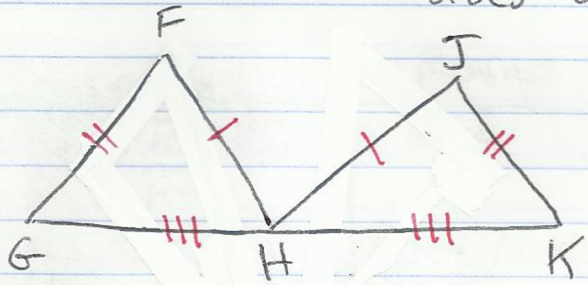
Proving $\cong$ Δs

Congruent Δs { ① corresponding $\angle$s $\cong$. ② corresponding sides $\cong$.

Side-side-side (SSS) → all 3 sets of corresponding sides are $\cong$ → Δs are $\cong$.



Given: $\overline{HF} \cong \overline{HJ}$
$\overline{FG} \cong \overline{JK}$
H is the midpoint of $\overline{GK}$.
Prove: $\Delta GFH \cong \Delta KJH$

Plan: prove Δs $\cong$ by SSS.

Proof: (Flow proof)

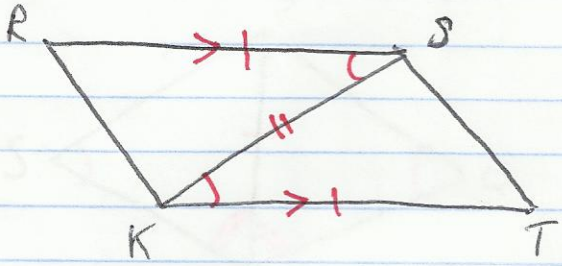
$\boxed{\overline{HF} \cong \overline{HJ}}$ Given

$\boxed{\overline{GH} \cong \overline{HK}}$ Definition of Midpoint

$\boxed{\overline{FG} \cong \overline{JK}}$ Given

$\boxed{\Delta GFH \cong \Delta KJH}$ SSS

Side-Angle-Side (SAS): If two pairs of corresponding sides and their included $\angle$s are congruent, then the $\triangle$s are $\cong$.



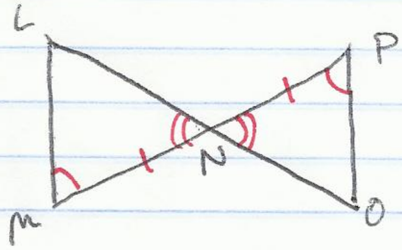
Given: $\overline{RS} \cong \overline{KT}$
$\overline{RS} \parallel \overline{KT}$

Prove: $\triangle RSK \cong \triangle TSK$

Two-column Proof

Statements:	Reasons
① $\overline{RS} \cong \overline{KT}$ S $\overline{RS} \parallel \overline{KT}$	① Given
② $\overline{KS} \cong \overline{KS}$ S	② Reflexive property of $\cong$.
③ $\angle RSK \cong \angle SKT$ A	③ Alternate-Interior $\angle$s theorem
④ $\triangle RSK \cong \triangle TSK$ (order matters)	④ SAS

Angle-Side-Angle (ASA): If 2 angles of a $\triangle$, and their included side are $\cong$ to 2 angles and the included side of another $\triangle$, then the $\triangle$s are $\cong$.

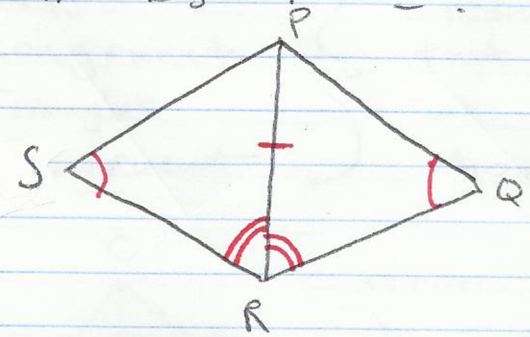


Given: $\angle M \cong \angle P$; $\overline{MN} \cong \overline{NP}$

Prove: $\triangle LMN \cong \triangle OPN$

Statements	Reasons
① $\angle M \cong \angle P$; $\overline{MN} \cong \overline{NP}$	① Given
② $\angle PNO \cong \angle LNM$	② Vertical $\angle$s are $\cong$.
③ $\triangle LMN \cong \triangle OPN$	③ ASA

Angle-Angle-Side (AAS) - If 2 ∠s and the non-included side of a △ are ≅ to 2 ∠s and the non-included side of another △, then the △s are ≅.



Given: ∠S ≅ ∠Q
$\overline{RP}$ bisects ∠SRQ

Prove: △SRP ≅ △QRP

Statements	Reasons
① ∠S ≅ ∠Q $\overline{RP}$ bisects ∠SRQ	① Given
② ∠SRP ≅ ∠QRP	② Definition of bisects
③ $\overline{PR} \cong \overline{PR}$	③ Reflexive Property of ≅.
④ △SRP ≅ △QRP	④ AAS

☆ NOT a way to prove ≅ △s → ~~Side-Side-Angle~~