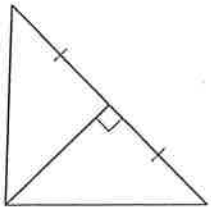
Kuta Software - Infinite Geometry

Name_____

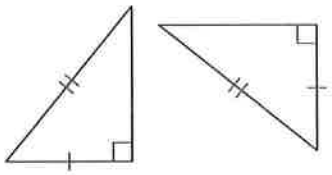
Right Triangle Congruence

Date_____ Period____

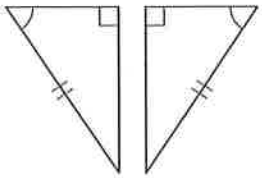
State if the two triangles are congruent. If they are, state how you know.

1) 

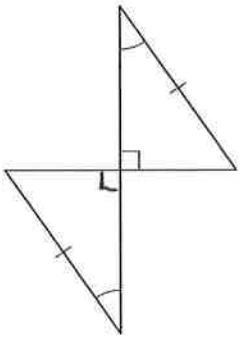
Yes, LL

2) 

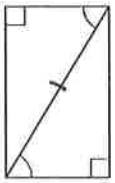
Yes, HL

3) 

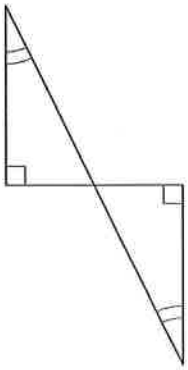
Yes, HA

4) 

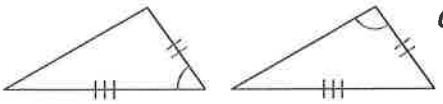
Yes, HA

5) 

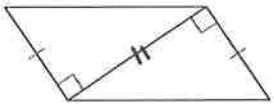
Yes, HA

6) 

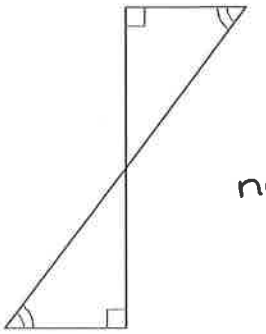
Not Congruent

7) 

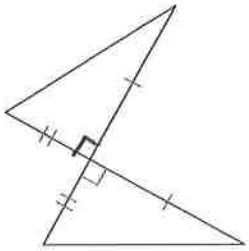
not congruent

8) 

Yes, LL

9) 

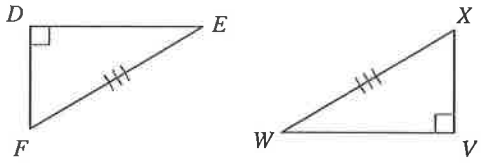
not congruent

10) 

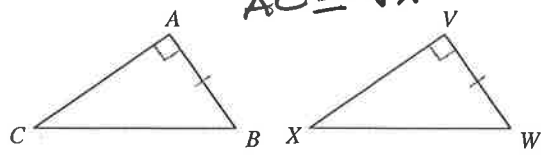
Yes, LL

State what additional information is required in order to know that the triangles are congruent for the reason given.

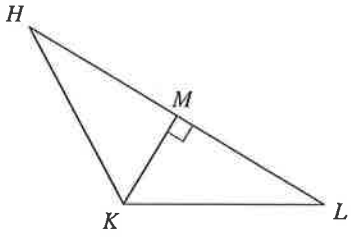
11) HL $\overline{DF} \cong \overline{VX}$ or $\overline{DE} \cong \overline{VW}$



12) LL $\overline{AC} \cong \overline{VX}$

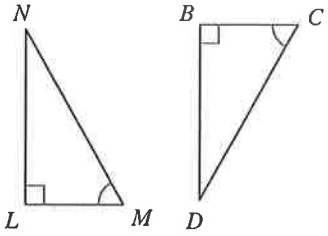


13) LL



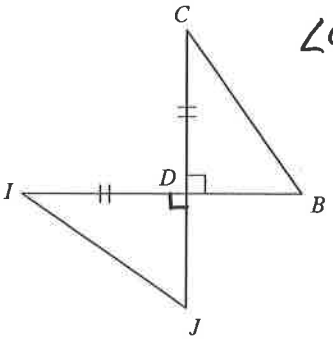
$\overline{MH} \cong \overline{ML}$

14) HA



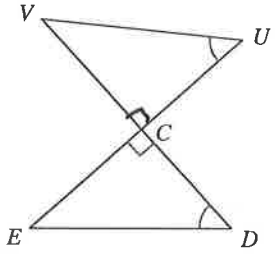
$\overline{NM} \cong \overline{DC}$

15) LA



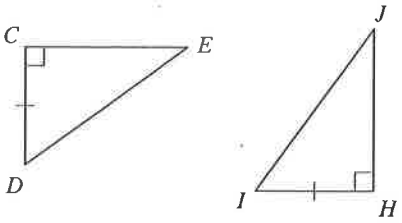
$\angle C \cong \angle I$ or $\angle B \cong \angle J$

16) HA



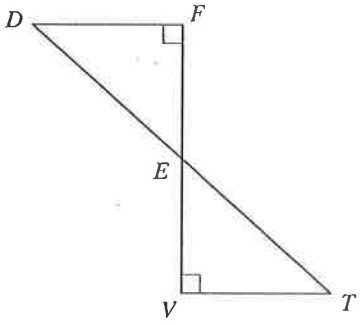
$\overline{VU} \cong \overline{ED}$

17) HL



$\overline{ED} \cong \overline{JI}$

18) LA



$\overline{FE} \cong \overline{VE}$ or $\overline{FD} \cong \overline{VT}$

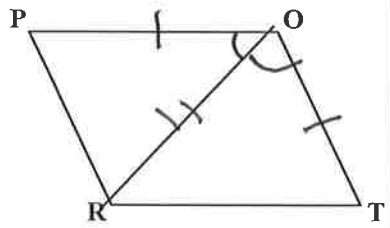
Geometry
Worksheet-Congruent Triangles III

Name _____
Date _____ **Period** _____

Label the drawing with the given information and state why the triangles are congruent. Use all eight theorems (SSS, SAS, ASA, AAS, HA, HL, LL, LA)

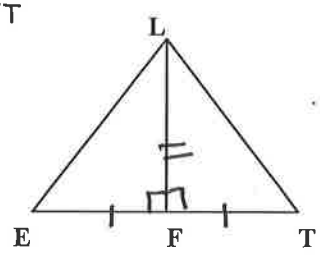
1. $\Delta POR \cong \Delta$ TOR by SAS

$\angle POR \cong \angle TOR$
$\overline{PO} \cong \overline{TO}$



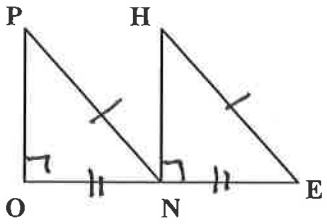
2. $\Delta LFE \cong \Delta$ LFT by LL

$\overline{LF}$ is the $\perp$ bisector of $\overline{ET}$



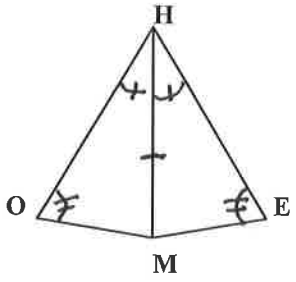
3. $\Delta PNO \cong \Delta$ HEN by HL

N is the midpoint of $\overline{OE}$
$\overline{PN} \cong \overline{HE}$
$\overline{PO} \perp \overline{ON}$
$\overline{HN} \perp \overline{NE}$



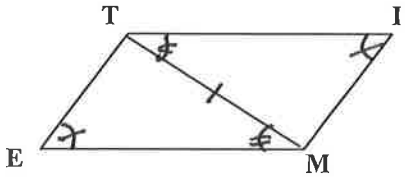
4. $\Delta HOM \cong \Delta$ HEM by AAS

$\overline{HM}$ bisects $\angle OHE$
$\angle O \cong \angle E$



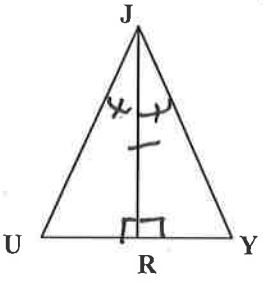
5. $\Delta MIT \cong \Delta$ TEM by AAS

$\angle I \cong \angle E$
$\overline{TI} \parallel \overline{ME}$



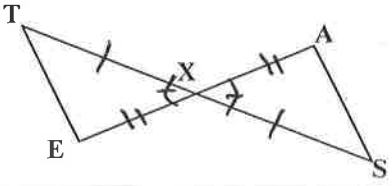
6. $\Delta RUJ \cong \Delta$ RYJ by LA

$\overline{JR} \perp \overline{UY}$
$\overline{JR}$ bisects $\angle UJY$



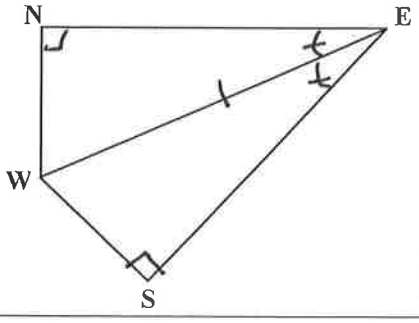
7. $\Delta XTE \cong \Delta$ XSA by SAS

X is the midpoint of
both $\overline{TS}$ and $\overline{AE}$



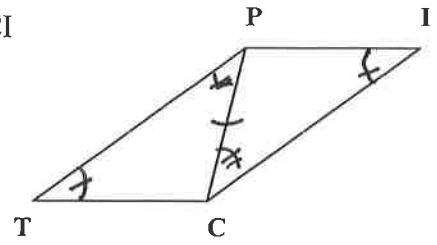
8. $\Delta NEW \cong \Delta$ SEW by HA

$\overline{NW} \perp \overline{NE}$
$\overline{SW} \perp \overline{SE}$
$\angle NEW \cong \angle SEW$



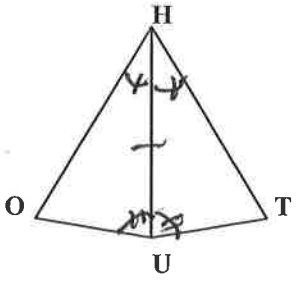
9. $\Delta PTC \cong \Delta$ CIP by AAS

$\angle T \cong \angle I$
$\angle TPC \cong \angle PCI$



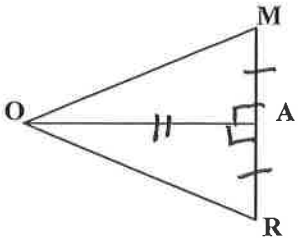
10. $\Delta TUH \cong \Delta$ OUH by ASA

$\overline{HU}$ bisects $\angle OHT$
$\overline{UH}$ bisects $\angle OUT$



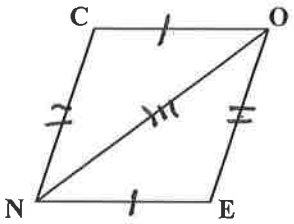
11. $\Delta MAO \cong \Delta$ RAO by LL

$\overline{MA} \perp \overline{OA}$
A is the midpoint of $\overline{MR}$



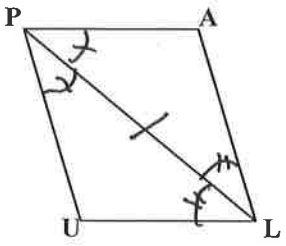
12. $\Delta NOC \cong \Delta$ OEN by SSS

$\overline{CO} \cong \overline{NE}$
$\overline{CN} \cong \overline{OE}$



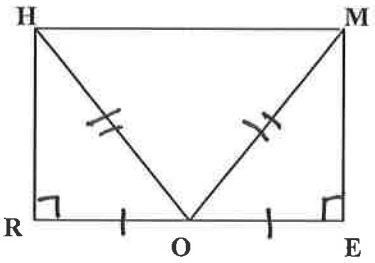
13. $\Delta ULP \cong \Delta$ ALP by ASA

$\overline{PL}$ bisects $\angle UPA$
$\overline{LP}$ bisects $\angle ALU$



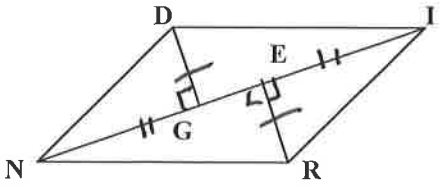
14. $\Delta HRO \cong \Delta$ MEO by HL

$\overline{HR} \perp \overline{RE}$
$\overline{ME} \perp \overline{ER}$
O is the midpoint of $\overline{RE}$
ΔHMO is isos. with base $\overline{HM}$



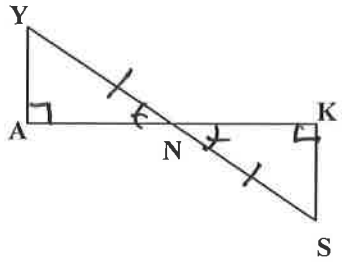
15. $\Delta DGI \cong \Delta$ REN by LL

$\overline{DG} \cong \overline{ER}$
$\overline{NE} \cong \overline{IG}$
$\overline{DG} \perp \overline{NI}$
$\overline{RE} \perp \overline{NI}$



16. $\Delta ANY \cong \Delta$ KNS by HA

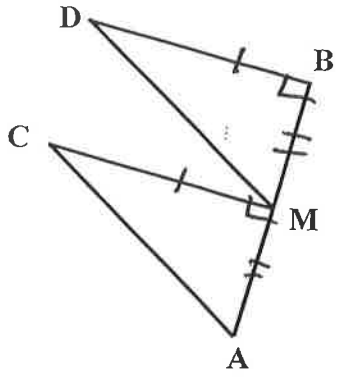
$\overline{YA} \perp \overline{AK}$
$\overline{SK} \perp \overline{KA}$
N is the midpoint of $\overline{YS}$



Given: $\overline{AB} \perp \overline{CM}$, $\overline{AB} \perp \overline{DB}$

M is the midpoint of $\overline{AB}$, $\overline{CM} \cong \overline{DB}$

Prove: $\Delta AMC \cong \Delta MBD$



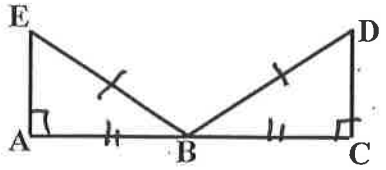
Statements	Reasons
1. $\overline{AB} \perp \overline{CM}$, $\overline{AB} \perp \overline{DB}$	1. Given
2. $\angle AMC$ + $\angle B$ are rt $\angle$'s	2. Def of $\perp$
3. ΔAMC + ΔMBD are rt Δ's	3. Def of rt Δ
4. M is m.p. of $\overline{AB}$	4. Given
✓ 5. $\overline{MA} \cong \overline{MB}$	5. Def of m.p.
✓ 6. $\overline{CM} \cong \overline{DB}$	6. Given

7. $\Delta AMC \cong \Delta MBD$ LL

Given: $\overline{EB} \cong \overline{DB}$, $\angle A$ and $\angle C$ are right angles

B is the midpoint of $\overline{AC}$

Prove: $\Delta BEA \cong \Delta BDC$

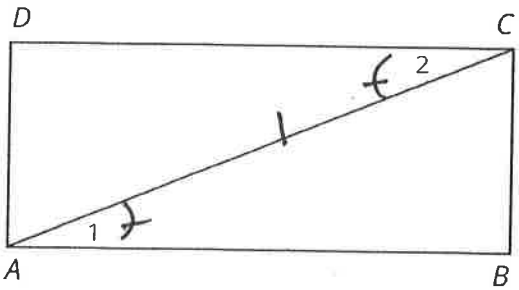


Statements	Reasons
1. $\angle A$ + $\angle C$ are rt $\angle$'s	1. Given
2. ΔBEA + ΔBDC are rt Δ's	2. Def of rt Δ
✓ 3. $\overline{EB} \cong \overline{DB}$	3. Given
4. B is m.p. of $\overline{AC}$	4. Given
✓ 5. $\overline{AB} \cong \overline{CB}$	5. Def of m.p.
6. $\Delta BEA \cong \Delta BDC$	6. HL

Given: $\angle D$, $\angle B$ are rt. $\angle$'s

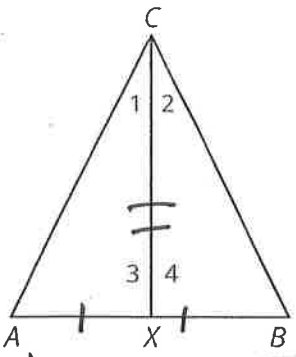
$\overline{DC} \parallel \overline{AB}$

Prove: $\triangle ADC \cong \triangle CBA$



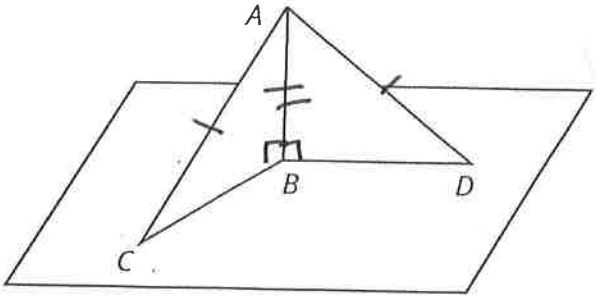
Statements	Reasons
1. $\angle D$, $\angle B$ are rt $\angle$'s	1. Given
2. ΔADC + ΔCBA are rt Δ's	2. Def of rt Δ
3. $\overline{DC} \parallel \overline{AB}$	3. Given
4. $\angle 1 \cong \angle 2$	4. Alternate Interior Angles Theorem
5. $\overline{AC} \cong \overline{AC}$	5. Reflexive
6. $\Delta ADC \cong \Delta CBA$	6. HA

Given: $\angle 3$, $\angle 4$ rt. $\angle$'s
$AX = BX$
Prove: $\triangle AXC \cong \triangle BXC$



Statements	Reasons
1. $\angle 3, \angle 4$ rt $\angle$'s	1. Given
2. $\triangle AXC$ & $\triangle BXC$ are rt $\triangle$'s	2. Def of rt $\triangle$
3. $AX = BX$	3. Given
4. $\overline{AX} \cong \overline{BX}$	4. Def of congruent segments
5. $\overline{CX} \cong \overline{CX}$	5. Reflexive
6. $\triangle AXC \cong \triangle BXC$	6. LL

Given: $\overline{AB} \perp \overline{BD}$
$\overline{AB} \perp \overline{BC}$
$AC = AD$
Prove: $\triangle ABC \cong \triangle ABD$



Statements	Reasons
1. $\overline{AB} \perp \overline{BD}$, $\overline{AB} \perp \overline{BC}$	1. Given
2. $\angle ABD$ & $\angle ABC$ are rt $\angle$'s	2. Def of $\perp$
3. $\triangle ABC$ and $\triangle ABD$ are rt $\triangle$'s	3. Def of rt $\triangle$
4. $AC = AD$	4. Given
5. $\overline{AC} \cong \overline{AD}$	5. Def of $\cong$ segments
6. $\overline{AB} \cong \overline{AB}$	6. Reflexive
7. $\triangle ABC \cong \triangle ABD$	7. HL