

Proofs with Triangles

Name _____



Given: $\angle B \cong \angle D$
 $BC \parallel DA$
 Prove: $\triangle ABC \cong \triangle CDA$

STATEMENTS	REASONS
1) $\angle B \cong \angle D$	1) Given
2) $BC \parallel DA$	2) Given
3) $\angle DAC \cong \angle BCA$	3) alt int \angle s \cong
4) $AC \cong AC$	4) Reflexive
5) $\triangle ABC \cong \triangle CDA$	5) AAS



Given: $\angle B \cong \angle D$
 $\angle BAC \cong \angle DCA$
 Prove: $\triangle ABC \cong \triangle CDA$

STATEMENTS	REASONS
1) $\angle B \cong \angle D$	1) Given
2) $\angle BAC \cong \angle DCA$	2) Given
3) $AC \cong AC$	3) Reflexive
4) $\triangle ABC \cong \triangle CDA$	4) AAS

Given: $\overline{AE} \parallel \overline{DC}$
 B is the midpoint of \overline{AD}
 Prove: $\triangle ABE \cong \triangle CBD$

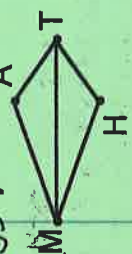


STATEMENTS	REASONS
1) $\overline{AE} \parallel \overline{DC}$	1) Given
2) $\angle EAB \cong \angle CDB$	2) alt int \angle s \cong
3) B is midpt of \overline{AD}	3) Given
4) $\overline{AB} \cong \overline{BD}$	4) Def of midpt
5) $\triangle ABE \cong \triangle CBD$	5) vertical \angle s
6) $\overline{AE} \parallel \overline{DC}$	6) A(ASA)

#3

STATEMENTS	REASONS
1) $\overline{AE} \parallel \overline{DC}$	1) Given
2) $\overline{AE} \cong \overline{DC}$	2) Given
3) $\triangle EAB \cong \triangle CDB$	3) alt int \angle s \cong
4) $\angle ABE \cong \angle CBD$	4) vertical \angle s \cong
5) $\triangle ABE \cong \triangle CBD$	5) AAS

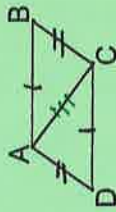
#4



Given: $\angle A \cong \angle H$
 $\angle ATM \cong \angle MHT$
 Prove: $\triangle MAT \cong \triangle MHT$

STATEMENTS	REASONS
1) $\angle A \cong \angle H$	1) Given
2) $\angle ATM \cong \angle MHT$	2) Given
3) $\overline{MT} \cong \overline{MT}$	3) Reflexive
4) $\triangle MAT \cong \triangle MHT$	4) AAS

#5



#1
Given: $\overline{AB} \cong \overline{CD}$
 $\overline{BC} \cong \overline{DA}$
Prove: $\triangle ABC \cong \triangle CDA$

STATEMENTS	REASONS
1) $\overline{AB} \cong \overline{CD}$	1) Given
2) $\overline{BC} \cong \overline{DA}$	2) Given
3) $\overline{AC} \cong \overline{AC}$	3) Reflexive
4) $\triangle ABC \cong \triangle CDA$	4) SSS



#2
Given: $\overline{AB} \cong \overline{CE}$
 $\overline{BC} \cong \overline{AE}$
Prove: $\triangle ABE \cong \triangle CEB$

STATEMENTS	REASONS
1) $\overline{AB} \cong \overline{CE}$	1) Given
2) $\overline{BE} \cong \overline{EB}$	2) Given
3) $\angle ABE \cong \angle CEB$	3) Vertical \angle 's \cong
4) $\triangle ABE \cong \triangle CEB$	4) SAS



#3
Given: $\angle XWY \cong \angle ZYX$
 $\overline{WX} \cong \overline{ZY}$
Prove: $\triangle WXY \cong \triangle ZYX$

STATEMENTS	REASONS
1) $\angle XWY \cong \angle ZYX$	1) given
2) $\overline{WX} \cong \overline{ZY}$	2) given
3) $\overline{WY} \cong \overline{WY}$	3) Reflexive
4) $\triangle WXY \cong \triangle ZYX$	4) ASA

#4

Given: \overline{AC} bisects $\angle BAD$
 $\overline{AB} \cong \overline{AD}$
Prove: $\triangle ABC \cong \triangle ADC$



STATEMENTS	REASONS
1) \overline{AC} bisects $\angle BAD$	1) Given
2) $\angle BAC \cong \angle DAC$	2) Given
3) $\overline{AB} \cong \overline{AD}$	3) Def of bisector
4) $\overline{AC} \cong \overline{AC}$	4) Reflexive
5) $\triangle ABC \cong \triangle ADC$	5) SAS

#5

Given: $\overline{AC} \perp \overline{BD}$
 $\overline{BC} \cong \overline{DC}$
Prove: $\triangle ABC \cong \triangle ADC$



STATEMENTS	REASONS
1) $\overline{AC} \perp \overline{BD}$	1) Given
2) $\angle B C \cong \angle DC$	2) Given
3) $\angle A C B = 90$ $\angle A C D = 90$	3) Def of \perp
4) $\angle A C B = \angle A C D$	4) Substitution
5) $\angle A C B \cong \angle A C D$	5) Def of $\cong \angle$'s
6) $\overline{AC} \cong \overline{AC}$	6) Reflexive
7) $\triangle ABC \cong \triangle ADC$	7) SAS