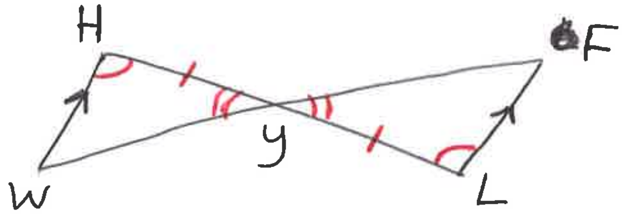
#1 Given: $LF \parallel WH$; $\overline{HY} \cong \overline{LY}$

Prove: $\triangle WHY \cong \triangle FLY$

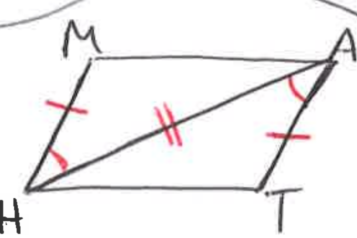



| Statement | Reason |
|---|---|
| 1. $LF \parallel WH$ | Given |
| A 2. $\angle WHY \cong \angle FLY$ | If lines are parallel, then alt. int. angles are congruent |
| S 3. $\overline{HY} \cong \overline{LY}$ | Given |
| A 4. $\angle HWY \cong \angle LYF$ | Vertical Angle Theorem |
| 5. $\triangle WHY \cong \triangle FLY$ | ASA |

*There are other ways to complete this proof

#2 Given: $MH \parallel AT$; $MH \cong AT$

Prove: $\triangle MAH \cong \triangle THA$

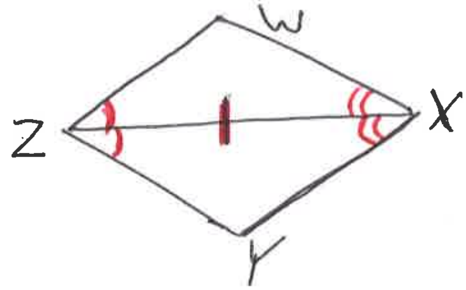



| S | R |
|---|---|
| 1. $MH \parallel AT$ | 1. Given |
| A 2. $\angle MHA \cong \angle TAH$ | 2. If lines are parallel, then alt. int. angles are congruent |
| S 3. $MH \cong AT$ | 3. Given |
| S 4. $AH \cong AH$ | 4. Reflexive Property |
| 5. $\triangle MAH \cong \triangle THA$ | 5. SAS |

#3 G: $\overline{ZX}$ Bisects $\angle WZY$

$\overline{ZX}$ Bisects $\angle WXY$

P: $\triangle ZYX \cong \triangle ZWX$

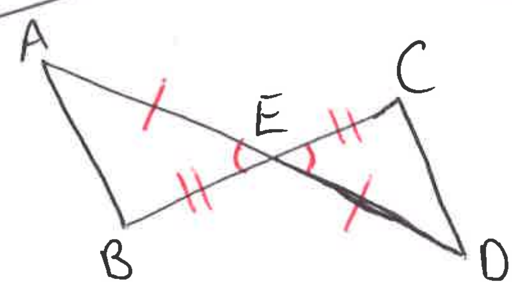



| S | R |
|---|---|
| 1. ZX Bisects $\angle WZY$ | 1. Given |
| A 2. $\angle WZX \cong \angle YZX$ | 2. Definition of Angle Bisector |
| 3. ZX Bisects $\angle WXY$ | 3. Given |
| A 4. $\angle WXZ \cong \angle YXZ$ | 4. Definition of Angle Bisector |
| S 5. $ZX \cong ZX$ | 5. Reflexive Property |
| 6. $\triangle ZYX \cong \triangle ZWX$ | 6. ASA |

#4 E is the Midpoint of AD

E is the Midpoint of BC

Prove: $\triangle AEB \cong \triangle DEC$

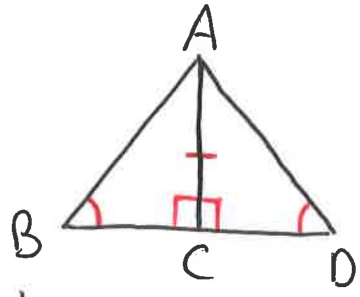



| S | R |
|---|---|
| 1. E is the Midpoint of AD | 1. Given |
| S 2. $\overline{AE} \cong \overline{ED}$ | 2. Definition of Midpoint |
| 3. E is the Midpoint of BC | 3. Given |
| S 4. $\overline{BE} \cong \overline{EC}$ | 4. Definition of Midpoint |
| A 5. $\angle AEB \cong \angle DEC$ | 5. Vertical Angle Theorem |
| 6. $\triangle AEB \cong \triangle DEC$ | 6. SAS |

# #5 $\overline{AC} \perp \overline{BD}$

$\angle B \cong \angle D$

Prove: $\triangle ACB \cong \triangle ACD$

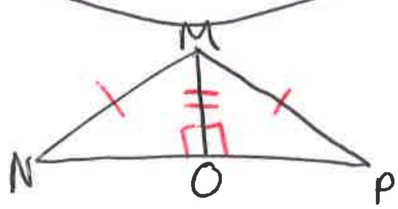



| | S | R |
|---|---|---|
| | ① $AC \perp BD$ | ① Given |
| | ② $\angle BCA$ and $\angle DCA$ are right angles | ② Definition of perpendicular lines |
| | ③ $m\angle BCA = 90°$, $m\angle DCA = 90°$ | ③ Definition of right angles |
| | ④ $m\angle BCA = m\angle DCA$ | ④ Substitution |
| A | $\angle BCA \cong \angle DCA$ | |
| A | ⑤ $\angle B \cong \angle D$ | ⑤ Given |
| S | ⑥ $\overline{AC} \cong \overline{AC}$ | ⑥ Reflexive Property |
| | ⑦ $\triangle ACB \cong \triangle ACD$ | ⑦ AAS |

# #6 $\overline{MO} \perp \overline{NP}$

$\overline{MN} \cong \overline{MP}$

Prove: $\triangle MON \cong \triangle MOP$

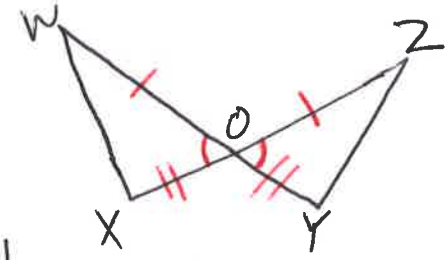



| | S | R |
|---|---|---|
| | ① $MO \perp NP$ | ① Given |
| Right | ② $\angle NOM$ and $\angle POM$ are right angles | ② Definition of perpendicular lines |
| | ③ $m\angle NOM = 90°$, $m\angle POM = 90°$ | ③ Definition of right angles |
| | ④ $m\angle NOM = m\angle POM$ <br> $\angle NOM \cong \angle POM$ | ④ Substitution |
| H | ⑤ $\overline{MN} \cong \overline{MP}$ | ⑤ Given |
| L | ⑥ $\overline{MO} \cong \overline{MO}$ | ⑥ Reflexive Property |
| | ⑦ $\triangle MON \cong \triangle MOP$ | ⑦ HL |

you do not need these steps but if you had them I would not take off

#7 $\overline{WO} \cong \overline{ZO}$, $\overline{XO} \cong \overline{YO}$

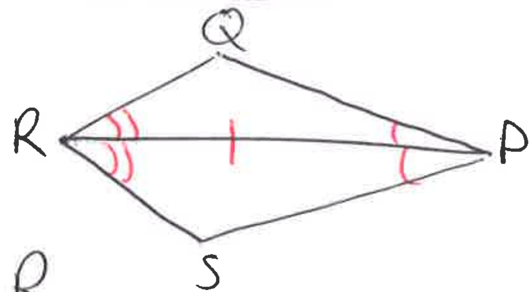
Prove: $\angle W \cong \angle Z$




| | S | R |
|---|---|---|
| S | ① $\overline{WO} \cong \overline{ZO}$ | ① Given |
| S | ② $\overline{XO} \cong \overline{YO}$ | ② Given |
| A | ③ $\angle WOX \cong \angle ZOY$ | ③ Vertical Angle Theorem |
| | ④ $\triangle WOX \cong \triangle ZOY$ | ④ SAS |
| | ⑤ $\angle W \cong \angle Z$ | ⑤ CPCTC |

#8 PR Bisects $\angle QPS$ and $\angle QRS$

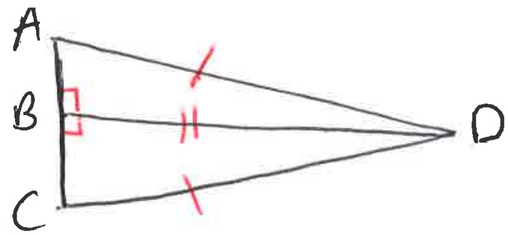
Prove: $RQ \cong RS$




| | S | R |
|---|---|---|
| | ① PR Bisects $\angle QPS$ | ① Given |
| A | ② $\angle QPR \cong \angle SPR$ | ② Definition of an angle bisector |
| | ③ PR Bisects $\angle QRS$ | ③ Given |
| A | ④ $\angle QRP \cong \angle SRP$ | ④ Definition of an angle bisector |
| S | ⑤ $\overline{RP} \cong \overline{RP}$ | ⑤ Reflexive Property |
| | ⑥ $\triangle QRP \cong \triangle SRP$ | ⑥ ASA |
| | ⑦ $\overline{RQ} \cong \overline{RS}$ | ⑦ CPCTC |

#9 $AC \perp BD$, $AD \cong DC$

Prove: $AB \cong BC$

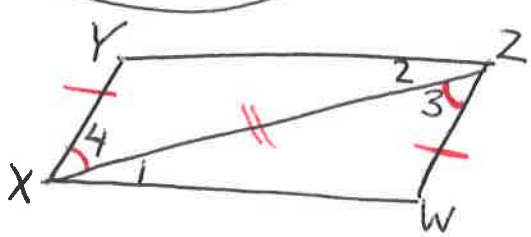



| S | R |
|---|---|
| ① $AC \perp BD$ | ① Given |
| Right ② $\angle ABD$ and $\angle CBD$ are right angles | ② Definition of Perpendicular lines |
| ③ $m\angle ABD = 90°$ $m\angle CBD = 90°$ | ③ Definition of right angles |
| ④ $m\angle ABD \cong m\angle CBD$ <br> $\angle ABD \cong \angle CBD$ | ④ Substitution |
| H ⑤ $\overline{AD} \cong DC$ | ⑤ Given |
| L ⑥ $\overline{BD} \cong \overline{BD}$ | ⑥ Reflexive Property |
| ⑦ $\triangle ABD \cong \triangle CBD$ | ⑦ HL |
| ⑧ $\overline{AB} \cong \overline{BC}$ | ⑧ CPCTC |

you don't need these two steps, but I won't take off if you have them

#10 $ZW \parallel YX$; $ZW \cong XY$

Prove: $ZY \parallel WX$

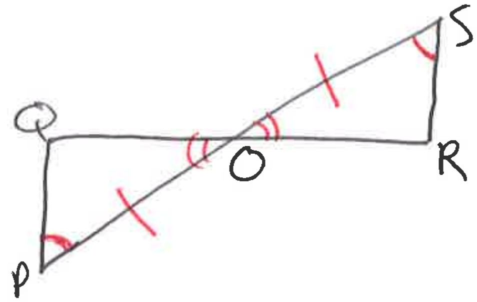



| S | R |
|---|---|
| ① $ZW \parallel YX$ | ① Given |
| A ② $\angle 4 \cong \angle 3$ | ② If lines are Parallel, then Alternate interior angles are congruent |
| S ③ $\overline{ZW} \cong XY$ | ③ Given |
| S ④ $\overline{XZ} \cong \overline{XZ}$ | ④ Reflexive Property |
| ⑤ $\triangle YXZ \cong WZX$ | ⑤ SAS |
| ⑥ $\angle 1 \cong \angle 2$ | ⑥ CPCTC |
| ⑦ $ZY \parallel WX$ | ⑦ If Alternate interior angles are congruent, two lines are parallel |

#11. $\angle P \cong \angle S$

O is the Midpoint of PS

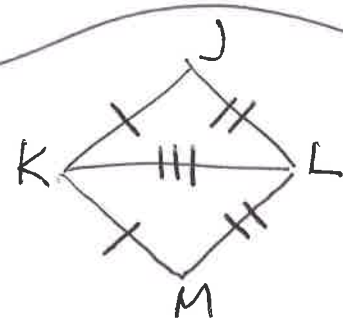
Prove: O is the midpoint of RQ




| S | R |
|---|---|
| ① A $\angle P \cong \angle S$, O is the midpoint of $\overline{PS}$ | ① Given |
| ② $\overline{PO} \cong \overline{OS}$ S | ② Definition of Midpoint |
| ③ $\angle QOP \cong \angle ROS$ A | ③ Vertical Angle Theorem |
| ④ $\triangle QOP \cong \triangle ROS$ | ④ ASA |
| ⑤ $RO \cong QO$ | ⑤ CPCTC |
| ⑥ O is the midpoint of RQ | ⑥ Definition of midpoint |

#12 $JK \cong \overline{KM}$, $\overline{JL} \cong \overline{ML}$

Prove: KL bisects $\angle JKM$




| S | R |
|---|---|
| ① $\overline{JK} \cong \overline{KM}$ S, $\overline{JL} \cong \overline{ML}$ S | ① Given |
| ② $KL \cong KL$ | ② Reflexive Property |
| ③ $\triangle JKL \cong \triangle MKL$ | ③ SSS |
| ④ $\angle JKL \cong \angle MKL$ | ④ CPCTC |
| ⑤ $\overline{KL}$ Bisects $\angle JKM$ | ⑤ Definition of <u>angle</u> bisector |