

Unit 4 Triangle Congruence Proofs Review

Key

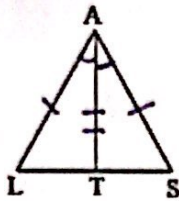
Directions: For each of the following problems, create a two column proof.

1.

Given: \overline{AT} bisects $\angle LAS$

$\overline{LA} \cong \overline{AS}$

Prove: $\triangle ATL \cong \triangle ATS$



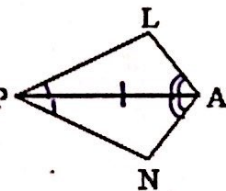
STATEMENTS	REASONS
① \overline{AT} bisects $\angle LAS$	① Given
② $\angle LAT \cong \angle SAT$	② Def of bisects
③ $\overline{LA} \cong \overline{AS}$	③ Given
④ $\overline{AT} \cong \overline{AT}$	④ Reflexive Prop
⑤ $\triangle ATL \cong \triangle ATS$	⑤ SAS

2.

Given: \overline{PA} bisects $\angle LPN$

\overline{PA} bisects $\angle LAN$

Prove: $\angle N \cong \angle L$



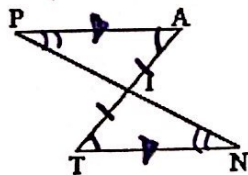
STATEMENTS	REASONS
① \overline{PA} bisects $\angle LPN$ & $\angle LAN$	① Given
② $\angle LPA \cong \angle NPA$	② Def of bisects
③ $\angle LAP \cong \angle NAP$	③ Def of bisects
④ $\overline{AP} \cong \overline{AP}$	④ Reflexive Prop
⑤ $\triangle LPA \cong \triangle NPA$	⑤ ASA
⑥ $\angle N \cong \angle L$	⑥ CPCTC

3.

Given: $\overline{PA} \parallel \overline{TN}$

\overline{PN} bisects \overline{AT}

Prove: $\overline{PI} \cong \overline{IN}$

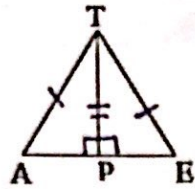


STATEMENTS	REASONS
① $\overline{PA} \parallel \overline{TN}$	① Given
② $\angle A \cong \angle T$	② Alt Int \angle 's are \cong
③ $\angle P \cong \angle N$	③ Alt Int \angle 's are \cong
④ \overline{PN} bisects \overline{AT}	④ Given
⑤ $\overline{PI} \cong \overline{TI}$	⑤ Def of bisects
⑥ $\triangle API \cong \triangle TNI$	⑥ AAS
⑦ $\overline{PI} \cong \overline{IN}$	⑦ CPCTC

• Could have been proven by AAS if you used vertical angles

4.

Given: $\overline{PT} \perp \overline{AE}$
 $\overline{AT} \cong \overline{TE}$
 Prove: $\Delta PAT \cong \Delta PET$

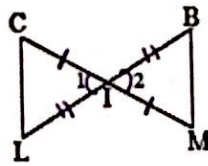


You could have said $\angle A \cong \angle E$ because of the Isosceles Base Angle Theorem, so $\Delta PAT \cong \Delta PET$ by AAS.

STATEMENTS	REASONS
① $\overline{PT} \perp \overline{AE}$	① Given
② $\angle TPA \cong \angle TPE$ are right angles	② Def of perpendicular
③ $\angle TPA \cong \angle TPE$	③ Right \angle 's are \cong
④ $\overline{AT} \cong \overline{TE}$	④ Given
⑤ $\overline{TP} \cong \overline{TP}$	⑤ Reflexive Prop
⑥ $\Delta PAT \cong \Delta PET$	⑥ HL

5.

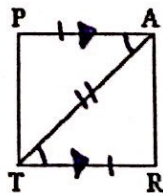
Given: I is the midpoint of \overline{CM}
 I is the midpoint of \overline{BL}
 Prove: $\overline{CL} \cong \overline{MB}$



STATEMENTS	REASONS
① I is midpoint of \overline{CM}	① Given
② $\overline{CI} \cong \overline{MI}$	② Def of midpoint
③ I is midpoint of \overline{BL}	③ Given
④ $\overline{LI} \cong \overline{BI}$	④ Def of midpoint
⑤ $\angle 1 \cong \angle 2$	⑤ Vertical \angle 's are \cong
⑥ $\Delta CIL \cong \Delta MIB$	⑥ SAS
⑦ $\overline{CL} \cong \overline{MB}$	⑦ CPCTC

6.

Given: $\overline{PA} \parallel \overline{TR}$
 $\overline{PA} \cong \overline{TR}$
 Prove: $\overline{PT} \cong \overline{AR}$



STATEMENTS	REASONS
① $\overline{PA} \parallel \overline{TR}$	① Given
② $\angle PAT \cong \angle RTA$	② Alt Int \angle 's are \cong
③ $\overline{PA} \cong \overline{TR}$	③ Given
④ $\overline{AT} \cong \overline{AT}$	④ Reflexive Prop
⑤ $\Delta PAT \cong \Delta RTA$	⑤ SAS
⑥ $\overline{PT} \cong \overline{AR}$	⑥ CPCTC