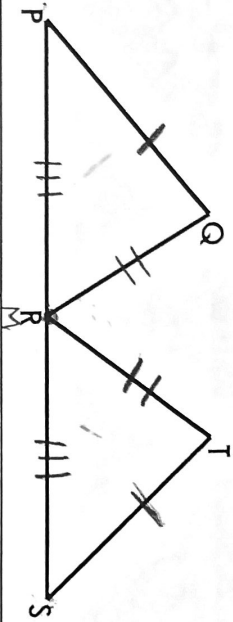


# SSS PROOF #1

**Given:**  $\overline{PQ} \cong \overline{ST}$ ,  $\overline{QR} \cong \overline{RT}$ , R is the midpoint of  $\overline{PS}$

**Prove:**  $\triangle PQR \cong \triangle STR$



Statements	Reasons
$\overline{PQ} \cong \overline{ST}$	Given
$\overline{QR} \cong \overline{RT}$	Given
R is the midpoint of $\overline{PS}$	Given
$\overline{PR} \cong \overline{SR}$	Defn. of midpoint
$\triangle PQR \cong \triangle STR$	SSS

$\overline{PQ} \cong \overline{ST}$

Def. of Midpoint

$\overline{QR} \cong \overline{RT}$

R is the midpoint of  $\overline{PS}$

Given

$\overline{PR} \cong \overline{SR}$

Given

SSS

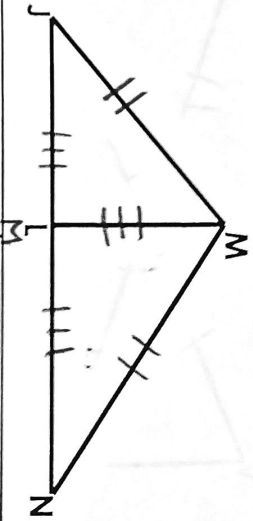
Given

$\triangle PQR \cong \triangle STR$

# SSS PROOF #2

**Given:** L is the midpoint of  $\overline{JN}$ ,  $\overline{JM} \cong \overline{NM}$

**Prove:**  $\triangle JLM \cong \triangle NLM$



Statements	Reasons
L is midpoint of $\overline{JN}$	Given
$\overline{JL} \cong \overline{NL}$	Defn. of midpoint
$\overline{JM} \cong \overline{NM}$	Given
$\overline{ML} \cong \overline{ML}$	Reflexive Prop.
$\triangle JLM \cong \triangle NLM$	SSS

$\overline{JL} \cong \overline{NL}$

L is the midpoint of  $\overline{JN}$

$\overline{JM} \cong \overline{NM}$

Def. of Midpoint

$\triangle JLM \cong \triangle NLM$

Given

Given

SSS

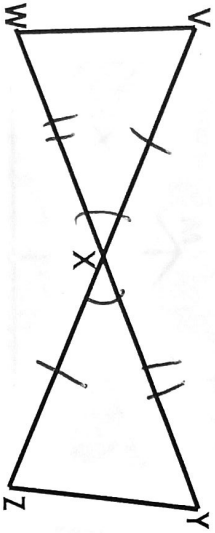
$\overline{LM} \cong \overline{LM}$

Reflexive Property

# SAS PROOF #1

**Given:** X is the midpoint of  $\overline{WZ}$ , X is the midpoint of  $\overline{WY}$

**prove:**  $\triangle VWX \cong \triangle ZYX$



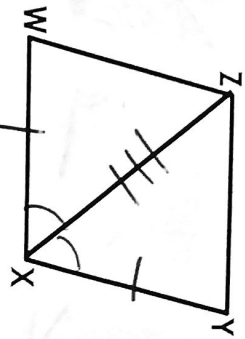
Statements	Reasons
X is the midpoint of $\overline{WZ}$	Given
$\overline{VX} \cong \overline{ZX}$	Defn. of midpt.
$\angle WXY \cong \angle YXZ$	Vertical $\angle$ s $\cong$
X is midpoint of $\overline{WY}$	Given
$\overline{WX} \cong \overline{YX}$	Defn. of Midpt.
$\triangle VWX \cong \triangle ZYX$	SAS

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# SAS PROOF #2

**Given:**  $\overline{XW} \cong \overline{XY}$ ,  $\overline{XZ}$  bisects  $\angle WXY$

**prove:**  $\triangle WXY \cong \triangle YXZ$



Statements	Reasons
$\overline{XW} \cong \overline{XY}$	Given
$\overline{XZ}$ bisects $\angle WXY$	Given
$\angle WXZ \cong \angle YXZ$	Defn. $\angle$ bisector
$\overline{XZ} \cong \overline{XZ}$	Reflexive Prop.
$\triangle WXZ \cong \triangle YXZ$	SAS

$\angle WXZ \cong \angle YXZ$

$\overline{XZ}$  bisects  $\angle WXY$

$\overline{XW} \cong \overline{XY}$

$\triangle WXY \cong \triangle YXZ$

Given

Def. of Angle Bisector

Given

SAS

$\overline{XZ} \cong \overline{XZ}$

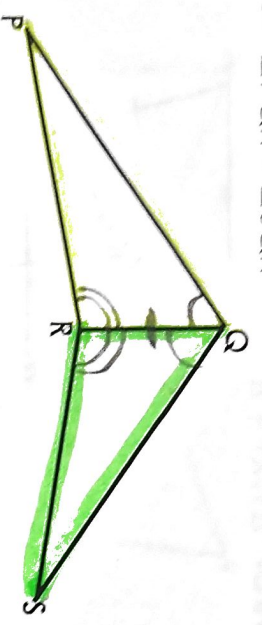
Reflexive Property

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**Given:**  $\overline{QR}$  bisects  $\angle PQS$ ,  $\angle PRQ = \angle SRQ$

**Prove:**  $\triangle PQR \cong \triangle SQR$

ASA



Statements	Reasons
$\overline{QR}$ bisects $\angle PQS$	Given
$\angle PQR \cong \angle SQR$	Defn. $\angle$ bisector
$\overline{QR} \cong \overline{QR}$	Reflexive Prop.
$\angle PRQ \cong \angle SRQ$	Given
$\triangle PQR \cong \triangle SQR$	ASA

$\overline{QR} = \overline{QR}$   Given   $\angle PQR = \angle SQR$

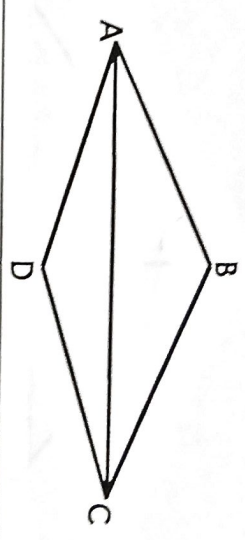
Def. of Angle Bisector  Given

$\overline{QR}$  bisects  $\angle PQS$   Reflexive Property   $\angle PRQ = \angle SRQ$

ASA   $\triangle PQR = \triangle SQR$

**Given:**  $\overline{AC}$  bisects  $\angle BAD$ ,  $\overline{AC}$  bisects  $\angle BCD$

**Prove:**  $\triangle BAC \cong \triangle DAC$



Statements	Reasons
$\overline{AC}$ bisects $\angle BAD$	Given
$\angle BAC \cong \angle DAC$	Defn. $\angle$ bisector
$\overline{AC} \cong \overline{AC}$	Reflexive Property
$\overline{AC}$ bisects $\angle BCD$	Given
$\angle BCA \cong \angle DCA$	Defn. $\angle$ bisector
$\triangle BAC \cong \triangle DAC$	ASA

Def. of Angle Bisector  Reflexive Property

$\overline{AC} = \overline{AC}$   Given   $\angle BAC = \angle DAC$

$\overline{AC}$  bisects  $\angle BCD$   Given

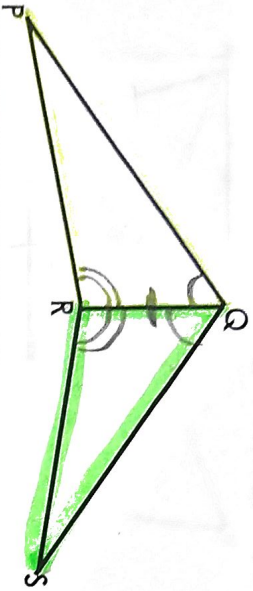
$\overline{AC}$  bisects  $\angle BAD$    $\angle BCA = \angle DCA$   ASA

Def. of Angle Bisector   $\triangle BAC = \triangle DAC$

# ASA PROOF #1

**Given:**  $\overline{QR}$  bisects  $\angle PQS$ ,  $\angle PRQ = \angle SRQ$

**prove:**  $\triangle PQR \cong \triangle SQR$



Statements	Reasons
1 $\overline{QR}$ bisects $\angle PQS$	Given
2 $\angle PQR \cong \angle SQR$	Defn. $\angle$ bisector
3 $\overline{QR} \cong \overline{QR}$	Reflexive Prop.
4 $\angle PRQ \cong \angle SRQ$	Given
5 $\triangle PQR \cong \triangle SQR$	ASA

$\overline{QR} = \overline{QR}$

Given

$\angle PQR = \angle SQR$

Def. of Angle Bisector

Given

$\overline{QR}$  bisects  $\angle PQS$

Reflexive Property

$\angle PRQ = \angle SRQ$

ASA

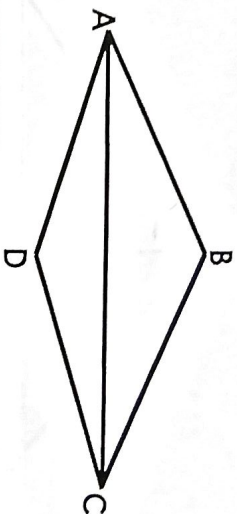
$\triangle PQR \cong \triangle SQR$

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# ASA PROOF #2

**Given:**  $\overline{AC}$  bisects  $\angle BAD$ ,  $\overline{AC}$  bisects  $\angle BCD$

**prove:**  $\triangle BAC \cong \triangle DAC$



Statements	Reasons
1 $\overline{AC}$ bisects $\angle BAD$	Given
2 $\angle BAC \cong \angle DAC$	Defn. $\angle$ bisector
3 $\overline{AC} \cong \overline{AC}$	Reflexive Property
4 $\overline{AC}$ bisects $\angle BCD$	Given
5 $\angle BCA \cong \angle DCA$	Defn. $\angle$ bisector
6 $\triangle BAC \cong \triangle DAC$	ASA

Def. of Angle Bisector

Reflexive Property

$\overline{AC} = \overline{AC}$

Given

$\angle BAC = \angle DAC$

$\overline{AC}$  bisects  $\angle BCD$

Given

$\overline{AC}$  bisects  $\angle BAD$

$\angle BCA = \angle DCA$

ASA

Def. of Angle Bisector

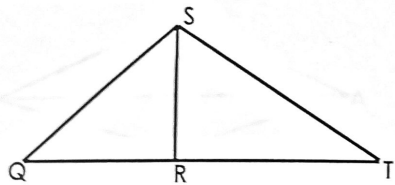
$\triangle BAC \cong \triangle DAC$

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## AAS PROOF #1

**Given:**  $\overline{SR}$  bisects  $\angle QST$ ,  $\angle SQR = \angle STR$

**prove:**  $\triangle QSR \cong \triangle TSR$



	Statements	Reasons
A	$\angle SQR \cong \angle STR$	Given
	$\overline{SR}$ bisects $\angle QST$	Given
A	$\angle QSR \cong \angle TSR$	Defn. $\angle$ bisector
S	$\overline{SR} \cong \overline{SR}$	Reflexive Prop.
	$\triangle QSR \cong \triangle TSR$	AAS

$\angle SQR = \angle STR$

Reflexive Property

Given

$\triangle QSR \cong \triangle TSR$

Given

$\angle SQR = \angle STR$

$\overline{SR}$  bisects  $\angle QST$

AAS

Def. of Angle Bisector

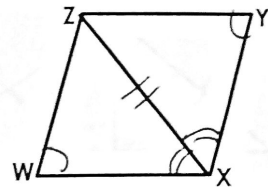
$\overline{SR} = \overline{SR}$

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## AAS PROOF #2

**Given:**  $\angle XWZ = \angle XYZ$ ,  $\overline{XZ}$  bisects  $\angle WXY$

**prove:**  $\triangle XWZ \cong \triangle XYZ$



	Statements	Reasons
	$\angle XWZ \cong \angle XYZ$	Given
	$\overline{XZ}$ bisects $\angle WXY$	Given
	$\angle WXZ \cong \angle YXZ$	Defn. $\angle$ bisector
	$\overline{XZ} \cong \overline{XZ}$	Reflexive Prop.
	$\triangle XWZ \cong \triangle XYZ$	AAS

$\overline{XZ} = \overline{XZ}$

Reflexive Property

$\angle XWZ = \angle XYZ$

$\angle WXZ = \angle YXZ$

Given

Given

$\overline{XZ}$  bisects  $\angle WXY$

AAS

Def. of Angle Bisector

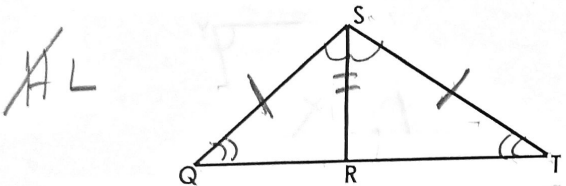
$\triangle XWZ \cong \triangle XYZ$

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# HL PROOF #1

**Given:**  $\triangle QSR$  and  $\triangle TSR$  are right triangles,  $\overline{QS} \cong \overline{TS}$

**prove:**  $\triangle QSR \cong \triangle TSR$



Statements	Reasons
$\triangle QSR$ and $\triangle TSR$ are rt. $\triangle$ s	Given
$\overline{QS} \cong \overline{TS}$	Given
$\overline{SR} \cong \overline{SR}$	Reflexive Prop.
$\triangle QSR \cong \triangle TSR$	HL

$\overline{QS} \cong \overline{TS}$       HL      Given

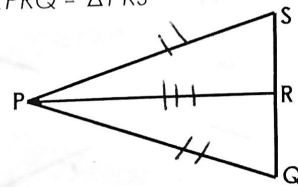
$\triangle QSR$  and  $\triangle TSR$  are right triangles      Given

Reflexive Property       $\triangle QSR \cong \triangle TSR$        $\overline{SR} \cong \overline{SR}$

# HL PROOF #2

**Given:**  $\overline{PR} \perp \overline{SQ}$ ,  $\overline{PQ} \cong \overline{PS}$

**prove:**  $\triangle PRQ \cong \triangle PRS$



Statements	Reasons
$\overline{PR} \perp \overline{SQ}$	Given
$\angle PRS$ and $\angle QRP$ are right angles	Defn. of $\perp$
$\triangle PRQ \cong \triangle PRS$ are rt. triangles	Defn. of right $\triangle$
$\overline{PQ} \cong \overline{PS}$	Given
$\overline{PR} \cong \overline{PR}$	Reflexive Prop.
$\triangle PRQ \cong \triangle PRS$	HL

$\angle PRQ = \angle PRS$       Given

$\overline{PQ} \cong \overline{PS}$       Reflexive Property       $\overline{PR} \perp \overline{SQ}$

Def. of  $\perp$       HL

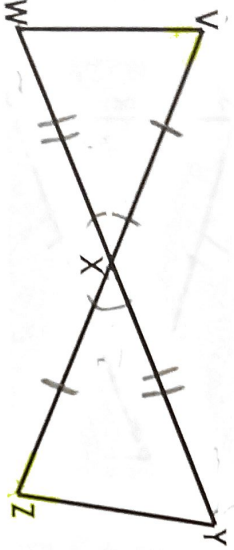
$\overline{PR} \cong \overline{PR}$        $\angle PRQ$  and  $\angle PRS$  are right  $\angle$ 's      Given

All right  $\angle$ 's are  $\cong$        $\triangle PRQ \cong \triangle PRS$

# CPCTC PROOF #1

**Given:** X is the midpoint of  $\overline{VZ}$ , X is the midpoint of  $\overline{WY}$

**Prove:**  $\angle XVW = \angle XZY$



Subgoal:

$\triangle XVW \cong \triangle XZY$

Statements	Reasons
X is midpoint of $\overline{VZ}$	Given
$\overline{VX} \cong \overline{XZ}$	Defn. of midpt.
$\angle WXV \cong \angle YXZ$	Vertical $\angle$ s $\cong$
X is midpt. of $\overline{WY}$	Given
$\overline{WX} \cong \overline{XY}$	Defn. of midpt
$\triangle XVW \cong \triangle XZY$	SAS
$\angle XVW \cong \angle XZY$	CPCTC

Given  Def. of Midpoint

$\overline{VX} = \overline{XZ}$   Def. of Midpoint

X is the midpoint of  $\overline{VZ}$   Given

$\overline{WX} = \overline{XY}$    $\triangle VWX = \triangle ZYX$

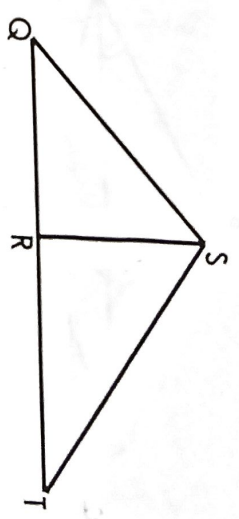
X is the midpoint of  $\overline{WY}$   CPCTC

SAS

# CPCTC PROOF #2

**Given:**  $\overline{QS} = \overline{ST}$ , R is the midpoint of  $\overline{QT}$

**Prove:**  $\angle RQS = \angle RTS$



Statements	Reasons
$\overline{QS} \cong \overline{ST}$	Given
R is the midpt. of $\overline{QT}$	Given
$\overline{QR} \cong \overline{TR}$	Defn. of midpoint
$\overline{SR} \cong \overline{SR}$	Reflexive Prop.
$\triangle RQS \cong \triangle RTS$	SSS
$\angle RQS \cong \angle RTS$	CPCTC

$\overline{RS} = \overline{RS}$   Reflexive Property

$\overline{QS} = \overline{ST}$   Given

$\overline{QR} = \overline{TR}$   Def. of Midpoint

R is the midpoint of  $\overline{QT}$   CPCTC

SSS

$\triangle QRS = \triangle TRS$

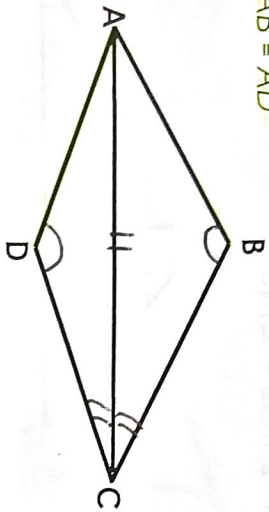
# CPCTC PROOF #3

**Given:**  $\overline{AC}$  bisects  $\angle BCD$ ,  $\angle ABC \cong \angle ADC$

**Prove:**  $\overline{AB} \cong \overline{AD}$

Subgoal:

Prove  $\triangle ABC \cong \triangle ADC$



Statements	Reasons
$\angle ABC \cong \angle ADC$	Given
$\overline{AC}$ bisects $\angle BCD$	Given
$\angle BCA \cong \angle DCA$	Defn, $\angle$ bisector
$\overline{AC} \cong \overline{AC}$	Reflexive Prop.
$\triangle ABC \cong \triangle ADC$	AAS
$\overline{AB} \cong \overline{AD}$	CPCTC

Given  $\triangle ABC \cong \triangle ADC$

$\overline{AC} \cong \overline{AC}$   $\overline{AC}$  bisects  $\angle BCD$   $\angle ABC \cong \angle ADC$

Def. of Angle Bisector Given

$\overline{AB} \cong \overline{AD}$   $\angle BCA \cong \angle DCA$  AAS

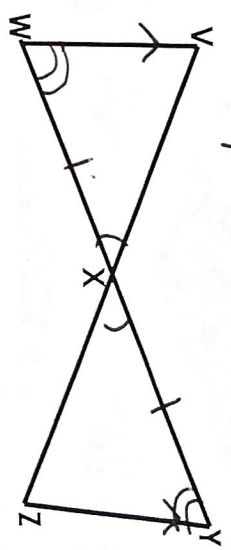
Reflexive Property CPCTC

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# CPCTC PROOF #4

**Given:**  $\overline{WV} \parallel \overline{YZ}$ , X is the midpoint of  $\overline{WY}$ ,

**Prove:**  $\overline{WX} \cong \overline{XZ}$



Statements	Reasons
$\overline{WV} \parallel \overline{YZ}$	Given
$\angle VWX \cong \angle ZYX$	Alt. Interior $\angle$ s are $\cong$
X is midpt. of $\overline{WY}$	Given
$\overline{WX} \cong \overline{YX}$	Defn. of midpoint
$\angle VXW \cong \angle ZXY$	Vertical $\angle$ s are $\cong$
$\triangle VXW \cong \triangle ZXY$	ASA
$\overline{WX} \cong \overline{XZ}$	CPCTC

ASA  $\triangle VXW \cong \triangle ZXY$   $\overline{WX} \cong \overline{XZ}$

$\overline{WV} \parallel \overline{YZ}$  CPCTC Given

Def. of Midpoint Alt. Interior Angles  $\angle VXW \cong \angle ZXY$

$\angle VWX \cong \angle ZYX$  X is the midpoint of  $\overline{WY}$

$\angle VWX \cong \angle ZYX$  Given Vertical Angles

$\overline{WX} \cong \overline{XZ}$

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