

Geometry – Congruent Triangle Proof fill-in-the-blank HW

For each problem, do the following:

- Show the given information in the diagram (using tick marks to show congruent side and arcs to show congruent angles).
- Show any other congruent parts you notice (from vertical angles, sides shared in common, or alternate interior angles with parallel lines).
- Give the postulate or theorem that proves the triangles congruent (SSS, SAS, ASA, AAS, HL).
- Finally, fill in the blanks to complete the proof.

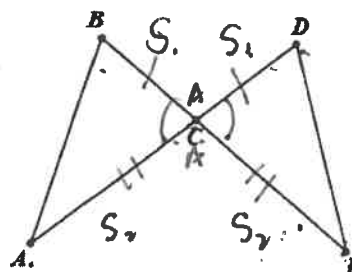
1.

Given: $\overline{BC} \cong \overline{DC}$; $\overline{AC} \cong \overline{EC}$
 Prove: $\triangle BCA \cong \triangle DCE$

facts or conclusions

justify

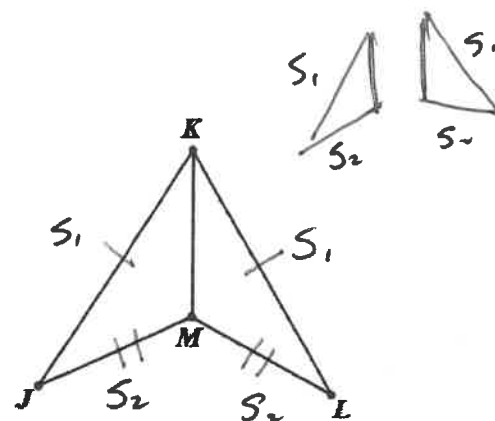
Statements	Reasons
1. $\overline{BC} \cong \overline{DC}$; $\overline{AC} \cong \overline{EC}$	1. Given
2. $\angle BCA \cong \angle DCE$	2. Vertical \angle s Theorem
3. $\triangle BCA \cong \triangle DCE$	3. SAS



2.

Given: $\overline{JK} \cong \overline{LK}$; $\overline{JM} \cong \overline{LM}$
 Prove: $\triangle KJM \cong \triangle KLM$

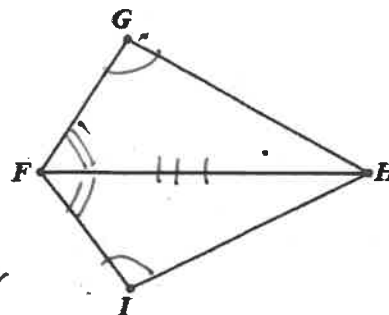
Statements	Reasons
1. $\overline{JK} \cong \overline{LK}$; $\overline{JM} \cong \overline{LM}$	1. Given
2. $\overline{KM} \cong \overline{KM}$	2. Reflexive Prop.
3. $\triangle KJM \cong \triangle KLM$	3. SSS



3.

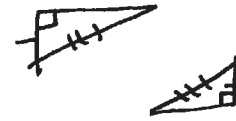
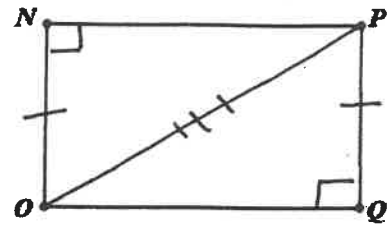
Given: $\angle G \cong \angle I$; \overline{FH} bisects $\angle GFI$
 Prove: $\triangle GFH \cong \triangle IFH$

Statements	Reasons
1. $\angle G \cong \angle I$; \overline{FH} bisects $\angle GFI$	1. Given
2. $\angle GFH \cong \angle IFH$	2. Def. of angle bisector
3. $\overline{FH} \cong \overline{FH}$	3. Reflexive Prop.
4. $\triangle GFH \cong \triangle IFH$	4. AAS



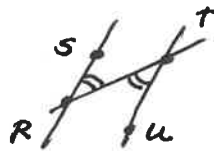
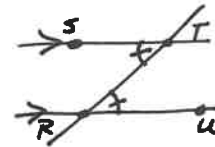
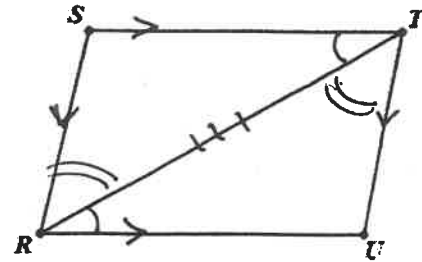
4. Given: $\angle N$ and $\angle Q$ are right angles; $\overline{NO} = \overline{PQ}$
 Prove: $\triangle ONP \cong \triangle PQO$

Statements	Reasons
1. $\angle N$ and $\angle Q$ are right angles	1. Given
2. $\triangle ONP$ and $\triangle PQO$ are right triangles	2. Def. of right triangle
3. $\overline{OP} \cong \overline{OP}$	3. Reflexive Prop.
4. $\overline{NO} = \overline{PQ}$	4. Given
5. $\triangle ONP \cong \triangle PQO$	5. HL



5. Given: $\overline{ST} \parallel \overline{RU}$; $\overline{SR} \parallel \overline{TU}$
 Prove: $\triangle SRT \cong \triangle UTR$

Statements	Reasons
1. $\overline{ST} \parallel \overline{RU}$	1. Given
2. $\angle STR \cong \angle TRU$	2. If lines \parallel , alt. int. \angle s \cong
3. $\overline{SR} \parallel \overline{TU}$	3. Given
4. $\angle SRT \cong \angle UTR$	4. If lines \parallel , alt. int. \angle s \cong
5. $\overline{RT} \cong \overline{RT}$	5. Reflexive Prop.
6. $\triangle SRT \cong \triangle UTR$	6. ASA



6. Given: $\angle W$ and $\angle Y$ are right angles; $\overline{VX} = \overline{ZX}$; X is the midpoint of \overline{WY}
 Prove: $\triangle VWX \cong \triangle ZYX$

Statements	Reasons
1. $\angle W$ and $\angle Y$ are right angles	1. Given
2. $\triangle VWX$ and $\triangle ZYX$ are rt. \triangle s.	2. Def. of right triangle
3. $\overline{VX} = \overline{ZX}$; X is the midpoint of \overline{WY}	3. Given
4. $\overline{WX} \cong \overline{XY}$	4. Def. of midpoint
5. $\triangle VWX \cong \triangle ZYX$	5. HL

