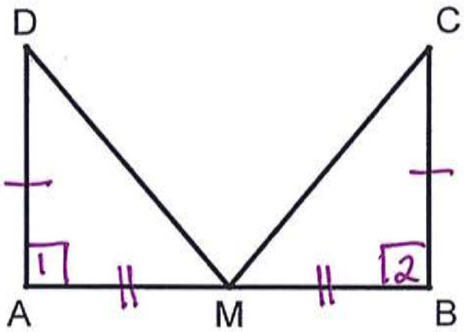
Name: KEY Date: ______
Common Core Geometry Period: ______

Unit 5 Review – Triangle Congruence HONORS

1.

Given: $\overline{DA} \perp \overline{AB}, \overline{CB} \perp \overline{AB}, \overline{DA} \cong \overline{CB}$, M is the midpoint of $\overline{AB}$

Prove: $\Delta ADM \cong \Delta BCM$

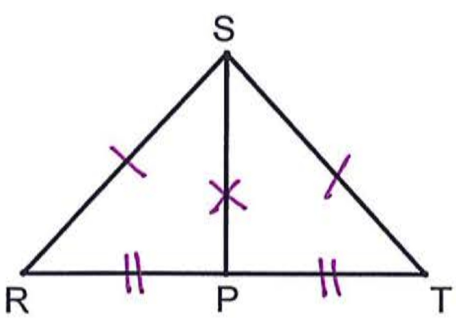


S	R
① $\overline{DA} \perp \overline{AB}$, $\overline{CB} \perp \overline{AB}$ $\overline{DA} \cong \overline{CB}$ M is mdpt of $\overline{AB}$	① Given
② ∠1 & ∠2 are rt ∠s	② ⊥ lines form rt ∠s
③ ∠1 ≅ ∠2	③ All rt ∠s are ≅
④ $\overline{AM} \cong \overline{BM}$	④ Mdpt creates 2 ≅ segments
⑤ $\Delta ADM \cong \Delta BCM$	⑤ SAS

2.

Given: $\overline{SR} \cong \overline{ST}, \overline{RP} \cong \overline{TP}$

Prove: $\Delta SRP \cong \Delta STP$



S	R
① $\overline{SR} \cong \overline{ST}$ $\overline{RP} \cong \overline{TP}$	① Given
② $\overline{SP} \cong \overline{SP}$	② Reflexive
③ $\Delta SRP \cong \Delta STP$	③ SSS

3.

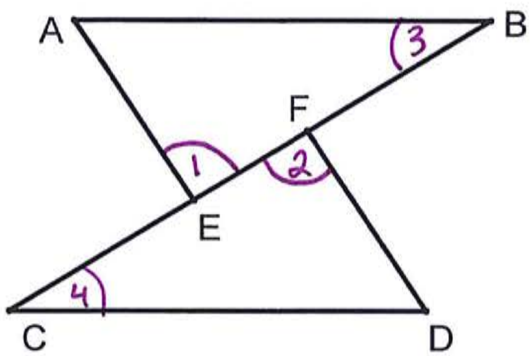
Given: $\overline{CEFB}$,

$\overline{CF} \cong \overline{BE}$,

$\overline{AB} \parallel \cancel{\overline{CB}}$, $\overline{CD}$

$\angle AEB \cong \angle DFE$

Prove: $\Delta ABE \cong \Delta DCF$



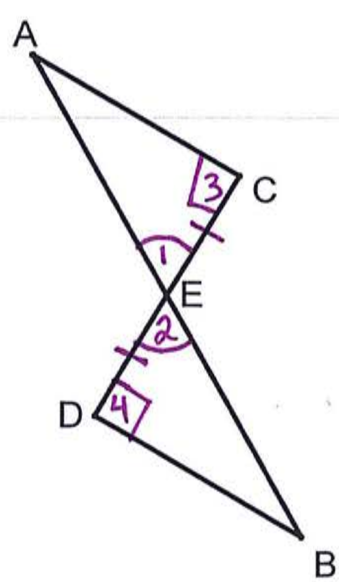
S	R
① $\overline{CEFB}$, $\overline{CF} \cong \overline{BE}$, $\overline{AB} \parallel \overline{CD}$, $\angle AEB \cong \angle DFE$	① Given
② $\angle 3 \cong \angle 4$	② If 2 ∥ lines are cut by a transversal, alt int ∠s ≅
③ $\Delta ABE \cong \Delta DCF$	③ ASA

4.

Given: $\overline{AB}$ and $\overline{CD}$ intersect at E, $\overline{BA}$ bisects $\overline{CD}$

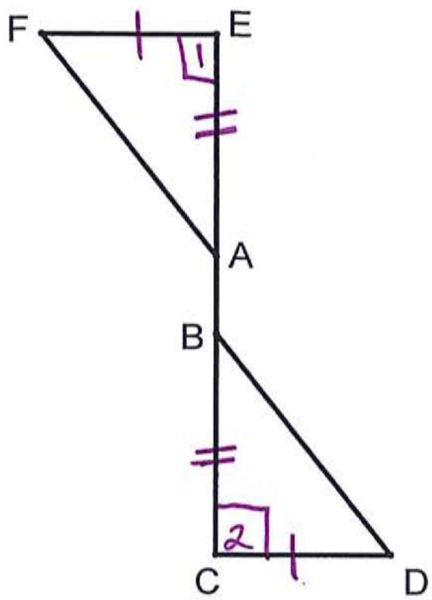
$\overline{CA} \perp \overline{CD}$, $\overline{BD} \perp \overline{CD}$

Prove: $\Delta ACE \cong \Delta BDE$



S	R
① $\overline{AB}$ & $\overline{CD}$ intersect at E, $\overline{BA}$ bisects $\overline{CD}$, $\overline{CA} \perp \overline{CD}$, $\overline{BD} \perp \overline{CD}$	① Given
② E is mdpt of $\overline{CD}$	② A seg bisector creates a mdpt
③ $\overline{CE} \cong \overline{DE}$	③ Mdpt creates 2 ≅ segments
④ $\angle 1 \cong \angle 2$	④ Vertical ∠s are ≅
⑤ $\angle 3$ & $\angle 4$ are rt ∠s	⑤ ⊥ lines form rt ∠s
⑥ $\angle 3 \cong \angle 4$	⑥ All rt ∠s are ≅
⑦ $\Delta ACE \cong \Delta BDE$	⑦ ASA

5.

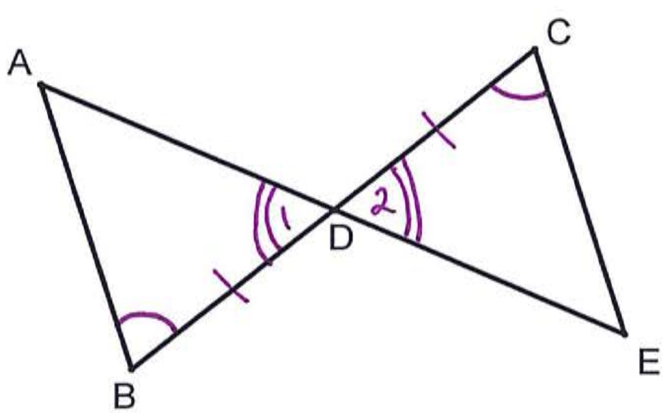


S	R
① $\overline{FE} \cong \overline{DC}$, $\overline{EA} \cong \overline{CB}$, $\overline{FE} \perp \overline{CE}$, $\overline{CD} \perp \overline{CE}$	① Given
② $\angle 1$ & $\angle 2$ are rt $\angle$s	② $\perp$ lines form rt $\angle$s
③ $\angle 1 \cong \angle 2$	③ All rt $\angle$s are $\cong$
④ $\Delta FEA \cong \Delta DCB$	④ SAS

Given: $\overline{FE} \cong \overline{DC}, \overline{EA} \cong \overline{CB}, \overline{FE} \perp \overline{CE}, \overline{CD} \perp \overline{CE}$

Prove: $\Delta FEA \cong \Delta DCB$

6.

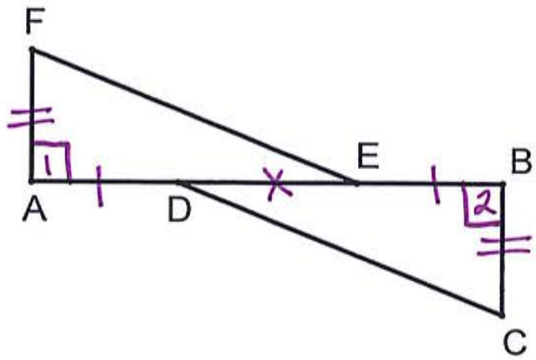


S	R
① $\overline{AE}$ bisects $\overline{CB}$, $\angle C \cong \angle B$	① Given
② D is mdpt of $\overline{CB}$	② Segment bisector creates a mdpt.
③ $\overline{BD} \cong \overline{CD}$	③ Mdpt creates 2 $\cong$ segments
④ $\angle 1 \cong \angle 2$	④ Vertical $\angle$s are $\cong$
⑤ $\Delta ABD \cong \Delta ECD$	⑤ ASA

Given: $\overline{AE}$ bisects $\overline{CB}$ at D, $\angle C \cong \angle B$

Prove: $\Delta ABD \cong \Delta ECD$

7.



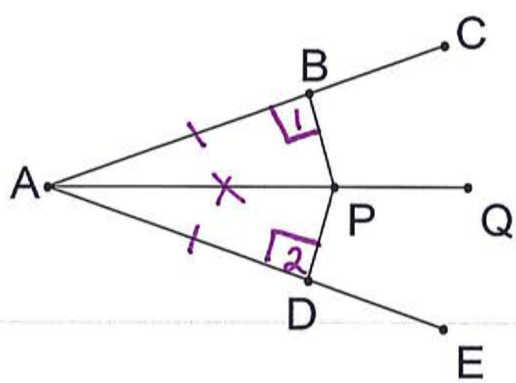
Given: $\overline{AF} \perp \overline{AB}, \overline{CB} \perp \overline{AB}, \overline{AD} \cong \overline{BE},$

$\overline{AF} \cong \overline{BC}$

Prove: $\Delta AFE \cong \Delta BCD$ and $\overline{AF} \parallel \overline{BC}$

S	R
① $\overline{AF} \perp \overline{AB}$, $\overline{CB} \perp \overline{AB}$, $\overline{AD} \cong \overline{BE}$, $\overline{AF} \cong \overline{BC}$	① Given
② $\angle 1$ & $\angle 2$ are rt $\angle$s	② $\perp$ lines form rt $\angle$s
③ $\angle 1 \cong \angle 2$	③ All rt $\angle$s are $\cong$
④ $\overline{DE} \cong \overline{ED}$	④ Reflexive
⑤ $\overline{AD} + \overline{DE} = \overline{BE} + \overline{ED}$ $\therefore \overline{AE} \cong \overline{BD}$	⑤ Addition
⑥ $\Delta AFE \cong \Delta BCD$	⑥ SAS
⑦ $\overline{AF} \parallel \overline{BC}$	⑦ If Alt Int $\angle$s are $\cong$, the lines are $\parallel$

8.

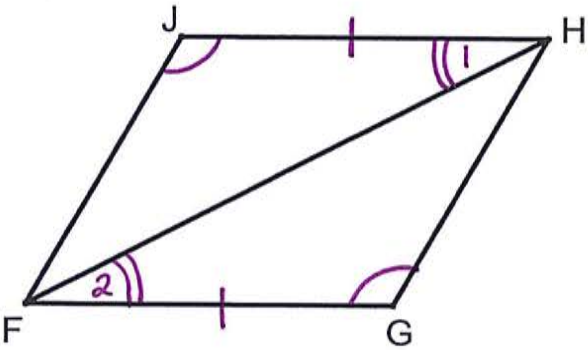


Given: $\overline{PB} \perp \overline{AC}$, $\overline{PD} \perp \overline{AE}$, $\overline{AB} \cong \overline{AD}$

Prove: BP = DP

S	R
① $\overline{PB} \perp \overline{AC}$, $\overline{PD} \perp \overline{AE}$, $\overline{AB} \cong \overline{AD}$	① Given
② $\angle 1$ & $\angle 2$ are rt $\angle$s	② $\perp$ lines form rt $\angle$s
③ $\angle 1 \cong \angle 2$	③ All rt $\angle$s are $\cong$
④ $\overline{AP} \cong \overline{AP}$	④ Reflexive
⑤ ΔABP & ΔADP are rt Δs	⑤ Rt Δs have 1 rt $\angle$
⑥ $\Delta ABP \cong \Delta ADP$	⑥ HL
⑦ BP = DP	⑦ Corresponding Parts of Congruent Δs are = in measure

9.

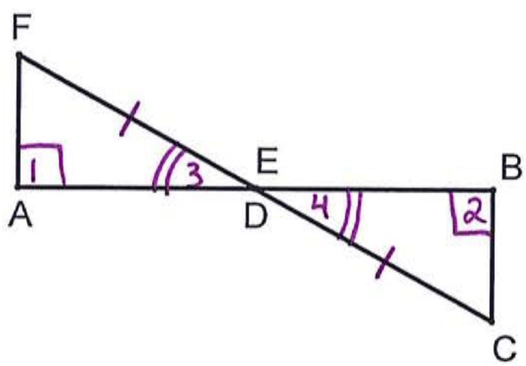


Given: $m\angle J = m\angle G$, JH = GF, $\overline{JH} \parallel \overline{FG}$

Prove: $\Delta JFH \cong \Delta GHF$

S	R
① $m\angle J = m\angle G$ $JH = GF$ $\overline{JH} \parallel \overline{FG}$	① Given
② $\angle 1 \cong \angle 2$	② If 2 ∥ lines are cut by a transversal, alt int ∠s ≅
③ $\Delta JHF \cong \Delta GFH$	③ SAS

10.



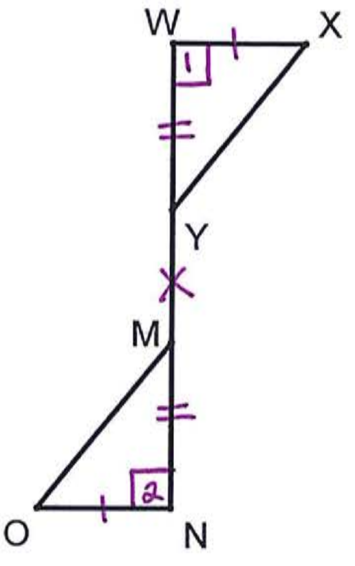
Given: $\overline{AB}$ bisects $\overline{CF}$, $\overline{AF} \perp \overline{AB}$, $\overline{CB} \perp \overline{AB}$

Prove: $\overline{CF}$ bisects $\overline{AB}$

S	R
① $\overline{AB}$ bisects $\overline{CF}$ $\overline{AF} \perp \overline{AB}$ $\overline{CB} \perp \overline{AB}$	① Given
② E (or D) is the mdpt of $\overline{CF}$	② A segment bisector creates a mdpt.
③ $\overline{FE} \cong \overline{CE}$	③ A mdpt creates 2 ≅ segments
④ ∠1 & ∠2 are rt ∠s	④ ⊥ lines form rt ∠s
⑤ $\angle 1 \cong \angle 2$	⑤ All rt ∠s are ≅
⑥ $\angle 3 \cong \angle 4$	⑥ Vertical ∠s are ≅
⑦ $\Delta FAD \cong \Delta CBD$	⑦ AAS
⑧ $\overline{AD} \cong \overline{BD}$	⑧ CPCTC
⑨ E (or D) is mdpt $\overline{AB}$	⑨ A mdpt creates 2 ≅ segments

⑨ $\overline{CF}$ bisects $\overline{AB}$	⑨ A segment bisector creates a mdpt

11.

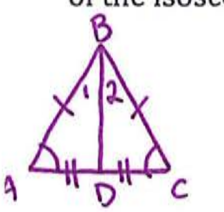


Given: $\overline{WN} \perp \overline{WX}, \overline{WN} \perp \overline{ON}, \overline{WM} \cong \overline{NY},$ $\overline{ON} \cong \overline{XW}$

Prove: $\overline{OM} \cong \overline{XY}$

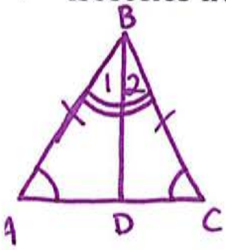
S	R
① $\overline{WN} \perp \overline{WX}$, $\overline{WN} \perp \overline{ON}$, $\overline{WM} \cong \overline{NY}$, $\overline{ON} \cong \overline{XW}$	① Given
② $\angle 1$ & $\angle 2$ are rt $\angle$s	② $\perp$ lines form rt $\angle$s
③ $\angle 1 \cong \angle 2$	③ All rt $\angle$s are $\cong$
④ $\overline{MY} \cong \overline{YM}$	④ Reflexive
⑤ $\overline{WM} - \overline{MY} \cong \overline{NY} - \overline{YM}$ $\therefore \overline{WY} \cong \overline{NM}$	⑤ Subtraction
⑥ $\triangle MON \cong \triangle YXW$	⑥ SAS
⑦ $\overline{OM} \cong \overline{XY}$	⑦ Corresponding Parts of $\cong$ $\triangle$s are $\cong$

12. Prove that the median drawn to the base of an isosceles triangle is also the angle bisector of the vertex of the isosceles triangle.



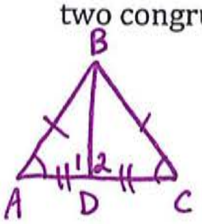
S	R
① $\overline{AB} \cong \overline{CB}$	① An Iso $\triangle$ has 2 $\cong$ sides
② $\angle A \cong \angle C$	② An Iso $\triangle$ has 2 $\cong$ $\angle$s
③ D is the mdpt of $\overline{AC}$	③ A median creates a mdpt
④ $\overline{AD} \cong \overline{CD}$	④ A mdpt creates 2 $\cong$ segments
⑤ $\triangle ABD \cong \triangle CBD$	⑤ SAS
⑥ $\angle 1 \cong \angle 2$	⑥ Corresponding Parts of $\cong$ $\triangle$s are $\cong$
⑦ $\overline{BD}$ is an $\angle$ bisector of $\angle ABC$	⑦ An $\angle$ bisector creates 2 $\cong$ $\angle$s

13. Prove that the angle bisector drawn to the vertex of an isosceles triangle is also a median of the isosceles triangle.



S	R
① $\overline{AB} \cong \overline{CB}$	① An Iso Δ has 2 $\cong$ sides
② $\angle A \cong \angle C$	② An Iso Δ has 2 $\cong$ $\angle$s
③ $\angle 1 \cong \angle 2$	③ An $\angle$ bisector creates 2 $\cong$ $\angle$s
④ $\Delta ABD \cong \Delta CBD$	④ ASA
⑤ $\overline{AD} \cong \overline{CD}$	⑤ Corresponding Parts of $\cong$ Δs are $\cong$
⑥ D is mdpt of $\overline{AC}$	⑥ A mdpt creates 2 $\cong$ segments
⑦ $\overline{BD}$ is a median of $\overline{AC}$	⑦ A median creates a mdpt.

14. Prove that the median drawn to the base of an isosceles triangle divides the isosceles triangle into two congruent ***right*** triangles.



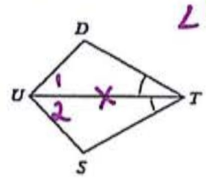
S	R
① $\overline{AB} \cong \overline{CB}$	① An Iso Δ has 2 $\cong$ sides
② $\angle A \cong \angle C$	② An Iso Δ has 2 $\cong$ $\angle$s
③ D is mdpt of $\overline{AC}$	③ A median creates a mdpt
④ $\overline{AD} \cong \overline{CD}$	④ A mdpt creates 2 $\cong$ segments
⑤ $\Delta ABD \cong \Delta CBD$	⑤ SAS
⑥ $\angle 1 \cong \angle 2$	⑥ Corresponding Parts of $\cong$ Δs are $\cong$
⑦ $\angle 1$ & $\angle 2$ are supplementary	⑦ $\angle$s that form a straight line are supp.
⑧ $\angle 1$ & $\angle 2$ are rt $\angle$s	⑧ 2 $\cong$ $\angle$s that are supp are rt $\angle$s
⑨ ΔABD & ΔCBD are rt Δs	⑨ A rt Δ has 1 rt $\angle$

A

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

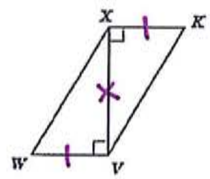
11) ASA

$\angle 1 \cong \angle 2$



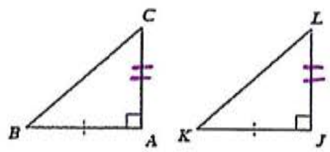
12) SAS

$\overline{WV} \cong \overline{KX}$



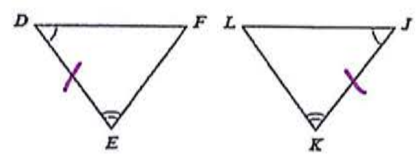
13) SAS

$\overline{CA} \cong \overline{LJ}$



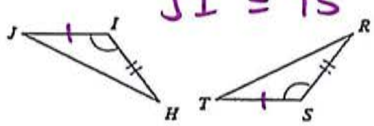
14) ASA

$\overline{DE} \cong \overline{JK}$



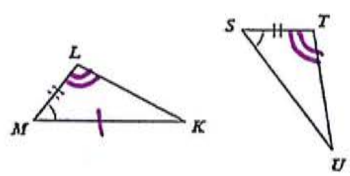
15) SAS

$\overline{JI} \cong \overline{TS}$



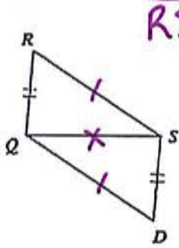
16) ASA

$\angle L \cong \angle T$



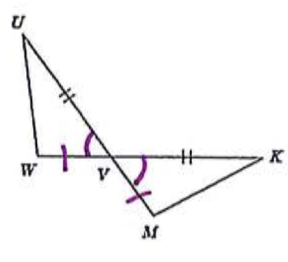
17) SSS

$\overline{RS} \cong \overline{DQ}$



18) SAS

$\overline{WV} \cong \overline{MV}$



B

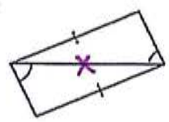
Kuta Software - Infinite Geometry

Name________________________

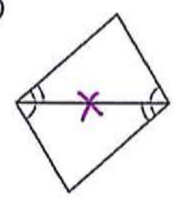
SSS, SAS, ASA, and AAS Congruence

Date________________ Period____

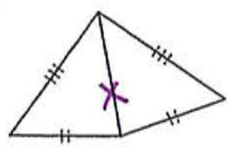
State if the two triangles are congruent. If they are, state how you know.

1)


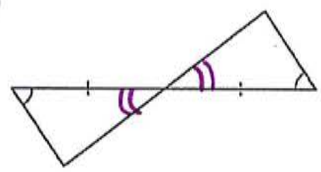
No

2)


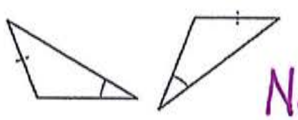
ASA

3)


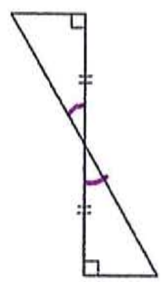
SSS

4)


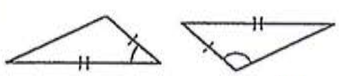
ASA

5)


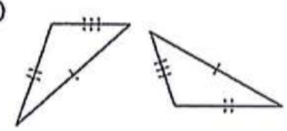
No

6)


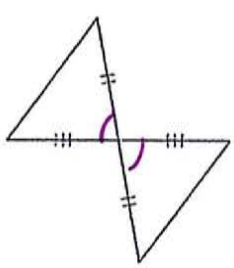
ASA

7)


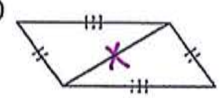
No

8)


SSS

9)


SAS

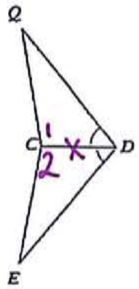
10)


SSS

C

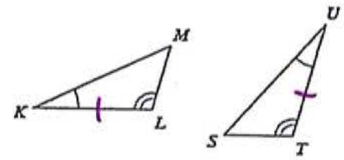
State what additional information is required in order to know that the triangles are congruent for the reason given.

11) ASA



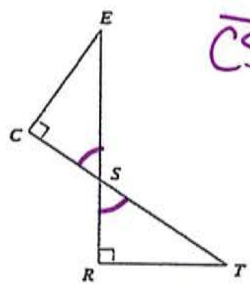
$\angle 1 \cong \angle 2$

12) ASA



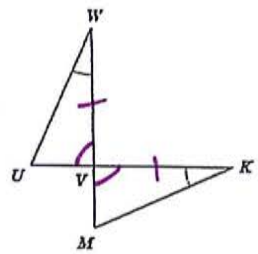
$\overline{KL} \cong \overline{UT}$

13) ASA



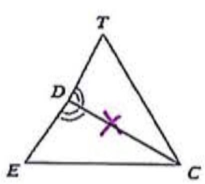
$\overline{CS} \cong \overline{RS}$

14) ASA



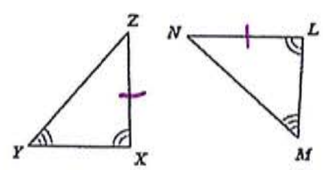
$\overline{WV} \cong \overline{KV}$

15) AAS



$\angle E \cong \angle T$

16) AAS

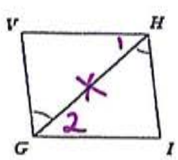


$\overline{ZX} \cong \overline{NL}$

OR

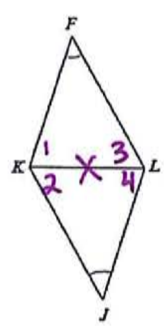
$\overline{ZY} \cong \overline{NM}$

17) ASA



$\angle 1 \cong \angle 2$

18) AAS



$\angle 1 \cong \angle 4$

OR

$\angle 2 \cong \angle 3$

D

Kuta Software - Infinite Geometry

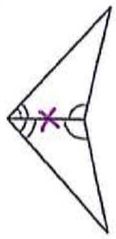
Name______________________

ASA and AAS Congruence

Date______________ Period____

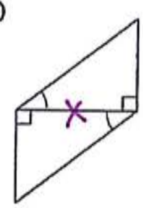
State if the two triangles are congruent. If they are, state how you know.

1)



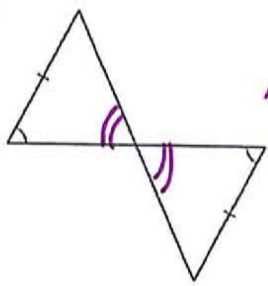
ASA

2)



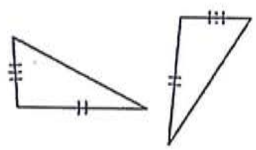
ASA

3)



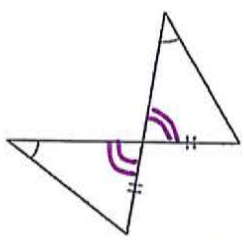
AAS

4)



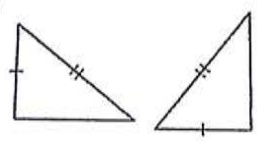
No

5)



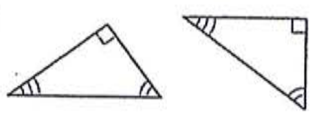
AAS

6)



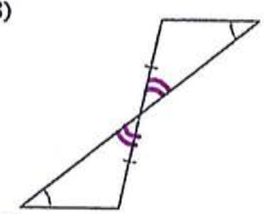
No

7)



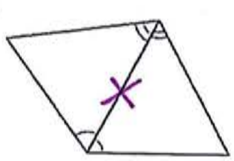
No

8)



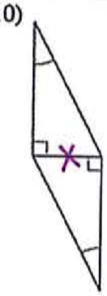
AAS

9)



ASA

10)

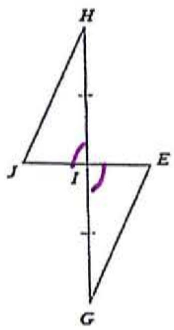


AAS

E

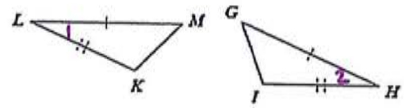
State what additional information is required in order to know that the triangles are congruent for the reason given.

11) SAS



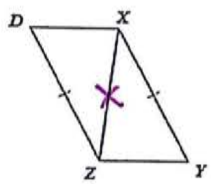
$\overline{JI} \cong \overline{EI}$

12) SAS



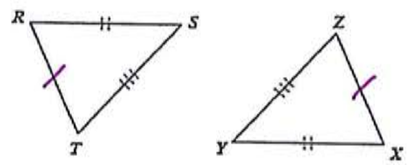
$\angle L \cong \angle H$

13) SSS



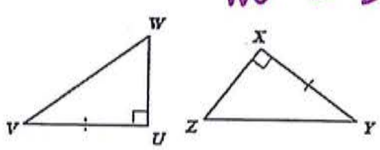
$\overline{DX} \cong \overline{YZ}$

14) SSS



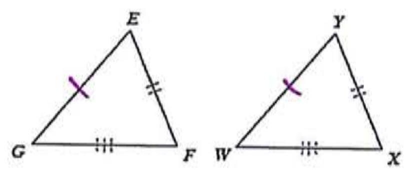
$\overline{RT} \cong \overline{XZ}$

15) SAS



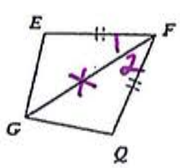
$\overline{WU} \cong \overline{ZX}$

16) SSS



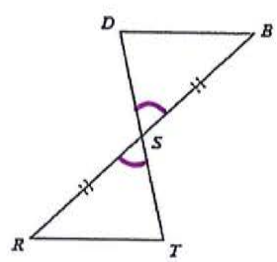
$\overline{GE} \cong \overline{WY}$

17) SAS



$\angle 1 \cong \angle 2$

18) SAS



$\overline{DS} \cong \overline{TS}$

F

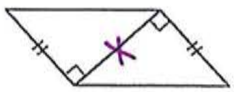
Kuta Software - Infinite Geometry

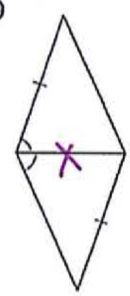
Name______________________________

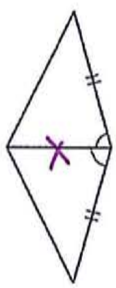
SSS and SAS Congruence

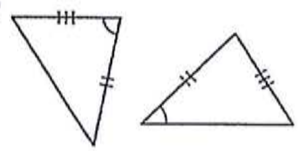
Date________________ Period____

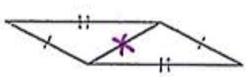
State if the two triangles are congruent. If they are, state how you know.

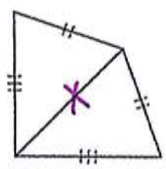
1)  SAS

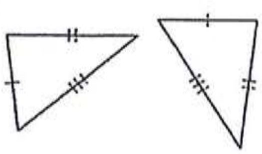
2)  No

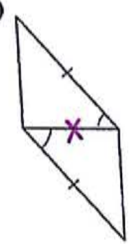
3)  SAS

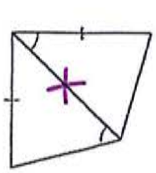
4)  No

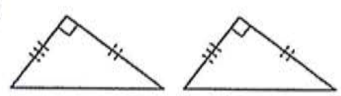
5)  SSS

6)  SSS

7)  SSS

8)  SAS

9)  No

10)  SAS