

Ch. 4 Triangle Proofs Practice

Name ANSW,

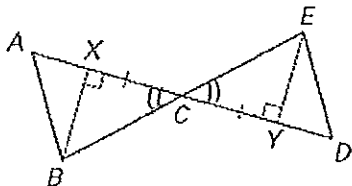
SSS, SAS, ASA, AAS, HL (no CPCTC)

Write a two column proof for each.

15. Given: C is the midpoint of \overline{XY} .

$\overline{BX} \perp \overline{AC}, \overline{EY} \perp \overline{CD}$

Prove: $\triangle CXB \cong \triangle CYE$

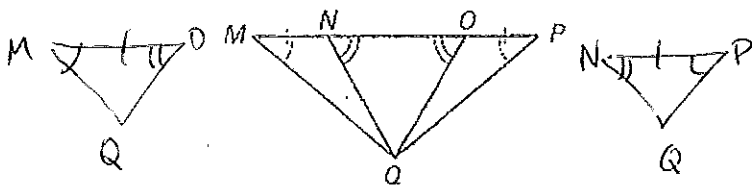


S	R
1) C is midpt of \overline{XY}	1) Given
2) $\overline{XC} \cong \overline{YC}$	2) Defn. midpt.
3) $\angle XCB \cong \angle YCE$	3) Vert. \angle thm
3) $\overline{BX} \perp \overline{AC}$	3) Given
4) $\angle BXC$ is a rt. \angle	4) Defn. \perp
5) $\overline{EY} \perp \overline{CD}$	5) Given
6) $\angle EYC$ is a rt. \angle	6) Defn. \perp
7) $\angle BXC \cong \angle EYC$	7) Rt. \angle thm
8) $\triangle CXB \cong \triangle CYE$	8) ASA

$\angle MOQ \cong \angle PNQ$

$\overline{MN} \cong \overline{PO}$

Prove: $\triangle MOQ \cong \triangle PNQ$

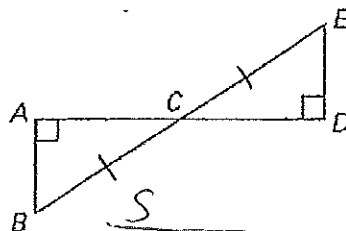


S	R
1) $\angle M \cong \angle P; \angle MOQ \cong \angle PNQ$	1) Given
$\overline{MQ} \cong \overline{PQ}$	2) Overlapping Segments Thm.
2) $\overline{MO} \cong \overline{PN}$	3) ASA
3) $\triangle MOQ \cong \triangle PNQ$	

16. Given: $\overline{AB} \perp \overline{AD}, \overline{DE} \perp \overline{AD}$

C is the midpoint of \overline{BE} .

Prove: $\triangle ABC \cong \triangle DEC$



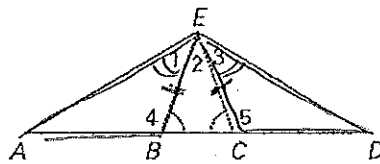
S	R
1) Given	1) Given
2) $\overline{BC} \cong \overline{EC}$	2) Defn. midpt.
3) $\angle ACB \cong \angle DCE$	3) Vert. \angle thm
4) $\angle BAC$ & $\angle EDC$ are right \angle s	4) Defn. \perp
5) $\angle BAC \cong \angle EDC$	5) Rt. \angle thm
6) $\triangle ABC \cong \triangle DEC$	6) AAS

18. Given: $\angle EBC \cong \angle ECB, \overline{EB} \cong \overline{EC}$

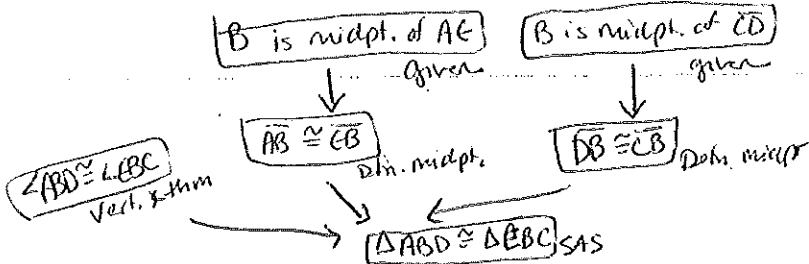
\overline{BE} bisects $\angle AEC$.

\overline{CE} bisects $\angle DEB$.

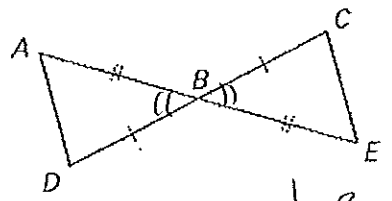
Prove: $\triangle ABE \cong \triangle DCE$



S	R
1) $\angle EBC \cong \angle ECB$	1) Given
$\overline{EB} \cong \overline{EC}$	2) Defn. bisect
\overline{BE} bis. $\angle AEC$	3) transitive POC
\overline{CE} bis. $\angle DEB$	4) Lin. Pr. Post.
2) $\angle 1 \cong \angle 2; \angle 2 \cong \angle 3$	5) Congr. Supp. Thm
3) $\angle 1 \cong \angle 3$	6) ASA
4) $\angle 4$ supp. $\angle EBC$	
$\angle 5$ supp. $\angle ECB$	
5) $\angle 4 \cong \angle 5$	
6) $\triangle ABE \cong \triangle DCE$	

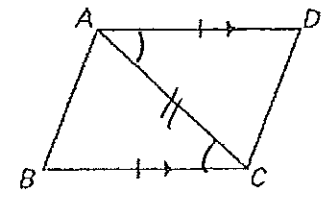


19. Given: B is the midpoint of \overline{AE} .
 B is the midpoint of \overline{CD} .
 Prove: $\Delta ABD \cong \Delta EBC$



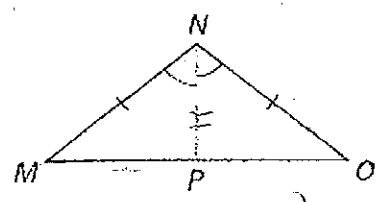
S	R
1) B is midpt. of \overline{AE} B is midpt. of \overline{CD}	1) Given
2) $\overline{AB} \cong \overline{EB}$; $\overline{DB} \cong \overline{CB}$	2) Defn. midpt.
3) $\angle ABD \cong \angle EBC$	3) Vert. \angle thm
4) $\Delta ABD \cong \Delta EBC$	4) SAS

20. Given: $\overline{AD} \cong \overline{CB}$, $\overline{AD} \parallel \overline{CB}$
 Prove: $\Delta ABC \cong \Delta CDA$



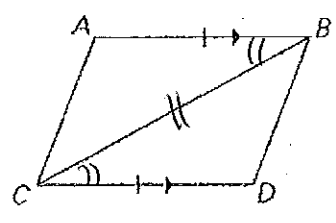
S	R
1) $\overline{AD} \cong \overline{CB}$, $\overline{AD} \parallel \overline{CB}$	1) Given
2) $\angle DAC \cong \angle BCA$	2) Alt. Int. \angle thm
3) $\overline{AC} \cong \overline{CA}$	3) Reflexive
4) $\Delta ABC \cong \Delta CDA$	4) SAS

21. Given: \overline{PN} bisects $\angle MNO$.
 $\overline{MN} \cong \overline{ON}$
 Prove: $\Delta MNP \cong \Delta ONP$



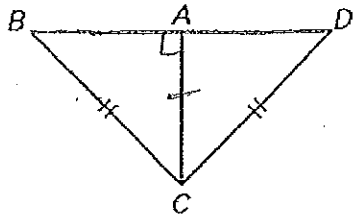
S	R
1) \overline{PN} bis. $\angle MNO$ $\overline{MN} \cong \overline{ON}$	1) Given
2) $\overline{PN} \cong \overline{PN}$	2) Reflexive
3) $\angle MNP \cong \angle ONP$	3) Defn. bisect
4) $\Delta MNP \cong \Delta ONP$	4) SAS

22. Given: $\overline{AB} \parallel \overline{CD}$, $\overline{AB} \cong \overline{CD}$
 Prove: $\Delta ABC \cong \Delta DCB$



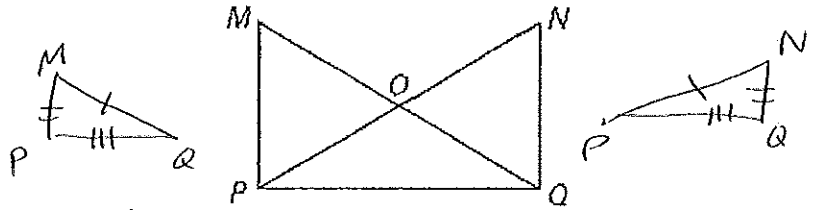
S	R
1) $\overline{AB} \parallel \overline{CD}$; $\overline{AB} \cong \overline{CD}$	1) Given
2) $\angle ABC \cong \angle DCB$	2) Alt. Int. \angle thm
3) $\overline{CB} \cong \overline{BC}$	3) Reflexive
4) $\Delta ABC \cong \Delta DCB$	4) SAS

23. Given: $\overline{AC} \perp \overline{BD}$ $\overline{BC} \cong \overline{CD}$
 Prove: $\triangle ABC \cong \triangle ADC$



S	R
1) $\overline{AB} \perp \overline{BD}$; $\overline{BC} \cong \overline{CD}$	1) Given
2) $\angle BAC$; $\angle DAC$ are rt. \angle s	2) Defn. \perp
3) $\triangle ABC$ and $\triangle ADC$ are rt. \triangle s	3) Defn. rt. \triangles Defn. rt. \triangle s
4) $\overline{AC} \cong \overline{AC}$	4) Reflexive
5) $\triangle ABC \cong \triangle ADC$	5) HL

24. Given: $\overline{MQ} \cong \overline{NP}$,
 $\overline{MP} \cong \overline{NQ}$
 Prove: $\triangle MPQ \cong \triangle NQP$

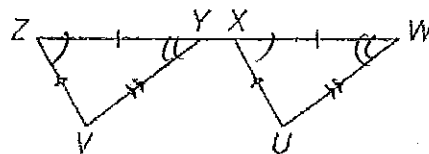


S	R
1) $\overline{MQ} \cong \overline{NP}$ $\overline{MP} \cong \overline{NQ}$	1) Given
2) $\overline{PQ} \cong \overline{QP}$	2) Reflexive
3) $\triangle MPQ \cong \triangle NQP$	3) SSS

25.

- Given: $\overline{WU} \parallel \overline{YV}$, $\overline{XU} \parallel \overline{ZV}$
 $\overline{WX} \cong \overline{YZ}$

Prove: $\triangle WXU \cong \triangle YZV$

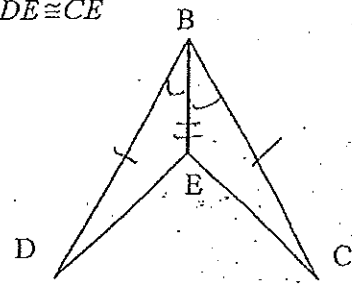


S	R
1) $\overline{WU} \parallel \overline{YV}$; $\overline{XU} \parallel \overline{ZV}$ $\overline{WX} \cong \overline{YZ}$	1) Given
2) $\angle ZYV \cong \angle XWU$	2) Corresp. \angle thm
3) $\angle YZV \cong \angle WXU$	3) Corresp. \angle thm
4) $\triangle WXU \cong \triangle YZV$	4) ASA

1) Given: $\angle DBE \cong \angle CBE$, $\overline{DB} \cong \overline{CB}$

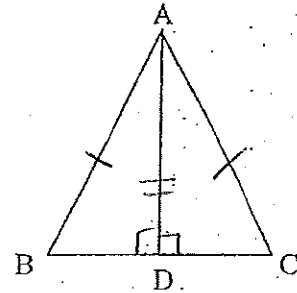
Prove: $\overline{DE} \cong \overline{CE}$

Specific Statements	General Reason
1) $\angle DBE \cong \angle CBE$; $\overline{DB} \cong \overline{CB}$	1) Given
2) $\overline{BE} \cong \overline{BE}$	2) Reflexive
3) $\triangle DBE \cong \triangle CBE$	3) SAS
4) $\overline{DE} \cong \overline{CE}$	4) CPCTC



2) Given: $\overline{AB} \cong \overline{AC}$, $\angle ADC$ is a right triangle, $\angle ADB$ is a right triangle
Prove: $\triangle ADC \cong \triangle ADB$

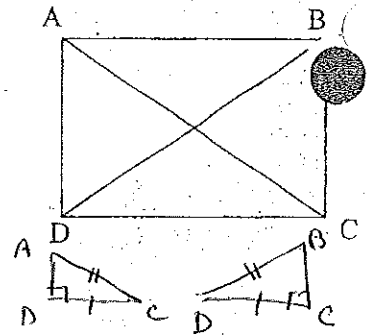
Specific Statements	General Reason
1) $\overline{AB} \cong \overline{AC}$; $\angle ADC$ is a rt. \triangle $\angle ADB$ is a rt. \triangle	1) Given
2) $\overline{AD} \cong \overline{AD}$	2) Reflexive
3) $\triangle ADC \cong \triangle ADB$	3) HL



3) Given: $\angle ADC$ and $\angle BCD$ are right angles, $\overline{AC} \cong \overline{BD}$

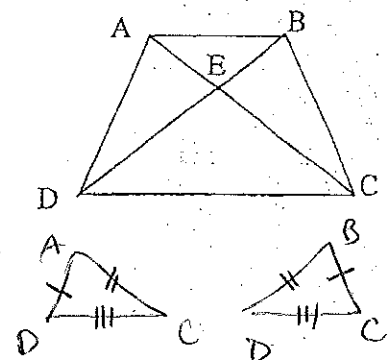
Prove: $\overline{AD} \cong \overline{BC}$

Specific Statements	General Reason
1) $\angle ADC$ & $\angle BCD$ are rt. \angle 's; $\overline{AC} \cong \overline{BD}$	1) Given
2) $\triangle ADC$ and $\triangle BCD$ are right triangles	2) Definition of a right triangle
3) $\overline{DC} \cong \overline{CD}$	3) Reflexive
4) $\triangle ADC \cong \triangle BCD$	4) HL
5) $\overline{AD} \cong \overline{BC}$	5) CPCTC

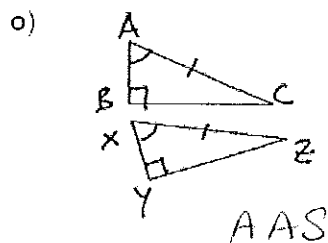
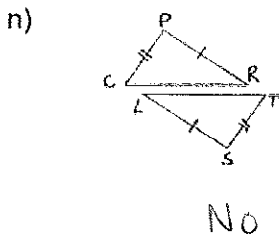
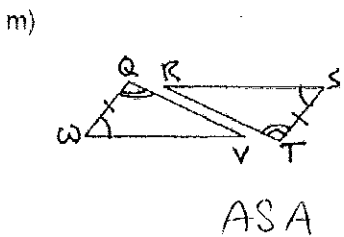
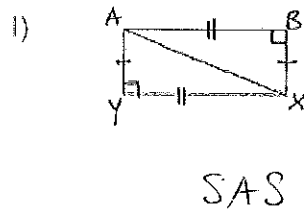
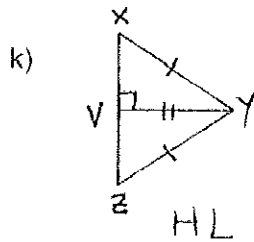
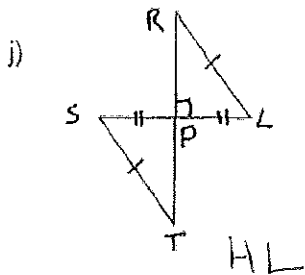
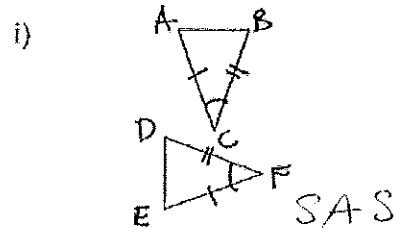
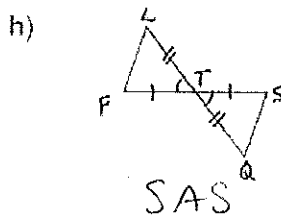
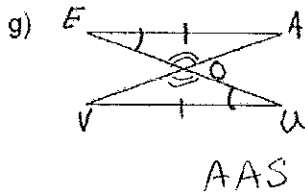
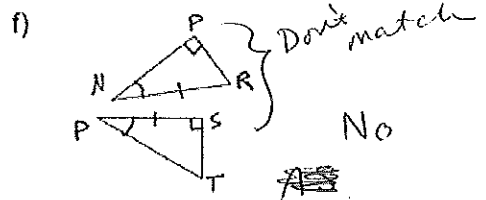
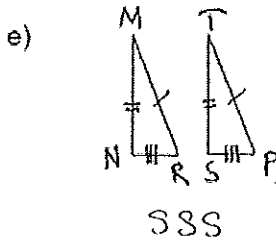
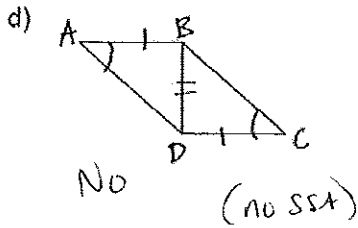
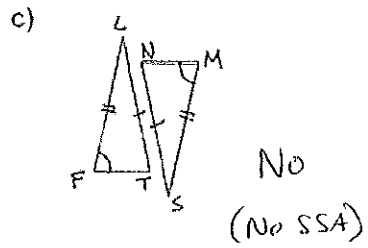
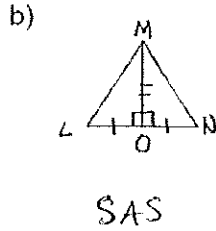
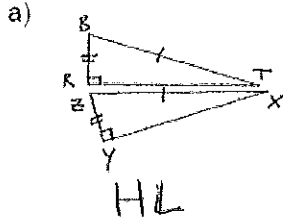


4) Given: $\overline{AD} \cong \overline{BC}$, $\overline{AC} \cong \overline{BD}$
Prove: $\angle DAC \cong \angle CBD$

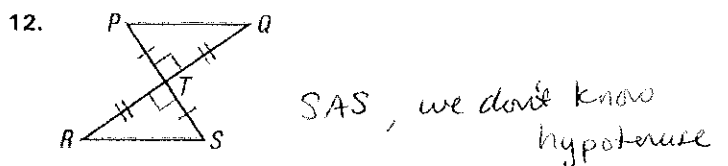
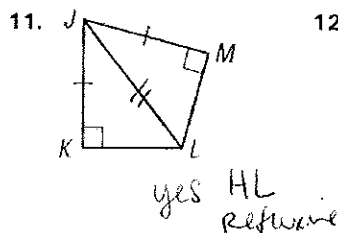
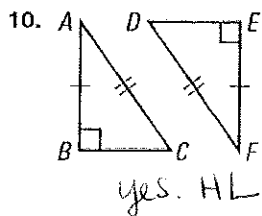
Specific Statements	General Reason
1) $\overline{AD} \cong \overline{BC}$; $\overline{AC} \cong \overline{BD}$	1) Given
2) $\overline{DC} \cong \overline{CD}$	2) Reflexive
3) $\triangle DAC \cong \triangle CBD$	3) SSS
4) $\angle DAC \cong \angle CBD$	4) CPCTC



1.) Are the triangles congruent? If they are, give a reason. (SSS, SAS, ASA, AAS, or HL Theorem)



2.) **HL Congruence Theorem** Determine whether you can use the HL Congruence Theorem to show that the triangles are congruent. Explain your reasoning.



PROOFS:

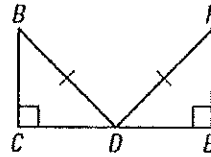
3.) Logical Reasoning Fill in the missing statements and reasons.

Given $\triangleright \overline{BD} \cong \overline{FD}$

D is the midpoint of \overline{CE} .

$\angle BCD$ and $\angle FED$ are right angles.

Prove $\triangleright \triangle BCD \cong \triangle FED$

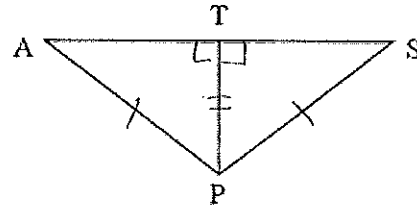


Statements	Reasons
1. $\overline{BD} \cong \overline{FD}$	1. <u>Given</u>
2. <u>D is midpoint of \overline{CE}</u>	2. Given
3. $\overline{CD} \cong \overline{ED}$	3. Definition of midpoint
4. $\angle BCD$ and $\angle FED$ are right angles.	4. <u>Given</u>
5. $\triangle BCD$ and $\triangle FED$ are right triangles.	5. Definition of right triangle
6. $\triangle BCD \cong \triangle FED$	6. <u>HL ?</u>

4.) PROOF:

Given: $\overline{TP} \perp \overline{AS}$, $\overline{AP} \cong \overline{SP}$

Prove: $\triangle ATP \cong \triangle STP$

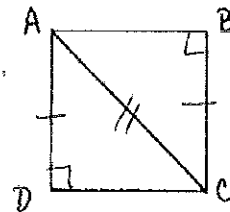


statements	reasons
1. $\overline{TP} \perp \overline{AS}$, $\overline{AP} \cong \overline{SP}$	1. <u>Given</u>
2. $\angle ATP$ and $\angle STP$ are right angles	2. <u>Defn. \perp</u>
3. $\triangle ATP$ and $\triangle STP$ are right triangles	3. <u>Defn. rt. Δ's</u>
4. $\overline{TP} \cong \overline{TP}$	4. <u>Reflexive</u>
5. $\triangle ATP \cong \triangle STP$	5. <u>HL</u>

5.) PROOF:

Given: $\angle D$ and $\angle B$ are right angles, $\overline{AD} \cong \overline{CB}$

Prove: $\triangle ABC \cong \triangle CDA$



statements	reasons
1. $\angle D$ and $\angle B$ are right angles, $\overline{AD} \cong \overline{CB}$	1. <u>Given</u>
2. $\triangle ABC$ and $\triangle CDA$ are right triangles	2. <u>Defn. rt. Δ's</u>
3. $\overline{AC} \cong \overline{CA}$	3. <u>Reflexive</u>
4. $\triangle ABC \cong \triangle CDA$	4. <u>HL</u>

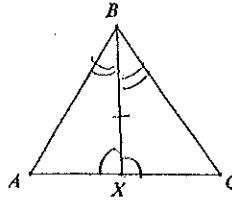
Name

ANSWERS

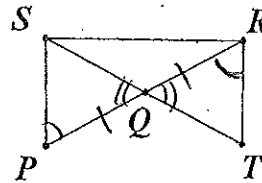
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Date

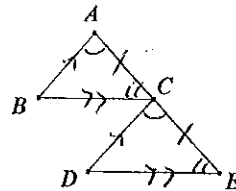
Geometry 21: LOTS of practice with Triangle Congruence Proofs!!! ☺

1. Given: $\angle AXB \cong \angle CXB, \angle ABX \cong \angle CBX$ Prove: $\overline{AB} \cong \overline{CB}$ 

S	R
1) $\angle AXB \cong \angle CXB, \angle ABX \cong \angle CBX$	1) Given
2) $\overline{BX} \cong \overline{BX}$	2) Reflexive
3) $\triangle ABX \cong \triangle CBX$	3) ASA
4) $\overline{AB} \cong \overline{CB}$	4) CPCTC

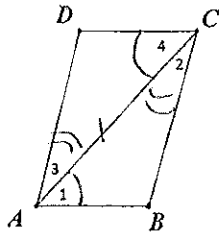
2. Given: Q is the midpoint of \overline{PR} , $\angle P \cong \angle QRT$ Prove: Q is the midpoint of \overline{ST} 

S	R
1) Q is midpt. of PR $\angle P \cong \angle QRT$	1) Given
2) $\overline{PQ} \cong \overline{RQ}$	2) Defn. of midpt.
3) $\angle SQP \cong \angle TQR$	3) Vertical \angle thm
4) $\triangle PQS \cong \triangle RQT$	4) ASA
5) $\overline{SQ} \cong \overline{TQ}$	5) CPCTC
6) Q is midpt. of \overline{ST}	6) Defn. midpt.

3. Given: $\overline{AB} \parallel \overline{CD}, \overline{BC} \parallel \overline{DE}, C$ is the midpoint of \overline{AE} Prove: $\overline{BC} \cong \overline{DE}$ 

S	R
1) $\overline{AB} \parallel \overline{CD}; \overline{BC} \parallel \overline{DE}$	1) Given
2) $\angle A \cong \angle DCE$ $\angle ACB \cong \angle CED$	2) Corresp. \angle thm
3) C is midpt. of \overline{AE}	3) Given
4) $\overline{AC} \cong \overline{CE}$	4) Defn. midpt.
5) $\triangle ABC \cong \triangle CDE$	5) ASA
6) $\overline{BC} \cong \overline{DE}$	6) CPCTC

4. Given: $\angle 1 \cong \angle 4, \angle 2 \cong \angle 3$
 Prove: $\overline{AB} \cong \overline{CD}$



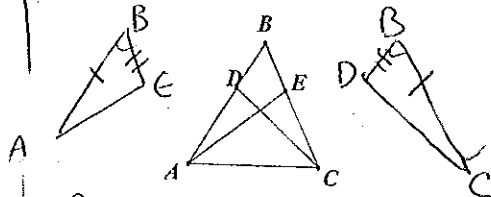
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- 1) $\angle 1 \cong \angle 4, \angle 2 \cong \angle 3$
- 2) $\overline{AC} \cong \overline{CA}$
- 3) $\triangle ADC \cong \triangle CBA$
- 4) $\overline{AB} \cong \overline{CD}$

- 1) Given
- 2) Reflexive
- 3) ASA
- 4) CPCTC

5. Given: $\overline{BA} \cong \overline{BC}, \overline{BD} \cong \overline{BE}$
 Prove: $\angle BDC \cong \angle BEA$



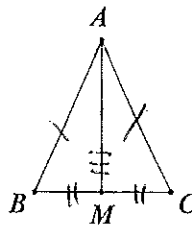
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R

- 1) $\overline{BA} \cong \overline{BC}, \overline{BD} \cong \overline{BE}$
- 2) $\angle B \cong \angle B$
- 3) $\triangle ABE \cong \triangle CBD$
- 4) $\angle BDC \cong \angle BEA$

- 1) Given
- 2) Reflexive
- 3) SAS
- 4) CPCTC

6. Given: $\overline{AB} \cong \overline{AC}, M$ is the midpoint of \overline{BC}
 Prove: \overline{AM} bisects $\angle BAC$



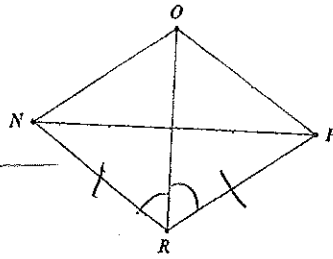
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- 1) $\overline{AB} \cong \overline{AC}, M$ is midpt. of \overline{BC}
- 2) $\overline{BM} \cong \overline{CM}$
- 3) $\overline{AM} \cong \overline{AM}$
- 4) $\angle BAM \cong \angle CAM$
- 5) \overline{AM} bisects $\angle BAC$

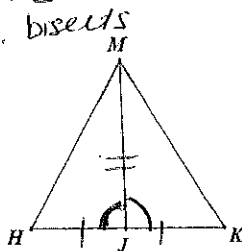
- 1) Given
- 2) Defn. midpt.
- 3) Reflexive
- 4) CPCTC
- 5) Defn bisect

7. Given: $\overline{NR} \cong \overline{PR}$, \overline{RO} bisects $\angle NRP$
 Prove: \overline{OR} bisects $\angle NOP$



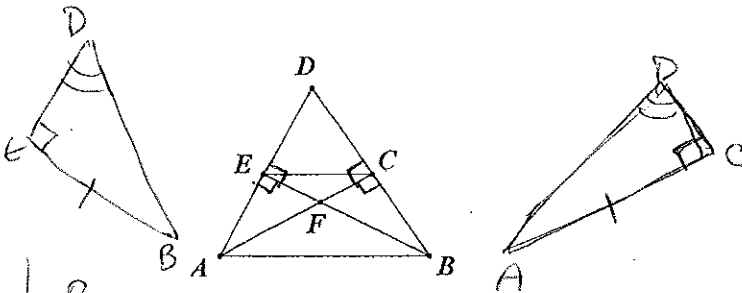
S	R
1) $\overline{NR} \cong \overline{PR}$, \overline{RO} bisects $\angle NRP$	1) Given
2) $\angle NRO \cong \angle PRO$	2) Defn. bisect
3) $\overline{OR} \cong \overline{OR}$	3) Reflexive
4) $\triangle PRO \cong \triangle NRO$	4) SAS
5) $\angle NOR \cong \angle POR$	5) CPCTC
6) \overline{OR} bisects $\angle NOP$	6) Defn. bisects

8. Given: $\overline{HJ} \cong \overline{KJ}$, $\angle MJH \cong \angle MJK$
 Prove: \overline{MJ} bisects $\angle HMK$



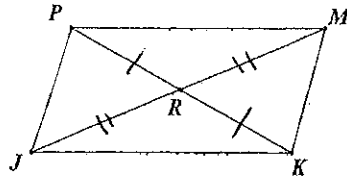
S	R
1) $\overline{HJ} \cong \overline{KJ}$, $\angle MJH \cong \angle MJK$	1) Given
2) $\overline{MJ} \cong \overline{MJ}$	2) Reflexive
3) $\angle HMJ \cong \angle KMJ$	3) CPCTC
4) \overline{MJ} bisects $\angle HMK$	4) Defn. bisect

9. Given: $\overline{BE} \perp \overline{AD}$, $\overline{AC} \perp \overline{BD}$, $\overline{AC} \cong \overline{BE}$
 Prove: $\overline{DE} \cong \overline{EC}$



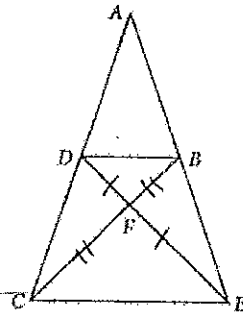
S	R
1) $\overline{BE} \perp \overline{AD}$, $\overline{AC} \perp \overline{BD}$	1) Given
2) $\angle DEB$, $\angle DCA$ are rt \angle s	2) Defn. \perp
3) $\overline{AC} \cong \overline{BE}$	3) Given
4) $\angle D \cong \angle D$	4) Reflexive
5) $\triangle DEB \cong \triangle DCA$	5) AAS
6) $\overline{DE} \cong \overline{DC}$	6) CPCTC

10. Given: \overline{PK} and \overline{JM} bisect each other at R
 Prove: $\overline{PJ} \cong \overline{MK}$



S	R
1) \overline{PK} & \overline{JM} bisect each other	1) Given
2) $\overline{PR} \cong \overline{KR}$, $\overline{JR} \cong \overline{MR}$	2) Defn. bisect
3) $\angle PRJ \cong \angle KRM$	3) Vertical \angle 's Thm
4) $\triangle PRJ \cong \triangle KRM$	4) SAS
5) $\overline{PJ} \cong \overline{MK}$	5) CPCTC

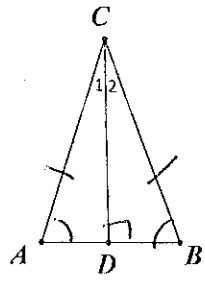
11. Given: F is the midpoint of \overline{DE} and \overline{BC}
 Prove: $\overline{DC} \cong \overline{BE}$



S	R
1) F is midpt. of \overline{DE} & \overline{BC}	1) Given
2) $\overline{DF} \cong \overline{EF}$; $\overline{BF} \cong \overline{CF}$	2) Defn. midpt.
3) $\angle DFC \cong \angle BFE$	3) Vertical \angle 's Thm
4) $\triangle DFC \cong \triangle BFE$	4) SAS
5) $\overline{DC} \cong \overline{BE}$	5) CPCTC

Geometry 21: Practice with 4.5 Isosceles and Equilateral Triangles

1. Given: $\overline{AC} \cong \overline{BC}$, $\overline{CD} \perp \overline{AB}$
 Prove: \overline{CD} bisects $\angle ACB$

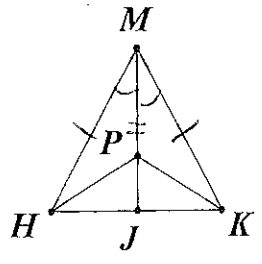


- S
-
- 1) $\overline{AC} \cong \overline{BC}$, $\overline{CD} \perp \overline{AB}$
 - 2) $\angle A \cong \angle B$
 - 3) $\angle CDA$ & $\angle CDB$ are rt. \angle s
 - 4) $\angle CDA \cong \angle CDB$
 - 5) $\triangle ACD \cong \triangle BCD$
 - 6) $\angle 1 \cong \angle 2$
 - 7) \overline{CD} bisects $\angle ACB$

- R
-
- 1) Given
 - 2) Isos. \triangle Thm
 - 3) Defn. \perp
 - 4) Rt. \angle thm
 - 5) AAS
 - 6) CPCTC
 - 7) Defn. bisect

(or HL)
 reflexive

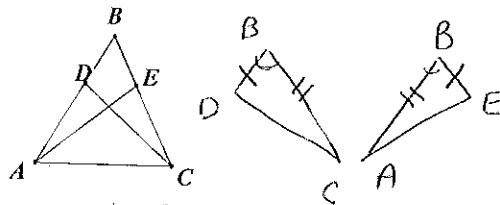
2. Given: \overline{MJ} bisects $\angle HMK$, $\triangle HMK$ is an isosceles triangle
 with legs \overline{HM} and \overline{KM}
 Prove: $\overline{HP} \cong \overline{KP}$



- S
-
- 1) \overline{MJ} bisects $\angle HMK$
 - 2) $\angle HMP \cong \angle KMP$
 - 3) $\triangle HMK$ is isos. w/ legs \overline{HM} & \overline{KM}
 - 4) $\overline{HM} \cong \overline{KM}$
 - 5) $\overline{MP} \cong \overline{MP}$
 - 6) $\triangle HMP \cong \triangle KMP$
 - 7) $\overline{HP} \cong \overline{KP}$

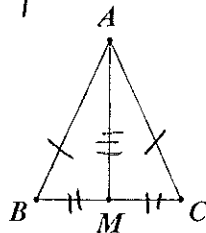
- R
-
- 1) Given
 - 2) Defn. bisect
 - 3) Given
 - 4) Defn. isos.
 - 5) Reflexive
 - 6) SAS
 - 7) CPCTC

3. Given: $\angle BAC \cong \angle BCA$, $\overline{BD} \cong \overline{BE}$
 Prove: $\angle BDC \cong \angle BEA$



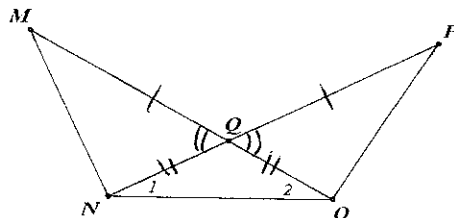
S	R
1) $\angle BAC \cong \angle BCA$; $\overline{BD} \cong \overline{BE}$	1) Given
2) $\overline{AB} \cong \overline{AC}$ $\overline{BA} \cong \overline{BC}$	2) Converse of Isos. Δ Thm.
3) $\angle B \cong \angle B$	3) Reflexive
4) $\Delta BDC \cong \Delta BEA$	4) SAS
5) $\angle BDC \cong \angle BEA$	5) CPCTC

4. Given: $\overline{AB} \cong \overline{AC}$, M is the midpoint of \overline{BC}
 Prove: \overline{AM} bisects $\angle BAC$



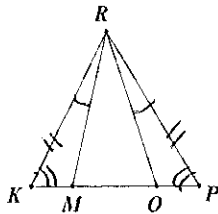
S	R
1) $\overline{AB} \cong \overline{AC}$	1) Given
2) M is the midpt. of \overline{BC}	2) Given
3) $\overline{BM} \cong \overline{CM}$	3) Defn. midpt
4) $\overline{AM} \cong \overline{AM}$	4) Reflexive
5) $\angle BAM \cong \angle CAM$	5) CPCTC
6) \overline{AM} bisects $\angle BAC$	6) Defn. bisect

5. Given: $\overline{MQ} \cong \overline{PQ}$, $\angle 1 \cong \angle 2$
 Prove: $\overline{MN} \cong \overline{PO}$



S	R
1) $\overline{MQ} \cong \overline{PQ}$; $\angle 1 \cong \angle 2$	1) Given
2) $\overline{NQ} \cong \overline{OQ}$	2) Converse of Isos. Δ Thm
3) $\angle MQN \cong \angle PQO$	3) Vertical \angle Thm
4) $\Delta MQN \cong \Delta PQO$	4) SAS
5) $\overline{MN} \cong \overline{PO}$	5) CPCTC

6. Given: $\angle KRM \cong \angle PRO, \overline{KR} \cong \overline{PR}$
 Prove: $\triangle RMO$ is isosceles



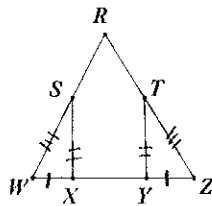
S

- 1) $\angle KRM \cong \angle PRO ; \overline{KR} \cong \overline{PR}$
- 2) $\angle K \cong \angle P$
- 3) $\triangle KRM \cong \triangle PRO$
- 4) $\overline{RM} \cong \overline{RO}$
- 5) $\triangle RMO$ is isos.

R

- 1) Given
- 2) Isos. \triangle thm
- 3) ASA
- 4) CPCTC
- 5) Defn. isos.

7. Given: $\overline{SX} \cong \overline{TY}, \overline{WX} \cong \overline{YZ}, \overline{SW} \cong \overline{TZ}$
 Prove: $\overline{RW} \cong \overline{RZ}$



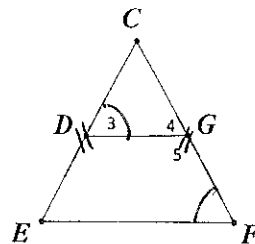
S

- 1) $\overline{SX} \cong \overline{TY} ; \overline{WX} \cong \overline{YZ} ; \overline{SW} \cong \overline{TZ}$
- 2) $\triangle SWX \cong \triangle TZY$
- 3) $\angle W \cong \angle Z$
- 4) $\overline{RW} \cong \overline{RZ}$

R

- 1) Given
- 2) SSS
- 3) CPCTC
- 4) Conv. of Isos. \triangle thm

8. Given: $\overline{CE} \cong \overline{CF}, \angle F \cong \angle B$
 Prove: $\triangle CDG$ is isosceles



S

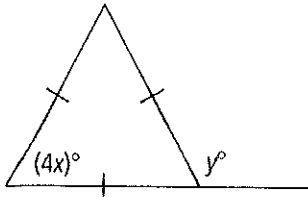
- 1) $\overline{CE} \cong \overline{CF} ; \angle F \cong \angle B$
- 2) $\angle E \cong \angle C$
- 3) $\angle B \cong \angle C$
- 4) $\overline{DG} \parallel \overline{EF}$
- 5) $\angle 4 \cong \angle F$
- 6) $\angle 3 \cong \angle C$
- 7) $\overline{CD} \cong \overline{CG}$ $\triangle CDG$ is isos.

R

- 1) Given
- 2) Isos. \triangle thm
- 3) Transitive POC
- 4) Conv. of Corresp. \angle thm
- 5) Corresp. \angle thm
- 6) Transitive
- 7) Conv. of Isos. \triangle thm
- 8) Defn. isos.

Find the values of the variables.

9.

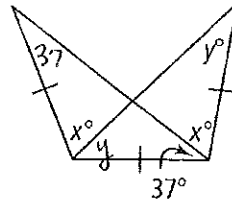


$$4x = 60$$

$$x = 15$$

$$y = 120$$

10.



$$\begin{array}{r} 180 \\ - 74 \\ \hline \end{array}$$

$$x + y = 106$$

$$\begin{array}{r} x + 37 = 106 \\ - 37 \\ \hline \end{array}$$

$$x = 69$$

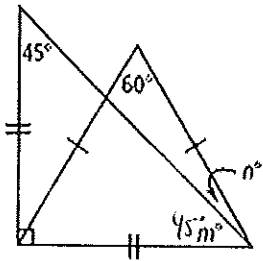
$$\begin{array}{r} 2y + x + 37 = 180 \\ - 37 \\ \hline \end{array}$$

$$2y + x = 143$$

$$\begin{array}{r} - y + x = 106 \\ \hline \end{array}$$

$$y = 37$$

11.

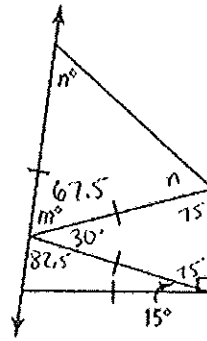


$$m = 45$$

$$45 + n = 60$$

$$n = 15$$

12.



$$\begin{array}{r} 90 \\ - 15 \\ \hline 75 \end{array}$$

$$\begin{array}{r} 180 \\ - 15 \\ \hline 165 \\ \hline 2 \end{array}$$

$$180 = 82.5 + 30 + m$$

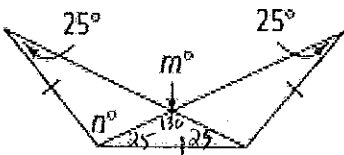
$$180 = 112.5 + m$$

$$m = 67.5$$

$$2n + 67.5 = 180$$

$$n = 56.25$$

13.



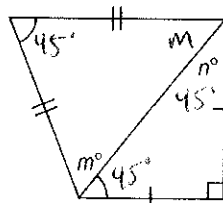
$$m = 130$$

$$n + 25 + 25 + 25 = 180$$

$$n + 75 = 180$$

$$n = 105$$

14.



$$n = 45$$

$$\begin{array}{r} 2m + 45 = 180 \\ - 45 \\ \hline \end{array}$$

$$2m = 135$$

$$m = 67.5$$