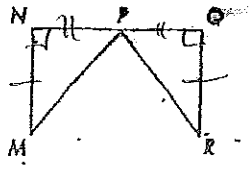
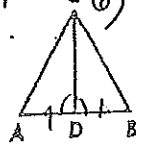
Name _____ (1)

(2) Given: $\triangle NPM$ and $\triangle QPR$
$\angle N$ and $\angle Q$ are right angles
P is the midpoint of $\overline{NQ}$
$\overline{NM} \cong \overline{QR}$
Prove: $\triangle NPM \cong \triangle QPR$



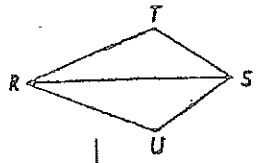
S	R
1) $\angle N$ & $\angle Q$ rt. $\angle$'s	1) Given
2) $\angle N \cong \angle Q$	2) Rt $\angle$'s thm
3) P midpt of $\overline{NQ}$	3) ~~Given~~ Given
4) $\overline{NP} \cong \overline{QP}$	4) Defn. midpt.
5) $\overline{NM} \cong \overline{QR}$	5) Given
	6) SAS

(4) Given: D is the midpoint of $\overline{AB}$
$\angle CDA \cong \angle CDB$
Prove: $\triangle ADC \cong \triangle BDC$



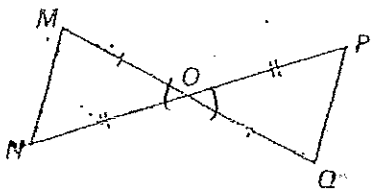
S	R
1) D is midpt of $\overline{AB}$	1) Given
2) $\overline{AD} \cong \overline{BD}$	2) Defn. midpt.
3) $\angle CDA \cong \angle CDB$	3) Given
4) $\overline{CD} \cong \overline{CD}$	4) Reflexive
5) $\triangle ADC \cong \triangle BDC$	5) SAS

(5) Given: $\overline{RT} \cong \overline{RU}$
$\overline{TS} \cong \overline{US}$
Prove: $\triangle RTS \cong \triangle RUS$



S	R
1) $\overline{RT} \cong \overline{RU}$, $\overline{TS} \cong \overline{US}$	1) Given
2) $\overline{RS} \cong \overline{RS}$	2) Reflexive
3) $\triangle RTS \cong \triangle RUS$	3) SSS

(9) Given: O is the midpoint of $\overline{MQ}$.
O is the midpoint of $\overline{NP}$.
Prove: $\triangle MON \cong \triangle QOP$



S	R
1) O is midpt. of $\overline{MQ}$	1) Given
2) $\overline{MO} \cong \overline{QO}$	2) Defn. midpt.
3) O is midpt of $\overline{NP}$	3) Given
4) $\overline{NO} \cong \overline{PO}$	4) Defn. midpt.
5) $\angle MON \cong \angle QOP$	5) Vertical $\angle$s thm
6) $\triangle MON \cong \triangle QOP$	6) SAS

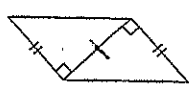
Kuta Software - Infinite Geometry

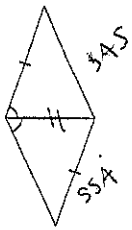
Name_____

SSS and SAS Congruence

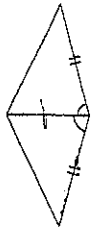
Date_____ Period____

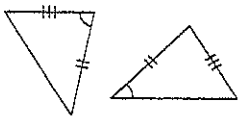
State if the two triangles are congruent. If they are, state how you know.

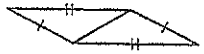
1) 
yes SAS

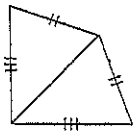
2) 

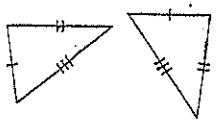
No

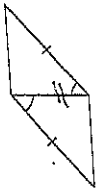
3) 
yes SAS

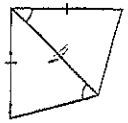
4) 
No

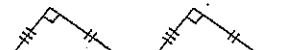
5) 
yes SSS

6) 
yes SSS

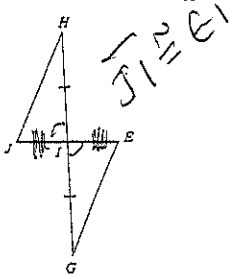
7) 
yes SSS

8) 
yes SAS

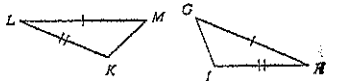
9) 
No

10) 
yes SAS

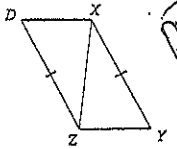
State what additional information is required in order to know that the triangles are congruent for the reason given.

11) SAS 

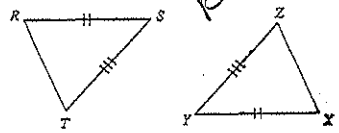
$\overline{JI} \cong \overline{EI}$

12) SAS 

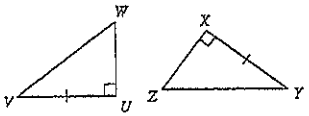
$\angle L \cong \angle H$

13) SSS 

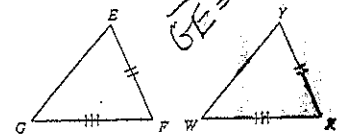
$\overline{DX} \cong \overline{FZ}$

14) SSS 

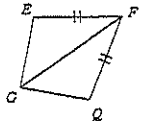
$\overline{RT} \cong \overline{XZ}$

15) SAS 

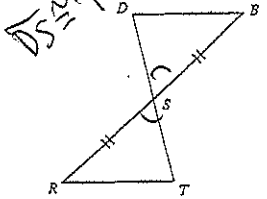
$\overline{WV} \cong \overline{ZX}$

16) SSS 

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

17) SAS 

$\angle EFG \cong \angle QFG$

18) SAS 

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

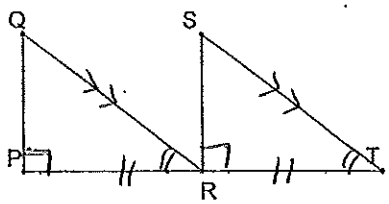
Name_____ Period____ Date_____

(2)

Geometry 21: More Practice with Triangle Congruence Proofs

Given: $\angle QPR$ and $\angle SRT$ are right angles

1. $\overline{QR} \parallel \overline{ST}$; R is the midpoint of $\overline{PT}$

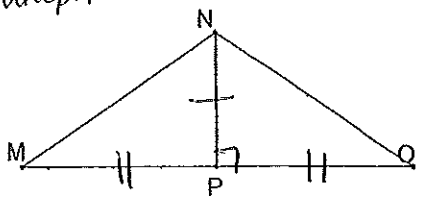


Prove: $\Delta PQR \cong \Delta RST$

S	R
1) $\angle QPR$ and $\angle SRT$ are rt. $\angle$s	1) Given
2) $\angle QPR \cong \angle SRT$	2) Rt. $\angle$s thm
3) $\overline{QR} \parallel \overline{ST}$	3) ~~Given~~ Given
4) $\angle QRP \cong \angle STR$	4) Corresp. $\angle$ thm.
5) R is midpt of $\overline{PT}$	5) ~~Def~~ Given
6) $\overline{PR} \cong \overline{RT}$	6) Defn. midpt
$\Delta PQR \cong \Delta RST$	7) ASA

Given: $\overline{NP} \perp \overline{MO}$; $\overline{NP}$ bisects $\overline{MO}$

2.

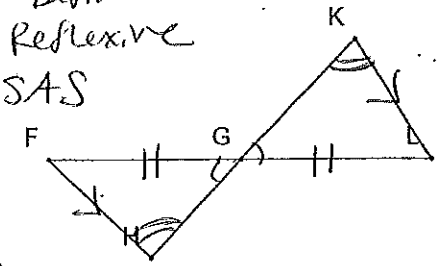


Prove: $\Delta MPN \cong \Delta OPN$

S	R
1) $\overline{NP} \perp \overline{MO}$	1) Given
2) $\angle NPO$ and $\angle NPM$ are rt. $\angle$s	2) Defn. $\perp$
3) $\angle NPO \cong \angle NPM$	3) Rt. $\angle$s Thm
4) $\overline{NP}$ bisects $\overline{MO}$	4) ~~Def~~ Given
5) $\overline{MP} \cong \overline{OP}$	5) Defn. bisect
6) $\overline{NP} \cong \overline{NP}$	6) Reflexive
$\Delta MPN \cong \Delta OPN$	7) SAS

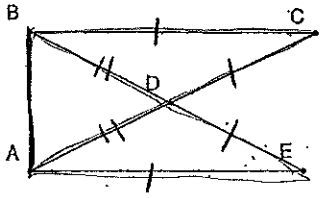
3. Given: $\overline{FH} \parallel \overline{LK}, \overline{GF} \cong \overline{GL}$

Prove: $\Delta FGH \cong \Delta LGK$



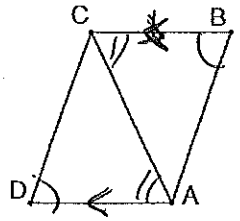
S	R
1) $\overline{FH} \parallel \overline{LK}$	1) Given
2) $\angle LKG \cong \angle FHG$	2) Alt. int. $\angle$ thm
3) $\overline{GF} \cong \overline{GL}$	3) Given
4) $\angle FGH \cong \angle LGK$	4) Vertical $\angle$s thm
5) $\Delta FGH \cong \Delta LGK$	5) AAS

4. Given: $\overline{BC} \cong \overline{AE}$, $\overline{BD} \cong \overline{AD}$, $\overline{DE} \cong \overline{DC}$
Prove: $\Delta ABC \cong \Delta BAE$



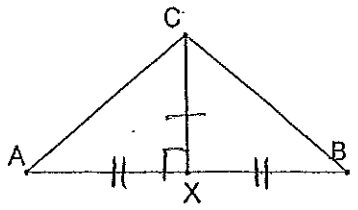
S	R
1) ~~BC~~ $\overline{BC} \cong \overline{AE}$; $\overline{BD} \cong \overline{AD}$; $\overline{DE} \cong \overline{DC}$	1) Given
2) $BD = AD$; $DE = DC$	2) Defn. $\cong$
3) $BD + DE = BE$; ~~AD = CA~~ $AD + DC = AC$	3) Seg. Add. Post.
4) $AD + DC = BE$	4) Substitution
5) $BE = AC$	5) Substitution
6) $\overline{BE} \cong \overline{AC}$	6) Defn. $\cong$
7) $\overline{BA} \cong \overline{AB}$	7) Reflexive
8) $\Delta ABC \cong \Delta BAE$	8) SSS

5. Given: $\angle D \cong \angle B$, $\overline{CB} \parallel \overline{DA}$
Prove: $\Delta DCA \cong \Delta BAC$



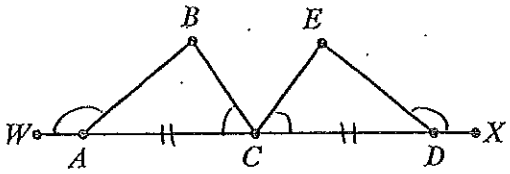
S	R
1) $\angle D \cong \angle B$; $\overline{CB} \parallel \overline{DA}$	1) Given
2) $\angle BCA \cong \angle DAC$	2) Alt int. $\angle$ thm
3) $\overline{CA} \cong \overline{AC}$	3) Reflexive
4) $\Delta DCA \cong \Delta BAC$	4) AAS

6. Given : $\overline{CX}$ is the perpendicular bisector of $\overline{AB}$,
Prove : $\Delta ACX \cong \Delta BCX$



S	R
1) $\overline{CX}$ is the $\perp$ bisector of $\overline{AB}$	1) Given
2) $\angle CXA$ and $\angle CXB$ are right $\angle$'s	2) Defn. $\perp$
3) $\angle CXA \cong \angle CXB$	3) Rt $\angle$'s thm
4) $\overline{AX} \cong \overline{BX}$	4) Defn. bisect
5) $\overline{CX} \cong \overline{CX}$	5) Reflexive
6) $\Delta ACX \cong \Delta BCX$	6) SAS

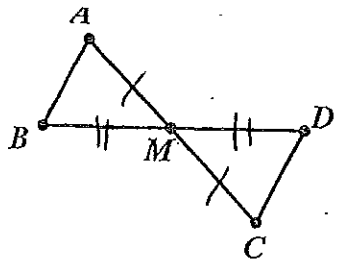
7. Given : $\angle WAB \cong \angle XDE$, $\overline{AC} \cong \overline{CD}$, $\overline{DC}$
$\angle ACB \cong \angle DCE$
Prove: $\Delta ABC \cong \Delta DEC$



S	R
1) $\angle WAB \cong \angle XDE$	1) Given
2) $\angle WAB$ and $\angle BAC$ are supp. $\angle XDE$ and $\angle EDC$ are supp.	2) Lin. Pr. Post.
3) $\angle BAC \cong \angle EDC$	3) $\cong$ supp. thm
4) $\overline{AC} \cong \overline{DC}$; $\angle ACB \cong \angle DCE$	4) Given
5) $\Delta ABC \cong \Delta DEC$	5) ASA

Given : $\overline{AC}$ and $\overline{BD}$ bisect each other at M

8. Prove : $\Delta AMB \cong \Delta CMD$

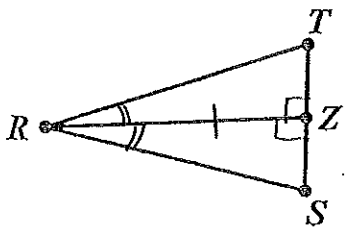


S	R
1) $\overline{AC}$ and $\overline{BD}$ bis. each other at M	1) Given
2) $\overline{AM} \cong \overline{CM}$; $\overline{BM} \cong \overline{DM}$	2) Def. bisect
3) $\angle AMB \cong \angle CMD$	3) Vertical $\angle$'s thm
4) $\Delta AMB \cong \Delta CMD$	4) SAS

Given : $\angle TZR$ and $\angle SZR$ are right angles

9. $\angle TRZ \cong \angle SRZ$

Prove : $\Delta RZS \cong \Delta RZT$



S	R
1) $\angle TZR$ and $\angle SZR$ are right $\angle$'s	1) Given
2) $\angle TZR \cong \angle SZR$	2) Rt. $\angle$'s thm
3) $\angle TRZ \cong \angle SRZ$	3) Given
4) $\overline{RZ} \cong \overline{RZ}$	4) Reflexive
5) $\Delta RZS \cong \Delta RZT$	5) ASA