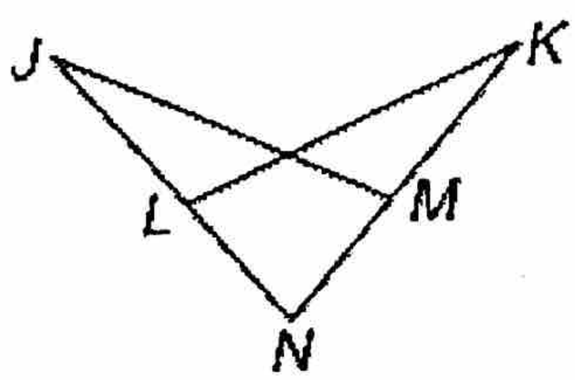
#4) **Given:** $\angle M \cong \angle S$, $\angle J \cong \angle R$, $\overline{MP} \cong \overline{ST}$

Prove: $\triangle JMP \cong \triangle RST$



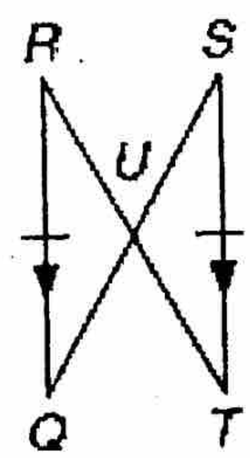
#5) **Given:** $\angle NKL \cong \angle NJM$
$\overline{KL} \cong \overline{JM}$

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

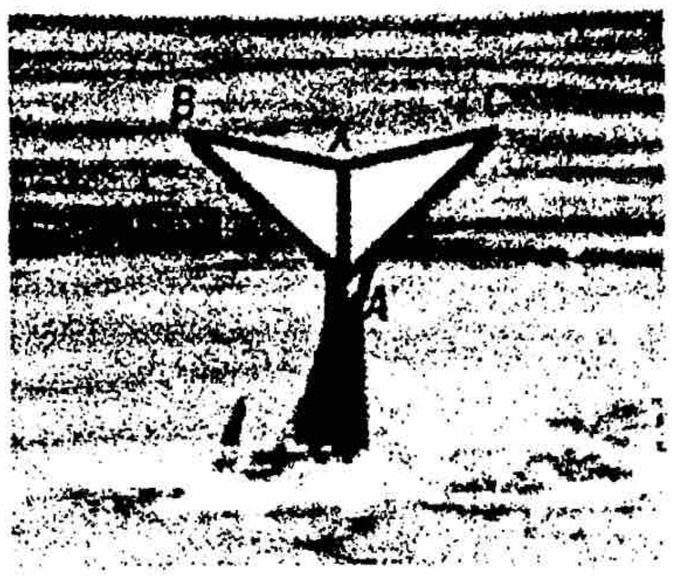


#6) **Given:** $\overline{RQ} \cong \overline{ST}$ and $\overline{RQ} \parallel \overline{ST}$

Prove: $\triangle RUQ \cong \triangle TUS$



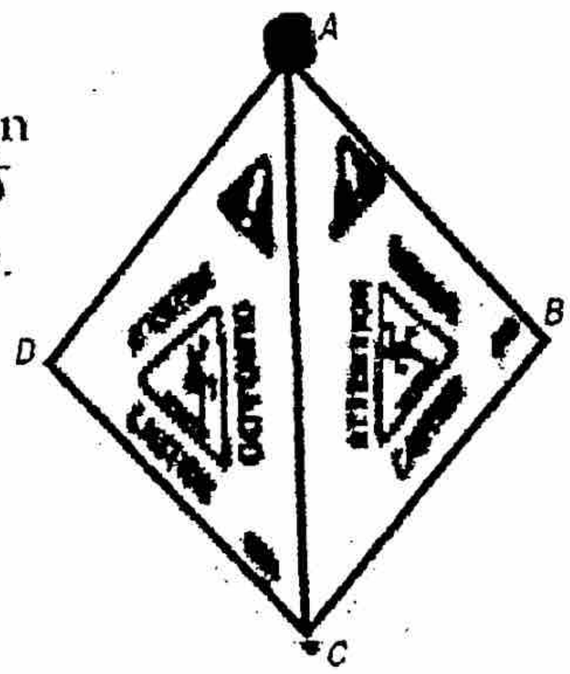
7 **MARINE BIOLOGY** The tail of an orca whale can be viewed as two triangles that share a common side. Write a two-column proof to prove that $\triangle BXA \cong \triangle CXA$ if $\overline{AB} \cong \overline{AC}$ and $\overline{BX} \cong \overline{CX}$.



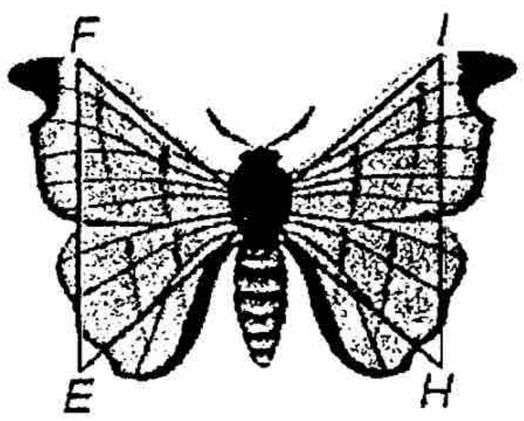
Given: $\overline{AB} \cong \overline{AC}$; $\overline{BX} \cong \overline{CX}$

Prove: $\triangle BXA \cong \triangle CXA$

8 **1A.** A "Caution, Floor Slippery When Wet" sign is composed of three triangles. If $\overline{AB} \cong \overline{AD}$ and $\overline{CB} \cong \overline{DC}$, prove that $\triangle ACB \cong \triangle ACD$.

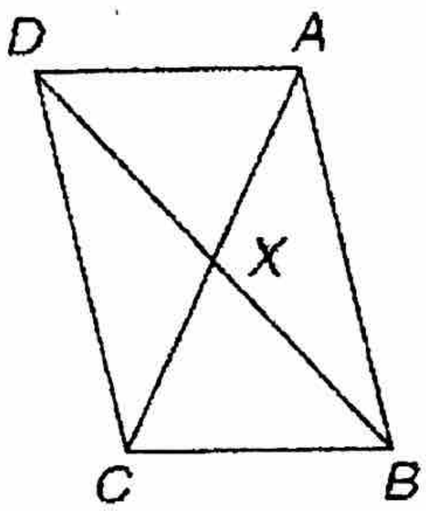


9 **ENTOMOLOGY** The wings of one type of moth form two triangles. Write a two-column proof to prove that $\triangle FEG \cong \triangle HIG$ if $\overline{EI} \cong \overline{FH}$, $\overline{FE} \cong \overline{HI}$, and G is the midpoint of both $\overline{EI}$ and $\overline{FH}$.



10 **Given:** X is the midpoint of $\overline{BD}$.
X is the midpoint of $\overline{AC}$.

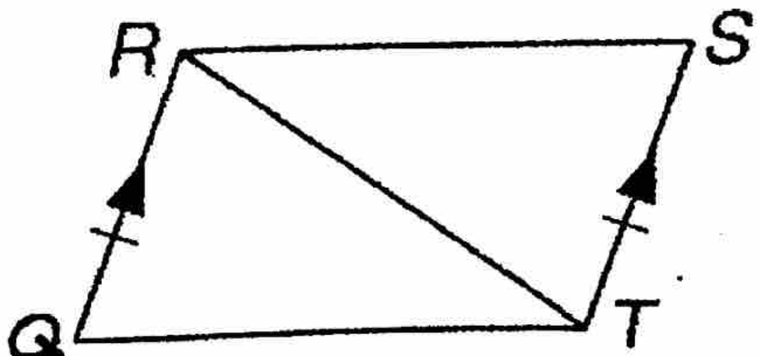
Prove: $\triangle DXC \cong \triangle BXA$



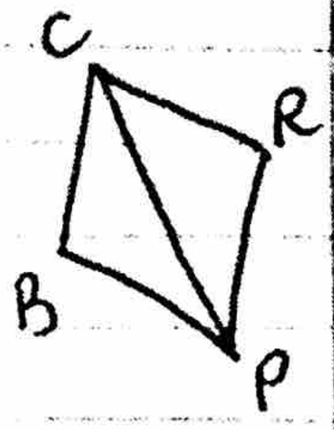
11

Given: $\overline{RQ} \parallel \overline{TS}$
$\overline{RQ} \cong \overline{TS}$

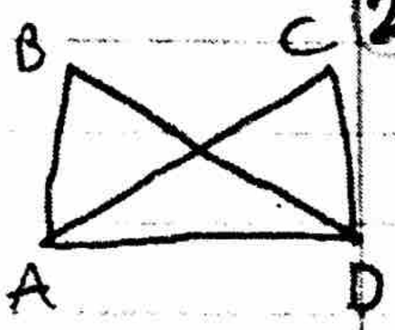
Prove: $\triangle QRT \cong \triangle STR$



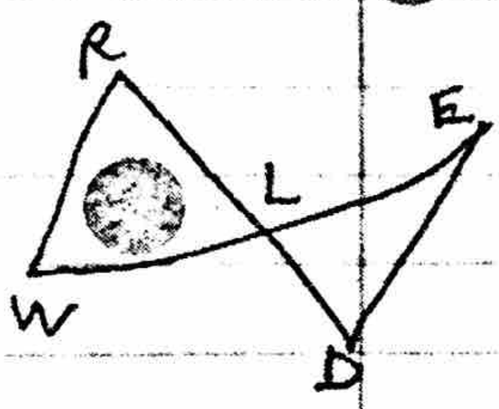
Proofs Practice



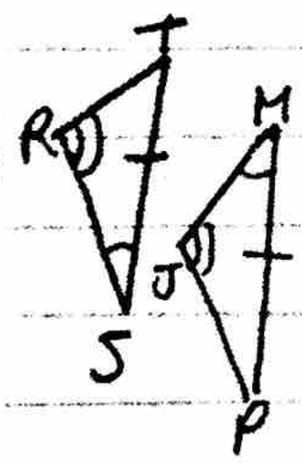
① 1. CP bisects $\angle BCR$ & $\angle BPR$	1. given
2. $\angle BCP \cong \angle RCP$	2. def of $\angle$ bisector
3. $\angle BPC \cong \angle RPC$	3. "
4. $\overline{CP} \cong \overline{CP}$	4. reflexive prop of $\cong$
5. $\triangle BCP \cong \triangle RCP$	5. ASA



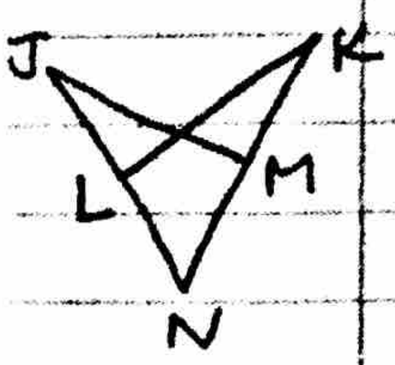
② 1. $\angle CAD \cong \angle BDA$	1. given
$\angle CDA \cong \angle BAD$	
2. $\overline{AD} \cong \overline{AD}$	2. reflexive prop of $\cong$
3. $\triangle ABD \cong \triangle DCA$	3. ASA



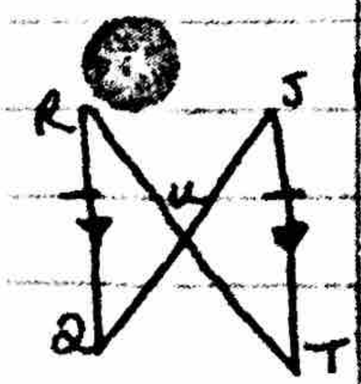
③ 1. L is mdpt of $\overline{WE}$	1. given
2. $\overline{WR} \parallel \overline{ED}$	2. given
3. $\overline{WL} \cong \overline{EL}$	3. def of mdpt
4. $\angle RLW \cong \angle ELP$	4. vertical $\angle$'s $\cong$ thm
5. $\angle W \cong \angle E$	5. alt. int $\angle$'s $\cong$
6. $\triangle WRL \cong \triangle EDL$	6. ASA



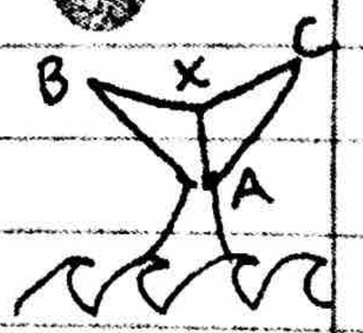
④ 1. $\angle M \cong \angle S$	1. given
$\angle J \cong \angle R$	
$\overline{MP} \cong \overline{ST}$	
2. $\triangle JMP \cong \triangle RST$	2. AAS



⑤ 1. $\angle NKL \cong \angle NJM$	1. given
$\overline{KL} \cong \overline{JM}$	
2. $\angle N \cong \angle N$	2. reflex prop of $\cong$
3. $\triangle JMN \cong \triangle KLM$	3. AAS
4. $\overline{LN} \cong \overline{MN}$	4. CPCTC

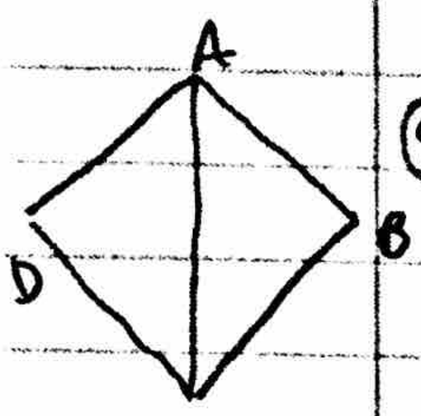


⑥ 1. $\overline{RQ} \cong \overline{ST}$ $\overline{RQ} \parallel \overline{ST}$	1. given
2. $\angle RUQ \cong \angle SUT$	2. vertical $\angle$'s $\cong$ thm
3. $\angle QRU \cong \angle STU$	3. alt int $\angle$'s thm
4. $\triangle RUQ \cong \triangle TUS$	4. AAS



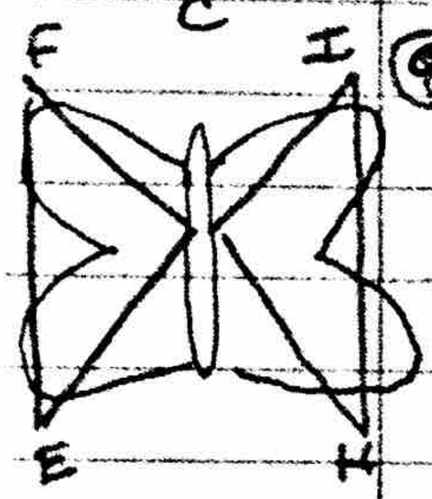
(7)

1. $\overline{AB} \cong \overline{AC}$, $\overline{BX} \cong \overline{CX}$	1. given
2. $\overline{XA} \cong \overline{XA}$	2. reflexive prop of $\cong$
3. $\triangle BXA \cong \triangle CXA$	3. SSS



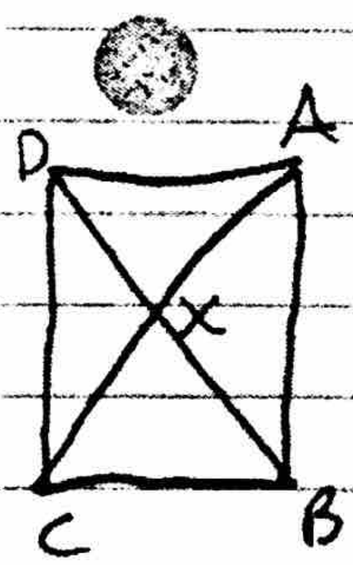
(8)

1. $\overline{AB} \cong \overline{AD}$, $\overline{CB} \cong \overline{DC}$	1. given
2. $\overline{AC} \cong \overline{AC}$	2. reflexive prop of $\cong$
3. $\triangle ACB \cong \triangle ACD$	3. SSS



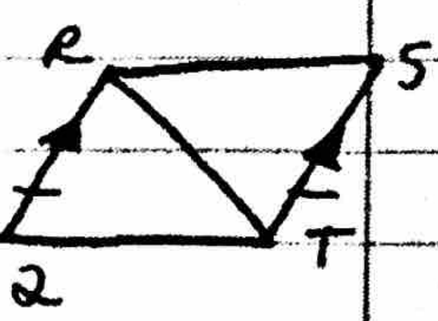
(9)

1. $\overline{EI} \cong \overline{FH}$, $\overline{FE} \cong \overline{HI}$ G is mdpt of $\overline{EI}$ & $\overline{FH}$	1. given
2. $\overline{EG} \cong \overline{GI}$	2. def of midpoint
3. $\overline{FG} \cong \overline{GH}$	3. def of midpoint
4. $\triangle FEG \cong \triangle HIG$	4. SSS



(10)

1. X is mdpt of $\overline{BD}$ X is mdpt of $\overline{AC}$	1. given
2. $\overline{DX} \cong \overline{XB}$	2. def of midpoint
3. $\overline{CX} \cong \overline{XA}$	3. def of midpoint
4. $\angle DXC \cong \angle BXA$	4. vertical $\angle$'s $\cong$ thm
5. $\triangle DXC \cong \triangle BXA$	5. SAS



(11)

1. $\overline{RQ} \parallel \overline{TS}$ $\overline{RQ} \cong \overline{TS}$	1. given
2. $\overline{RT} \cong \overline{RT}$	2. reflexive prop of $\cong$
3. $\angle QRT \cong \angle RTS$	3. if 2 $\parallel$ lines are cut by a transversal, then alt. int $\angle$'s are $\cong$
4. $\triangle QRT \cong \triangle STR$	4. SAS