Using Corresponding Parts of Congruent Triangles

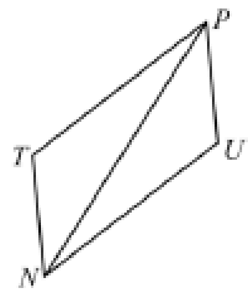
SOL G.6 (2016)

Corresponding parts of congruent triangles are congruent
Corresponding parts of ≅ Δ's are ≅.

Example 1:

Given: $\overline{PT} \parallel \overline{UN}$; $\overline{TN} \parallel \overline{PU}$

Prove: $\overline{PT} \cong \overline{UN}$

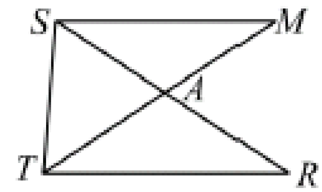


Statements	Reasons
1. $\overline{PT} \parallel \overline{UN}$; $\overline{TN} \parallel \overline{PU}$	1. Given
2. $\angle TPN \cong \angle UNP$; $\angle TNP \cong \angle UPN$	2. Alternate Interior Angles Theorem
3. $\overline{PN} \cong \overline{PN}$	3. Reflexive
4. $\triangle TNP \cong \triangle UPN$	4. ASA
5. $\overline{PT} \cong \overline{UN}$	5. Corresponding parts of ≅ Δ's are ≅.

Practice

Write a two-column proof.

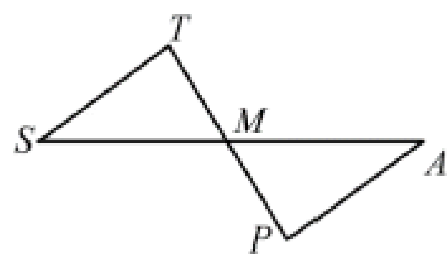
1.



Given: A is the midpoint of $\overline{SR}$ and $\overline{TM}$

Prove: $\overline{SM} \cong \overline{TR}$

2.

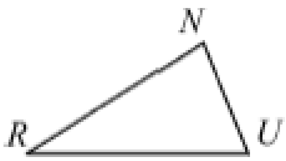


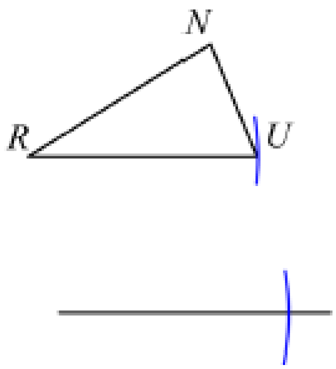
Given: $\overline{TP}$ bisects $\overline{SA}$ and $\overline{ST} \parallel \overline{PA}$

Prove: M is the midpoint of $\overline{TP}$

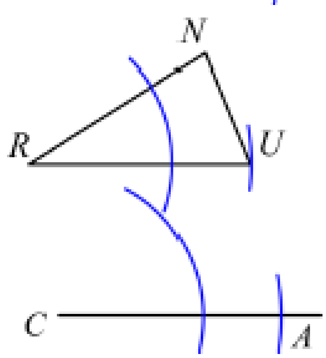
Congruent parts can also be used to construct congruent triangles.

Example 2: Construct ΔCAT such that $\Delta CAT \cong \Delta RUN$.

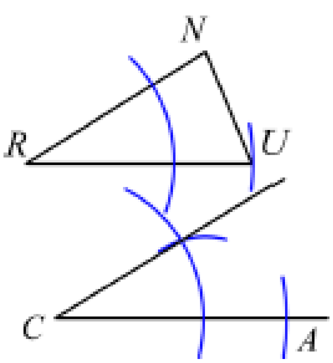




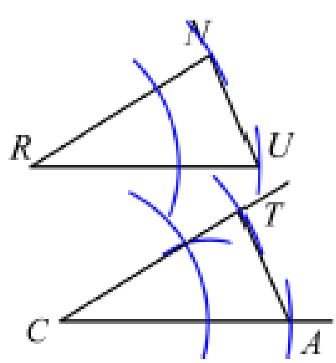
1. Use the compass to measure *RU*. Use this same setting to mark the segment that will become $\overline{CA}$. *This creates a pair of congruent sides.*



2. Construct $\angle C$ congruent to $\angle R$ by drawing an arc through the angle from point *R* and drawing the same arc from *C*.



3. On $\angle R$, use the compass to measure the distance across the arc. Mark the same distance on $\angle C$ and use that point to complete the angle. *This creates a pair of congruent angles.*



4. Use the compass to measure *RN*. Use this same setting to mark the segment that will become $\overline{CT}$. *This creates a pair of congruent sides.*

$\Delta CAT \cong \Delta RUN$
by SAS

3. Construct $\Delta RED \cong \Delta SOX$