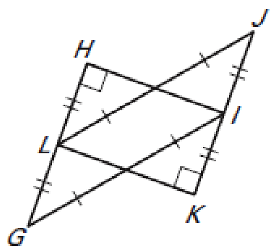
Geometry H
Section 4.4 HL Homework

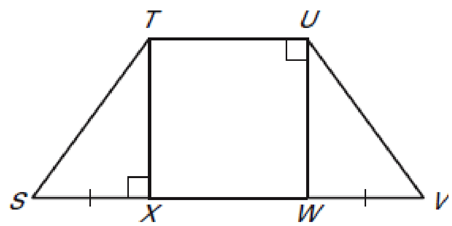
Name: ________________________________
Date: ____________________ Period: _____

Decide whether enough information is given to prove that the triangles are congruent. If there is enough information, state the congruence postulate or theorem you would use (SSS, SAS, or HL).

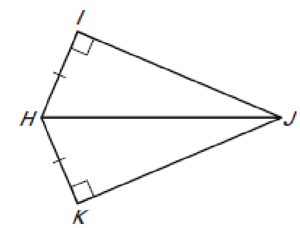
1. $\triangle GHI$, $\triangle JKL$



2.

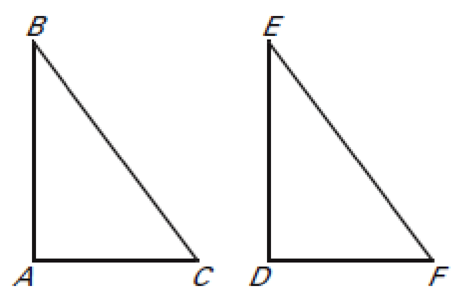


3.



State the third congruence that is needed to prove that ΔABC ≅ ΔXYZ using the given postulate or theorem.

4. **GIVEN:** $\angle B \cong \angle E$, $\overline{BC} \cong \overline{EF}$, ________ $\cong$ ________
Use the SAS Congruence Theorem



5. **GIVEN:** $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, ________ $\cong$ ________
Use the SSS Congruence Postulate

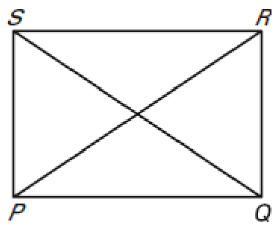
6. **GIVEN:** $\overline{AC} \cong \overline{DF}$, $\angle A$ *is a right angle and* $\angle A \cong \angle D$, _________ $\cong$ ________
Use the H-L Congruence Theorem

7. Suppose P is the midpoint of $\overline{OQ}$ in $\triangle OQS$. If $\overline{SP} \perp \overline{OQ}$, explain why $\triangle SPO \cong \triangle SPQ$. (Hint: You may want to draw a diagram ☺)

Complete the following Proofs.

8. **Given:** $\overline{QS} \cong \overline{PR}$, $\overline{PS} \perp \overline{RS}$, $\overline{QR} \perp \overline{RS}$

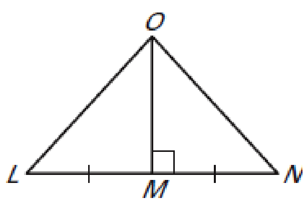
Prove: $\Delta PRS \cong \Delta QSR$



Statements	Reasons
1.	**1.**
2.	**2.**
3.	**3.**
4.	**4.**
5. $\overline{RS} \cong \overline{SR}$	**5.**
6. $\Delta PRS \cong \Delta QSR$	**6.**

9. **Given:** $\overline{OM} \perp \overline{LN}$, $\overline{ML} \cong \overline{MN}$

Prove: $\Delta OML \cong \Delta OMN$

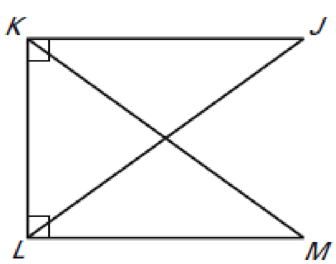


Statements	Reasons
1.	**1.**
2.	**2.**
3.	**3.**
4.	**4.**
5.	**5.**
6. $\Delta ABC \cong \Delta DCB$	**6.**

10. **Given:** $\angle$JKL & $\angle$MLK are right angles

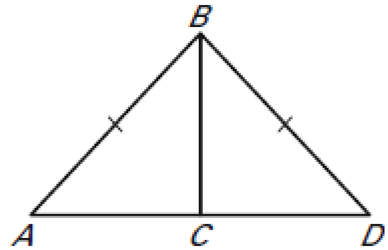
$\overline{JL} \cong \overline{MK}$

Prove: $\Delta JKL \cong \Delta MLK$



Statements	Reasons
1.	**1.**
2.	**2.**
3.	**3.**
4.	**4.**
5. $\Delta JKL \cong \Delta MLK$	**5.**

11. **Given:** $\overline{AB} \cong \overline{DB},\ \overline{BC} \perp \overline{AD}$
Prove: $\Delta ABC \cong \Delta DBC$



Statements	Reasons
1.	**1.**
2.	**2.**
3.	**3.**
4.	**4.**
5.	**5.**
6.	**6.**

Answer Key

1) Yes, by H-L
2) Yes, by SAS
3) Yes, by H-L
4) $\overline{AB} \cong \overline{DE}$
5) $\overline{AC} \cong \overline{DF}$
6) $\overline{BC} \cong \overline{EF}$
7) Since $\overline{SP} \cong \overline{SP}$ by the reflexive property, $\overline{OP} \cong \overline{QP}$ by definition of midpoint, and $\angle SPO$ and $\angle SPQ$ are right angles by definition of perpendicular lines, then $\triangle SPO \cong \triangle SPQ$ by SAS
8) 1. $\overline{QS} \cong \overline{PR}$; Given 2. $\overline{PS} \perp \overline{RS}, \overline{QR} \perp \overline{RS}$; Given 3. $\angle PSR$ & $\angle QRS$ are right angles; Def of perpendicular lines 4. $\triangle PSR$ & $\triangle QRS$ are right triangles; Def of right triangles 5. Reflexive 6. HL
9) 1. $\overline{OM} \perp \overline{LN}$; Given 2. $\angle OML$ & $\angle OMN$ are right angles; Def of perpendicular lines 3. $\triangle OML$ & $\triangle OMN$ are right triangles; Def of right triangles 4. $\overline{ML} \cong \overline{MN}$; Given 5. $\overline{OM} \cong \overline{OM}$; Reflexive 6. SAS
10) 1. $\angle$JKL & $\angle$ MLK are right angles; Given 2. ΔJKL & ΔMLK are right triangles; Def of right triangles 3. $\overline{JL} \cong \overline{MK}$; Given 4. $\overline{KL} \cong \overline{KL}$; Reflexive 5. HL
11) 1. $\overline{AB} \cong \overline{DB}$; Given 2. $\overline{CB} \cong \overline{CB}$; Reflexive 3. $\overline{BC} \perp \overline{AD}$; Given 4. $\angle BCA$ & $\angle BCD$ are right angles; Definition of perpendicular lines 5. $\triangle BCA$ & $\triangle BCD$ are right triangles; Definition of right triangles 6. $\triangle ABC \cong \triangle DBC$; HL