

Using Congruent Triangles

son Objective | NBAT prove that **corresp. parts of congruent triangles are congruent.**

Remember: Congruent triangles have congruent corresponding parts.

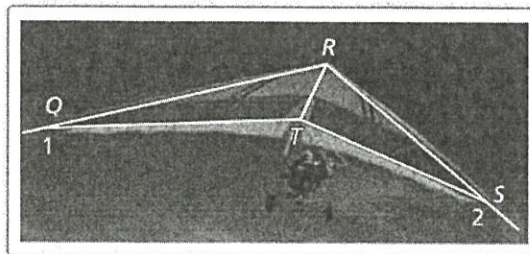
So, if you can prove that two triangles are congruent, then you know that their corresponding parts must be congruent as well!

Examples

1. Explain how you can use the given information to prove that the hang glider parts are congruent.

Given: $\angle 1 \cong \angle 2$, $\angle RTQ \cong \angle RTS$

Prove: $\overline{QT} \cong \overline{ST}$



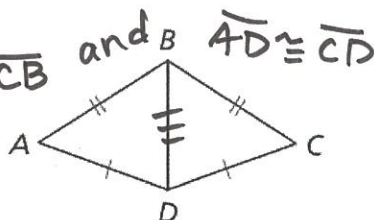
****HINT:** If you can show that $\triangle QRT \cong \triangle SRT$, then you know that $\overline{QT} \cong \overline{ST}$ since these sides are corresponding!

Statements	Reasons
① $\angle 1 \cong \angle 2$, $\angle RTQ \cong \angle RTS$	① given
② $\overline{RT} \cong \overline{RT}$	② reflex. prop. $\cong$
③ $\angle RQT \cong \angle RST$	③ $\cong$ supp. thm (supp. to same $\angle \rightarrow \cong$)
④ $\triangle RQT \cong \triangle RST$	④ AAS $\cong$
⑤ $\overline{QT} \cong \overline{ST}$	⑤ corresp. parts of $\cong \triangle$ s are $\cong$ (CPCTC)

2. Write a two-column proof.

Given: the diagram

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

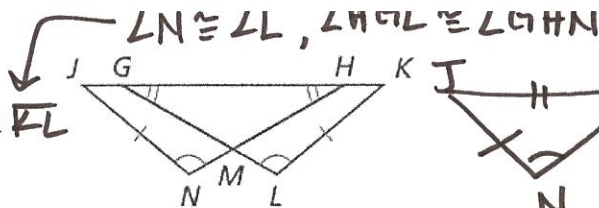


Statements	Reasons
① $\overline{AB} \cong \overline{CB}$, $\overline{AD} \cong \overline{CD}$	① given
② $\overline{BD} \cong \overline{BD}$	② reflex. prop. $\cong$
③ $\triangle ABD \cong \triangle CBD$	③ SSS $\cong$
④ $\angle A \cong \angle C$	④ CPCTC

3. Write a two-column proof.

Given: ~~the diagram~~ $\overline{JN} \cong \overline{KL}$

Prove: $\overline{GK} \cong \overline{HJ}$



Statements

Reasons

① $\overline{JN} \cong \overline{KL}$, $\angle N \cong \angle L$, $\angle HGL \cong \angle GHN$

① given

② $\triangle JHN \cong \triangle KGL$

② AAS $\cong$

③ $\overline{JH} \cong \overline{KL}$

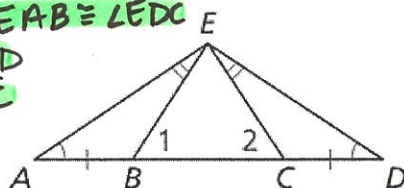
③ CPCTC

4. Write a two-column proof. $\angle EAB \cong \angle EDC$

Given: ~~the diagram~~ $\angle A \cong \angle D$

Prove: $\angle 1 \cong \angle 2$

$\overline{AB} \cong \overline{DC}$



**There are at least TWO different ways to write this proof: one with $\cong$ Δ s and CPCTC, one without. Challenge yourself! Try to write both proofs ☺

Statements

Reasons

① $\angle A \cong \angle D$

① given

② $\triangle ABE \cong \triangle DCE$

② AAS $\cong$

③ $\overline{EB} \cong \overline{EC}$

③ CPCTC

④ $\angle 1 \cong \angle 2$

④ $\Delta \rightarrow \Delta$

Statements

Reasons

① $\angle A \cong \angle D$

① given

② $\angle EBA \cong \angle DCE$

② Third LS Thm

③ $\angle 1 \cong \angle 2$

③ $\cong$ supps. thm