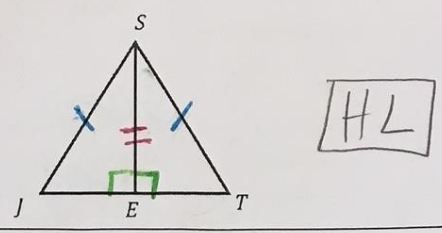


Congruent Triangles Proof Practice

For each exercise below, mark the diagram, then write a proof. You may or may not need all of the lines provided.

1. Given: $\overline{JT} \perp \overline{ES}$
 $\overline{JS} \cong \overline{TS}$ ← correction:

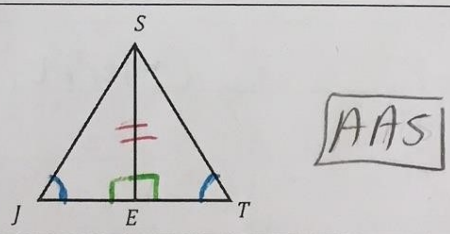


Prove: $\triangle JES \cong \triangle TES$

H
L

Statements	Reasons
1. $\overline{JT} \perp \overline{ES}$	1. Given
2. $\angle SEJ$ & $\angle SET$ are right \angle s	2. 2 \perp segments \rightarrow form right \angle s
3. $\triangle SEJ$ & $\triangle SET$ are right \triangle s	3. \triangle has a right $\angle \rightarrow$ it is right \triangle
4. $\overline{JS} \cong \overline{TS}$	4. Given
5. $\overline{SE} \cong \overline{SE}$	5. Reflexive POC
6. $\triangle JES \cong \triangle TES$	6. Corr HL of 2 \triangle s $\cong \rightarrow \triangle$ s are \cong
7.	7.
8.	8.

2. Given: $\overline{JT} \perp \overline{ES}$
 $\angle J \cong \angle T$



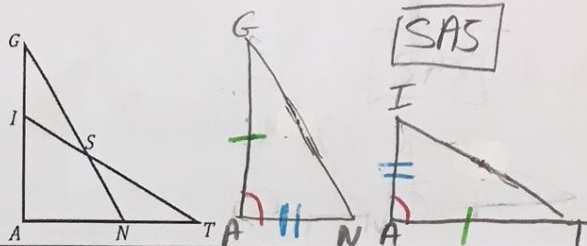
Prove: $\triangle JES \cong \triangle TES$

A
A
S

Statements	Reasons
1. $\overline{JT} \perp \overline{ES}$	1. Given
2. $\angle JES$ & $\angle TES$ are right \angle s	2. 2 \perp segments \rightarrow 2 right \angle s
3. $\angle JES \cong \angle TES$	3. 2 right \angle s \rightarrow 2 $\cong \angle$ s
4. $\angle J \cong \angle T$	4. Given
5. $\overline{SE} \cong \overline{SE}$	5. Reflexive POC
6. $\triangle JES \cong \triangle TES$	6. Corr AAS of 2 \triangle s $\cong \rightarrow \triangle$ s are \cong
7.	7.

3. Given: $\overline{GA} \cong \overline{TA}$
 $\overline{AN} \cong \overline{AI}$

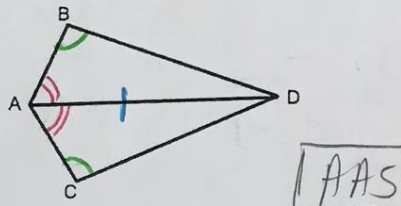
Prove: $\triangle GAN \cong \triangle TAI$



Statements	Reasons
1. $\overline{GA} \cong \overline{TA}$	1. Given
2. $\overline{AN} \cong \overline{AI}$	2. Given
3. $\angle A \cong \angle A$	3. Reflexive POC
4. $\triangle GAN \cong \triangle TAI$	4. Corr SAS of 2 $\triangle s \cong \rightarrow \triangle s$ are \cong
5.	5.
6.	6.
7.	7.

4. Given: $\angle B \cong \angle C$
 \overline{AD} bisects $\angle BAC$

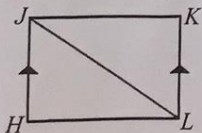
Prove: $\triangle ABD \cong \triangle ACD$



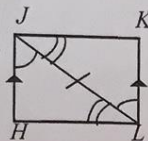
Statements	Reasons
1. $\angle B \cong \angle C$	1. Given
2. \overline{AD} bisects $\angle BAC$	2. Given
3. $\angle BAD \cong \angle CAD$	3. If ray bisects an $\angle \rightarrow 2 \cong \angle s$
4. $\overline{AD} \cong \overline{AD}$	4. Reflexive POC
5. $\triangle ABD \cong \triangle ACD$	5. Corr AAS of 2 $\triangle s \cong \rightarrow \triangle s$ are \cong
6.	6.
7.	7.

5. **Error Analysis:** The student made a mistake. Read their work to find their error. Then, explain the error.

Is $\triangle JKL \cong \triangle LHJ$?



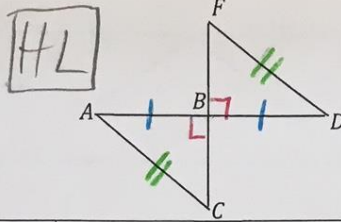
Student's Answer: Yes. After marking the diagram (see right), the triangles can be proved congruent by ASA.



Explain the error:

Cannot mark $\angle KTL \cong \angle HLJ$

6. Given: B is the midpoint of \overline{AD}
 $\overline{FC} \perp \overline{AD}$
 $\overline{FD} \cong \overline{CA}$

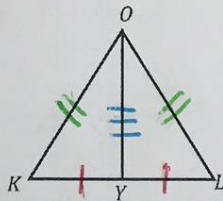


Prove: $\triangle CAB \cong \triangle FDB$

Statements	Reasons
1. B is midpoint of \overline{AD}	1. Given
L $\overline{AB} \cong \overline{DB}$	2. If point is midpt of segment \rightarrow 2 \cong segments
3. $\overline{FC} \perp \overline{AD}$	3. Given
4. $\angle FBD$ & $\angle CBA$ are right \angle s	4. 2 segments are $\perp \rightarrow$ form right \angle s
5. $\triangle FBD$ & $\triangle CBA$ are right \triangle s	5. a \triangle has a right $\angle \rightarrow$ it is a right \triangle
H $\overline{FD} \cong \overline{CA}$	6. Given
7. $\triangle CAB \cong \triangle FDB$	7. Corr HL of 2 right \triangle s $\cong \rightarrow$ \triangle s are \cong

7. Given: \overline{OY} bisects \overline{KL}
 $\overline{KO} \cong \overline{LO}$ *← correction LO*

SSS

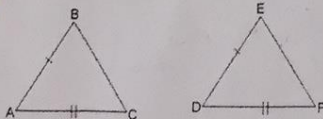


Prove: $\triangle KOY \cong \triangle LOY$

Statements	Reasons
1. \overline{OY} bisects \overline{KL}	1. Given
S $\overline{KY} \cong \overline{LY}$	2. If segment bisects segment \rightarrow 2 \cong segments
S $\overline{KO} \cong \overline{LO}$	3. Given
S $\overline{OY} \cong \overline{OY}$	4. Reflexive POC
5. $\triangle KOY \cong \triangle LOY$	5. Corr SSS of 2 \triangle s $\cong \rightarrow$ \triangle s are \cong
6.	6.
7.	7.

8. Error Analysis: The student made a mistake. Read their work to find their error. Then, explain the error.

Is $\triangle ABC \cong \triangle DEF$?

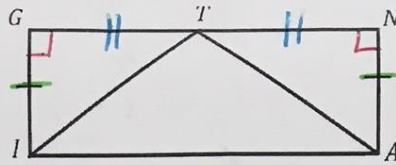


Student's Answer: Yes, the \triangle 's can be proved \cong by SSS. $\overline{BC} \cong \overline{EF}$ because if 2 sides in 1 \triangle are \cong to 2 sides in a 2nd \triangle , then the 3rd sides are \cong (3rd Sides Thm).

Explain the error:

There is no such theorem as 3rd Sides Thm. There is not enough info to prove \triangle s \cong

9. Given: \overline{IT} bisects \overline{GN}
 $\overline{GI} \cong \overline{NA}$
 $\overline{IG} \perp \overline{GN}$
 $\overline{AN} \perp \overline{NG}$

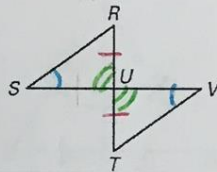


SAS

Prove: $\triangle GIT \cong \triangle NAT$

Statements	Reasons
1. $\overline{GI} \cong \overline{NA}$	1. Given
2. \overline{IT} bisects \overline{GN}	2. Given
3. $\overline{GT} \cong \overline{NT}$	3. Segment bisects a segment \rightarrow 2 \cong segments
4. $\overline{IG} \perp \overline{GN}$, $\overline{AN} \perp \overline{NG}$	4. Given
5. $\angle G$ & $\angle N$ are right \angle s	5. 2 lines are $\perp \rightarrow$ form right \angle s
6. $\angle G \cong \angle N$	6. 2 right \angle s \rightarrow 2 \cong \angle s
7. $\triangle GIT \cong \triangle NAT$	7. Corr SAS of 2 Δ s $\cong \rightarrow$ Δ s are \cong

10. Given: $\angle S \cong \angle V$
 U is the midpoint of \overline{RT}



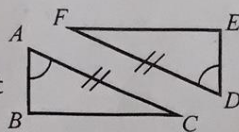
AAS

Prove: $\triangle RSU \cong \triangle TVU$

Statements	Reasons
1. $\angle S \cong \angle V$	1. Given
2. U is midpoint of \overline{RT}	2. Given
3. $\overline{RU} \cong \overline{TU}$	3. midpoint of a segment \rightarrow 2 \cong segments
4. $\angle RUS$ & $\angle TVU$ are vertical- \angle s	4. Given by diagram
5. $\angle RUS \cong \angle TVU$	5. 2 vertical \angle s \rightarrow 2 \cong \angle s
6. $\triangle RSU \cong \triangle TVU$	6. Corr. AAS of 2 Δ s $\cong \rightarrow$ Δ s are \cong
7.	7.

11. Error Analysis: The student made a mistake. Read their work to find their error. Then, explain the error.

In order to use the ASA Postulate to prove these Δ 's congruent, what is the third pair of parts that needs to be congruent?



Student's Answer: $\angle B \cong \angle E$

Explain the error:

If $\angle B \cong \angle E$, you could use AAS to show \cong Δ s. You need $\angle F \cong \angle C$ to use ASA b/c those are the included \angle s of the \cong sides.