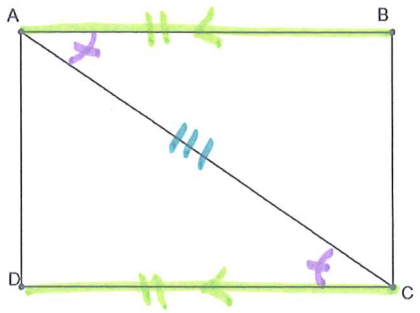
HW- Proofs Using Triangle Congruence **Name:** Key

Write a two-column proof for the following.

1. Given: $\overline{AB} \cong \overline{CD}$; $\overline{AB} \| \overline{CD}$

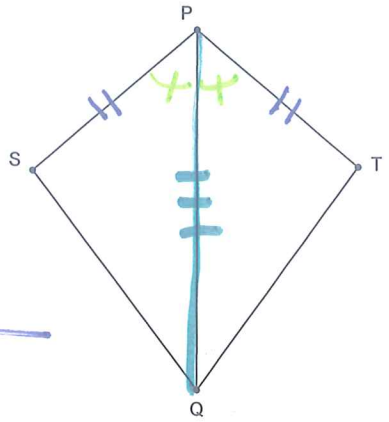
Prove: ΔABC ≅ ΔCDA



1. $AB \cong CD$, $AB \| CD$	1. Given
2. $\angle BAC \cong \angle DCA$	2. ∥ lines form ≅ alt. int ∠s.
3. $AC \cong AC$	3. reflexive
4. $\Delta ABC \cong \Delta CDA$	4. SAS

2. Given: $\overline{PQ}$ bisects ∠SPT
$\overline{SP} \cong \overline{PT}$

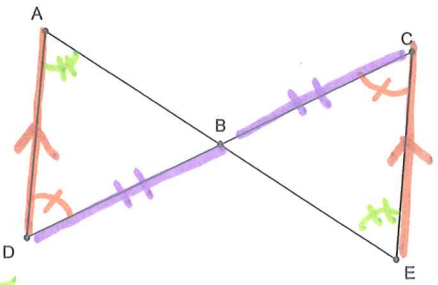
Prove: Δ SPQ ≅ ΔTPQ



1. PQ bisects ∠SPT $SP \cong PT$	1. given
2. ∠SPQ ≅ ∠TPQ	2. def of ∠ Bisector
3. $PQ \cong PQ$	3. reflexive
4. $\Delta SPQ \cong \Delta TPQ$	4. SAS

3. Given: $\overline{AD} \| \overline{CE}$; $\overline{BD} \cong \overline{BC}$

Prove: ΔABD ≅ Δ EBC



1. AD∥CE BD ≅ BC	1. given
2. ∠D ≅ ∠C, ∠A ≅ ∠E	2. ∥ lines form ≅ alt. int ∠s.
3. $\Delta ABD \cong \Delta EBC$	3. AAS

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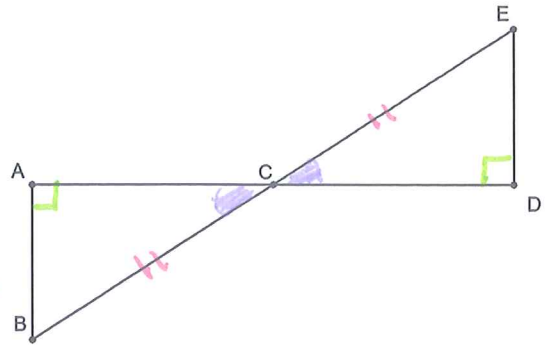
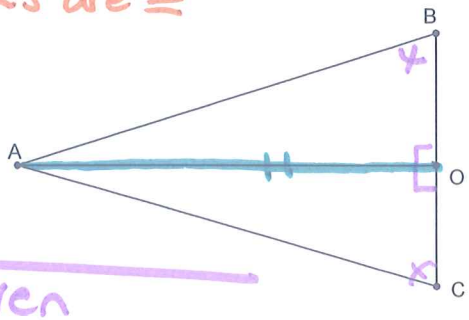
4. Given: $\overline{AB} \perp \overline{AD}$
$\overline{DE} \perp \overline{AD}$
C is the midpoint of $\overline{BE}$



Prove: $\angle ABC \cong \angle DEC$

1. AB⊥AD, DE⊥AD C is midpt of BE	1. given
2. ∠A=90, ∠D=90	2. def of ⊥
3. ∠A ≅ ∠D	3. subs.
4. BC ≅ EC	4. def of midpt
5. ∠ACB ≅ ∠DCE	5. vertical ∠s are ≅
6. △ACB ≅ △DCE	6. SAA
7. ∠ABC ≅ ∠DEC	7. cpctc

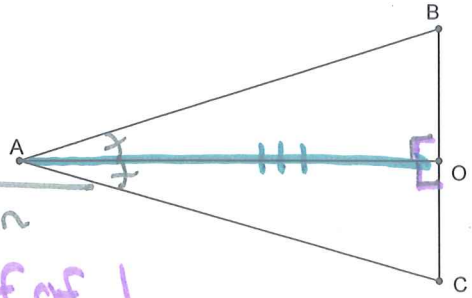
5. Given: $\overline{AO} \perp \overline{BC}; \angle B \cong \angle C$



Prove: $\Delta AOB = \Delta AOC$

1. AO⊥BC ∠B≅∠C	1. given
2. ∠AOB=90°, ∠AOC=90°	2. def of ⊥
3. ∠AOB ≅ ∠AOC	3. Subs.
4. AO ≅ AO	4. reflexive
5. △AOB ≅ △AOC	5. SAA

6. Given: $\overline{AO} \perp \overline{BC}; \angle BAO \cong \angle CAO$



Prove: $\Delta AOB = \Delta AOC$

1. AO⊥BC, ∠BAO ≅ ∠CAO	1. given
2. ∠AOB=90, ∠AOC=90°	2. def of ⊥
3. ∠AOB ≅ ∠AOC	3. subs.
4. AO ≅ AO	4. reflexive.
5. △AOB ≅ △AOC	5. ASA

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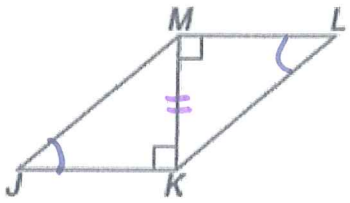
7.

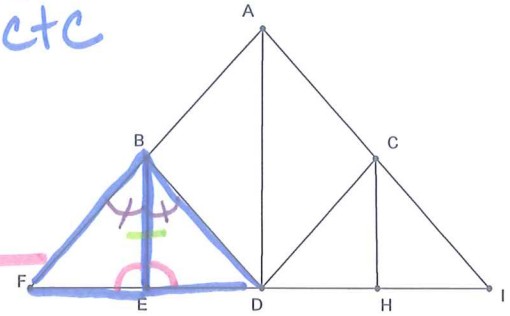
Given: $\overline{ML} \perp \overline{MK}, \overline{JK} \perp \overline{KM}$
$\angle J \cong \angle L$
Prove: $\overline{JM} \cong \overline{KL}$



1. ML⊥MK, JK⊥KM, ∠J ≅ ∠L	1. given
2. ∠MKJ=90, ∠LMK=90	2. def of ⊥
3. ∠MKJ ≅ ∠LMK	3. subs.
4. MK ≅ MK	4. reflexive
5. ΔJKM ≅ ΔLMK	5. AAS
6. JM ≅ KL	6. CPCTC

8. Given: ∠BEF ≅ ∠BED
BE bisects ∠FBD

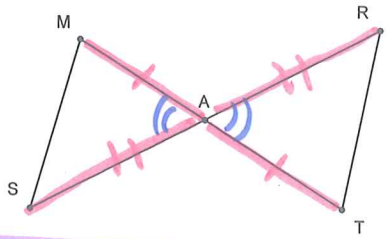
Prove: ΔFBE ≅ Δ DBE



1. ∠BEF ≅ ∠BED, BE Bisects ∠FBD	1. given
2. ∠FBE ≅ ∠DBE	2. def of ∠ bisector
3. BE ≅ BE	3. reflexive
4. ΔFBE ≅ ΔDBE	4. ASA

9. Given: A is the midpoint of MT
A is the midpoint of SR

Prove: $\overline{MS} \cong \overline{TR}$



1. A is midpt of MT, A is midpt of SR	1. given
2. MA ≅ TA, SA ≅ RA	2. def of midpt
3. ∠SAM ≅ ∠RAT	3. Vertical ∠s are ≅
4. ΔSAM ≅ ΔRAT	4. SAS
5. MS ≅ TR	5. CPCTC