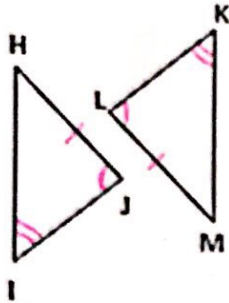


Day 4 - Proving Triangles Congruent Notes

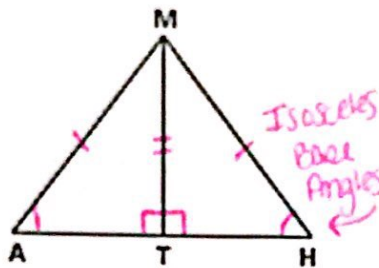
For each diagram, mark it with the given information, add any additional markings that are allowed, decided if they are congruent, and then give the congruence statement.

Given: $\overline{HJ} \cong \overline{LM}$
 $\angle J \cong \angle L$
 $m\angle I = m\angle K$



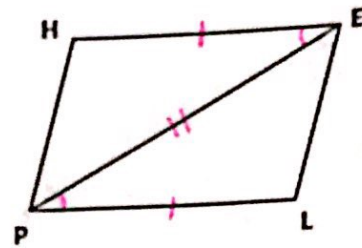
Congruence Rule: AAS
 Statement: $\triangle HIJ \cong \triangle KLM$

Given: $\overline{MT} \perp \overline{AH}$
 $\overline{MA} \cong \overline{MH}$



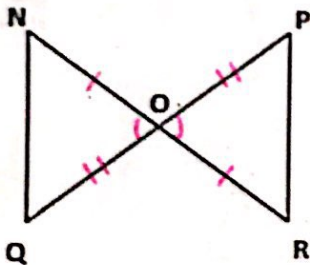
Congruence Rule: AAS
 Statement: $\triangle MAT \cong \triangle MHT$

Given: $\angle HEP \cong \angle LPE$
 $\overline{HE} \cong \overline{PL}$



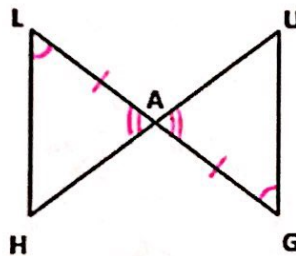
Congruence Rule: SAS
 Statement: $\triangle HEP \cong \triangle LPE$

Given: $\overline{NO} \cong \overline{OR}$
 $\overline{QO} \cong \overline{OP}$



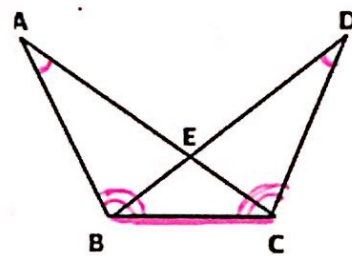
Congruence Rule: SAS
 Statement: $\triangle NOQ \cong \triangle POR$

Given: $\angle A = \angle G$
 $\angle L \cong \angle G$



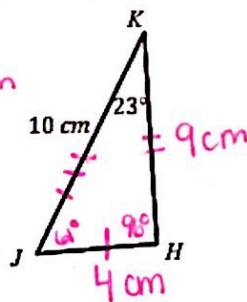
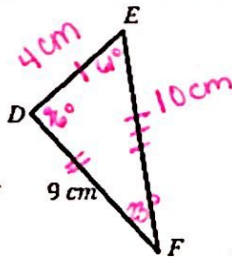
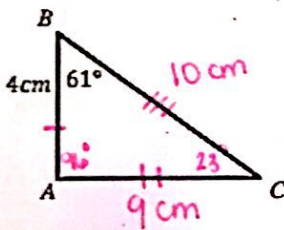
Congruence Rule: ASA
 Statement: $\triangle LAH \cong \triangle GAU$

Given: $\angle A \cong \angle D$
 $\angle ABC \cong \angle DCB$



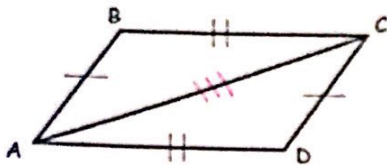
Congruence Rule: AAS
 Statement: $\triangle ABE \cong \triangle DCB$

Given: $\triangle ABC \cong \triangle DEF \cong \triangle HJK$, find the all missing angles and sides.



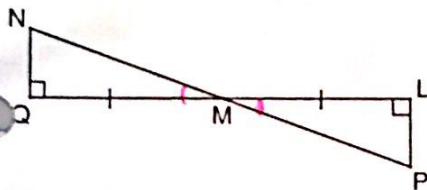
From yesterday, you learned that you only need 3 pieces of information (combination of angles and sides) to determine if two triangles are congruent. Today, we are going to prove two triangles are congruent using two column proofs.

A. Given: $\overline{AB} \cong \overline{CD}$, $\overline{BC} \cong \overline{AD}$
 Prove: $\triangle ABC \cong \triangle CDA$



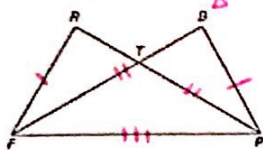
Statements	Reasons
S $\overline{AB} \cong \overline{CD}$	① Given
S $\overline{BC} \cong \overline{AD}$	② Given
S $\overline{CA} \cong \overline{CA}$	③ Reflexive Prop
④ $\triangle ABC \cong \triangle CDA$	④ SSS

B. Given: $\overline{QM} \cong \overline{ML}$ and $\angle QMN \cong \angle LMP$
 Prove: $\triangle NQM \cong \triangle PLM$



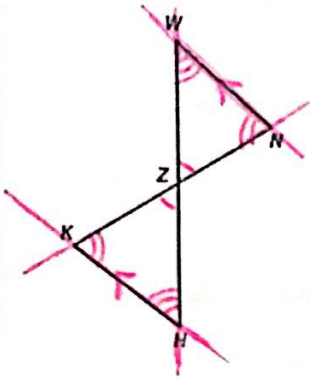
Statements	Reasons
S $\overline{QM} \cong \overline{ML}$	① Given
A $\angle QMN \cong \angle LMP$	② Given
A $\angle Q \cong \angle L$	③ Right \angle 's are \cong
④ $\triangle NQM \cong \triangle PLM$	④ ASA

C. Given: $\overline{RF} \cong \overline{BP}$ and $\overline{BF} \cong \overline{RP}$
 Prove: $\triangle RFP \cong \triangle BPF$



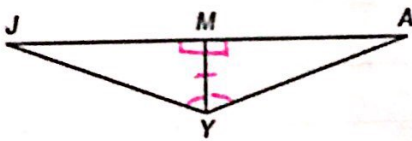
Statements	Reasons
S $\overline{RF} \cong \overline{BP}$	① Given
S $\overline{BF} \cong \overline{RP}$	② Given
S $\overline{FP} \cong \overline{FP}$	③ Reflexive Prop
④ $\triangle RFP \cong \triangle BPF$	④ SSS

D. Given: $\overline{WN} \perp \overline{HK}$
 Prove: $\triangle WNZ \cong \triangle HKZ$?



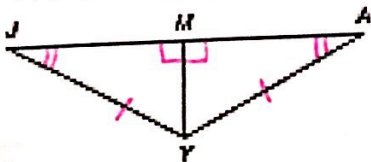
Not enough information to prove

E. Given: $\overline{JA} \perp \overline{MY}$ and \overline{YM} bisects $\angle JYA$
 Prove: $\triangle JYM \cong \triangle AYM$?



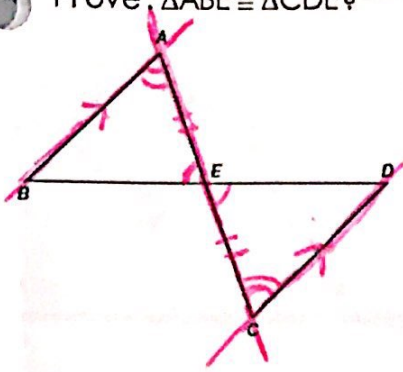
Statements	Reasons
① $\overline{JA} \perp \overline{MY}$	① Given
② $\angle JMY$ & $\angle AMY$ are right \angle 's	② Def of perpendicular
A ③ $\angle JMY \cong \angle AMY$	③ Right angles are \cong
④ \overline{YM} bisects $\angle JYA$	④ Given
A ⑤ $\angle JYM \cong \angle AYM$	⑤ Def of bisects
S ⑥ $\overline{MY} \cong \overline{MY}$	⑥ Reflexive Prop
⑦ $\triangle JYM \cong \triangle AYM$	⑦ ASA

F. Given: $\overline{JA} \perp \overline{MY}$ and $\overline{JY} \cong \overline{AY}$
 Prove: $\triangle JYM \cong \triangle AYM$?



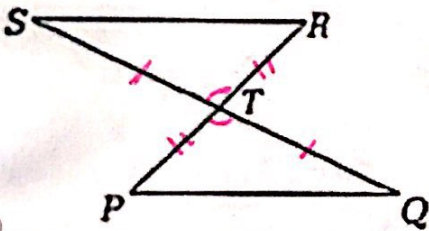
Statements	Reasons
① $\overline{JA} \perp \overline{MY}$	① Given
② $\angle JMY$ & $\angle AMY$ are right \angle 's	② Def. of perpendicular
A ③ $\angle JMY \cong \angle AMY$	③ Right \angle 's are \cong
S ④ $\overline{JY} \cong \overline{AY}$	④ Given
A ⑤ $\angle J \cong \angle A$	⑤ Isosceles Base Angles Thm
⑥ $\triangle JYM \cong \triangle AYM$	⑥ AAS

G. Given: $\overline{AB} \parallel \overline{CD}$ and $\overline{AE} \cong \overline{CE}$
 Prove: $\triangle ABE \cong \triangle CDE$?



	Statements	Reasons
	① $\overline{AB} \parallel \overline{CD}$	① Given
A	② $\angle A \cong \angle C$	② Alt. Int. \angle 's are \cong
S	③ $\overline{AE} \cong \overline{CE}$	③ Given
A	④ $\angle AEB \cong \angle CED$	④ Vertical \angle 's are \cong
	⑤ $\triangle ABE \cong \triangle CDE$	⑤ ASA

H. Given: \overline{SQ} and \overline{PR} bisect each other
 Prove: $\triangle RST \cong \triangle PQT$



	Statements	Reasons
	① \overline{SQ} & \overline{PR} bisect each other	① Given
S	② $\overline{ST} \cong \overline{TQ}$	② Def. of Bisectors
S	③ $\overline{PT} \cong \overline{TR}$	③ Def. of Bisectors
A	④ $\angle STR \cong \angle QTP$	④ Vertical \angle 's are \cong
	⑤ $\triangle RST \cong \triangle PQT$	⑤ SAS