

G5: Proof Practice

1. Prove:  $\triangle PRQ \cong \triangle TRS$



Stmnt	Reason
$\overline{PR} \cong \overline{TR}$	Given
$\overline{QR} \cong \overline{RS}$	Given
$\angle PRQ \cong \angle TRS$	vert. $\angle$ s
$\triangle PRQ \cong \triangle TRS$	SAS $\cong$

3. Prove: R is midpoint of line SQ



Stmnt	Reason
$\overline{PR} \cong \overline{RQ}$	Given
$\overline{SR} \cong \overline{SR}$	Given
$\angle PSR \cong \angle QSR$	Alt. int. angles
$\triangle PSR \cong \triangle QSR$	Vertical angles are $\cong$
$\triangle PSR \cong \triangle QSR$	ASA $\cong$
$\overline{SR} \cong \overline{SR}$	CPCTC
$\overline{SR} \cong \overline{SR}$	Def. of midpoint

1. Prove: Angle M is bisected by line KM

$\overline{ML} \cong \overline{MT}$  (Given)  
 $\overline{LK} \cong \overline{KT}$  (Given)  
 $\overline{MK} \cong \overline{MK}$  (Reflexive Prop.)  
 $\triangle MLK \cong \triangle MTK$  (SSS  $\cong$ )  
 $\angle LMK \cong \angle KMT$  (CPCTC)  
 KM bisects  $\angle M$  (Def. of angle bisector)



Stmnt	Reason
$\overline{LM} \cong \overline{LP}$	Given
$\overline{MN} \cong \overline{NP}$	Given
$\overline{LN} \cong \overline{LN}$	Reflexive Prop.
$\triangle LMN \cong \triangle LPN$	SSS $\cong$
$\angle LMN \cong \angle LPN$	CPCTC

2. Prove:  $\angle A \cong \angle C$

$\angle APB$  is a right  $\angle$  (Given)  
 $\angle BDC$  is a right  $\angle$  (Given)  
 $\angle ADB \cong \angle BDC$  (all right angles are  $\cong$ )  
 $\overline{DB} \cong \overline{BD}$  (Reflexive Prop.)  
 $\angle ABD \cong \angle CBD$  (Given)  
 $\triangle ADB \cong \triangle BDC$  (ASA  $\cong$ )  
 $\angle A \cong \angle C$  (CPCTC)



6. Prove:  $\overline{BC} \cong \overline{DA}$

$\overline{AB} \cong \overline{DC}$  (Given)  
 $\angle BAC \cong \angle ACD$  (Given)  
 $\overline{AC} \cong \overline{CA}$  (Reflexive Prop.)  
 $\triangle ACD \cong \triangle CAB$  (SAS  $\cong$ )  
 $\overline{BC} \cong \overline{DA}$  (CPCTC)



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Given:  $\overline{BD}$  bisects  $\angle B$ ,  
 $\overline{BD} \perp \overline{AC}$

Prove:  $\angle A \cong \angle C$

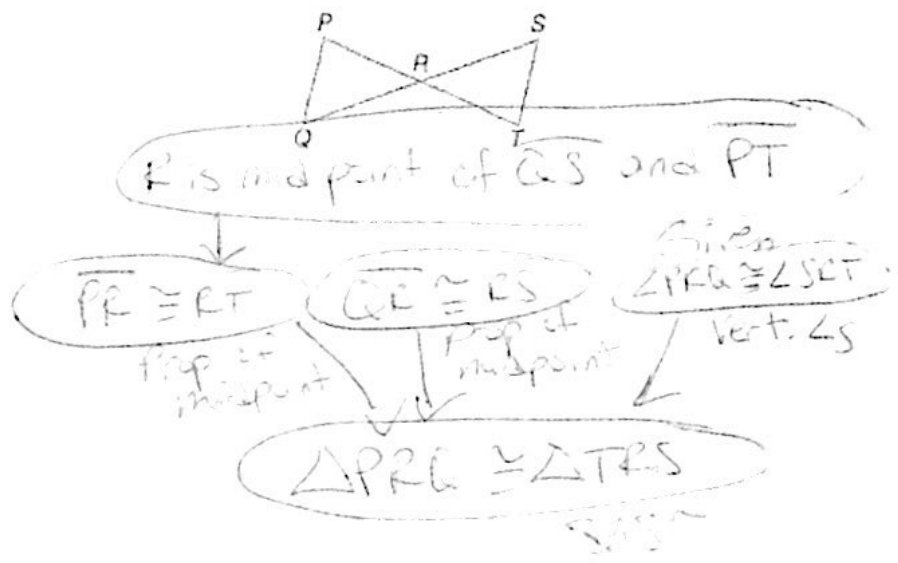


Statement	Reason
$\overline{BD}$ bisects $\angle B$	Given
$\angle ABD \cong \angle CBD$	Prop of perpendicular
$\overline{BD} \perp \overline{AC}$	all right $\angle$ s are $\cong$
$\angle ADB \cong \angle CDB$	Given
$\overline{BD} \cong \overline{BD}$	Prop of $\angle$ bisector
$\triangle ABD \cong \triangle CBD$	Reflexive Prop
$\angle A \cong \angle C$	ASA
	CTC

8 paragraph proof

Given:  $R$  is the midpoint of  $\overline{QS}$  and  $\overline{PT}$ .

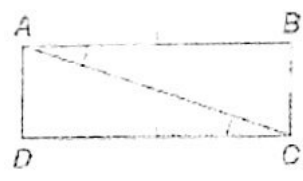
Prove:  $\triangle PRQ \cong \triangle TRS$



9. 4. Write a two-column proof.

Given:  $\overline{BA} \cong \overline{DC}$ ,  $\angle BAC \cong \angle DCA$

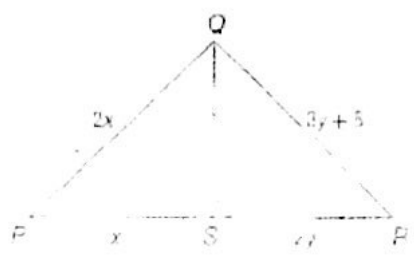
Prove:  $\overline{BC} \cong \overline{DA}$



CHALLENGE Find  $x$  and  $y$  if  $\triangle PQS \cong \triangle RQS$

$$3y + 8 = 2x \quad 2y = x$$

$$3y + 8 = 2(2y)$$



$$3y + 8 = 4y$$

$$-3y \quad -3y$$

$$\boxed{8 = y}$$

$$\boxed{x = 2(8)}$$

$$\boxed{x = 16}$$