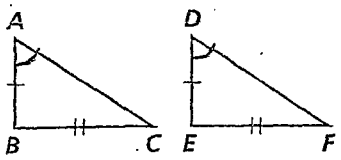
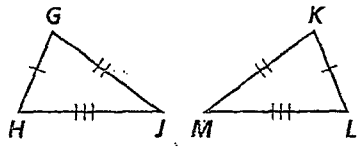
Practice 8-1

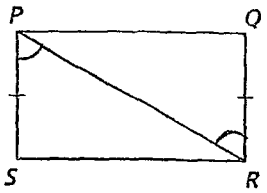
Example Exercises

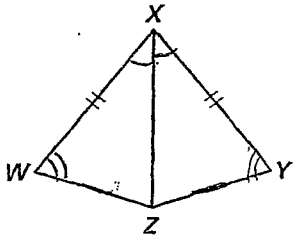
Example 1

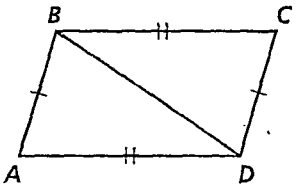
Do you have enough information to prove the two triangles congruent? If so, which of the five methods can you use?

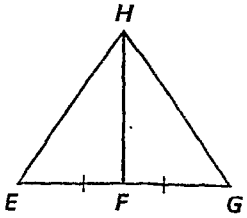
1. 

2. 

3. 

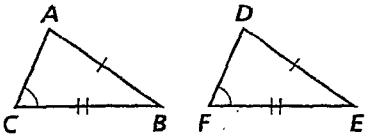
4. 

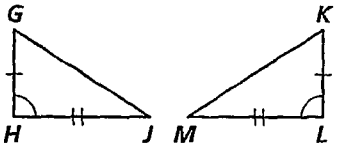
5. 

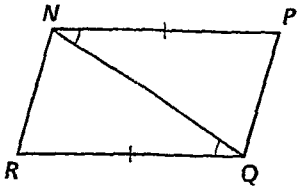
6. 

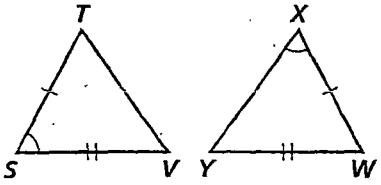
Example 2

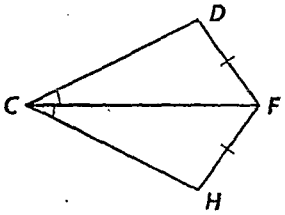
From the information given, can you prove the two triangles congruent? Explain.

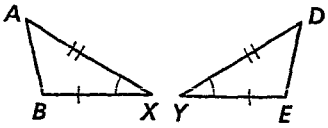
7. 

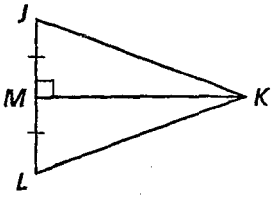
8. 

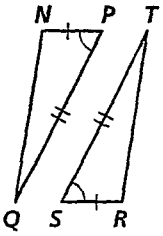
9. 

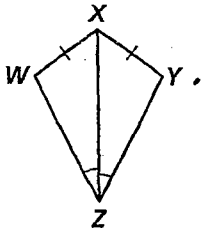
10. 

11. 

12. 

13. 

14. 

15. 

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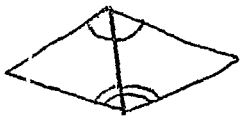
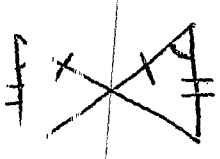
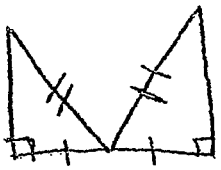
Tell whether or not the triangles can be proved congruent and give a reason for your answer.

① 

② 

③ 

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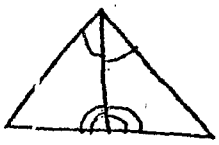
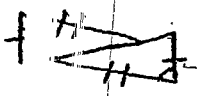
⑤ 

⑥ 

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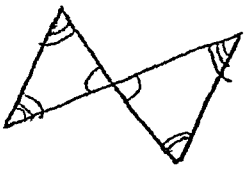
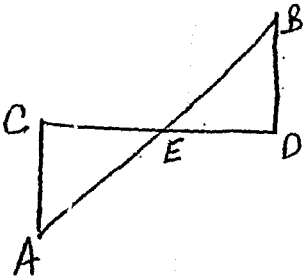
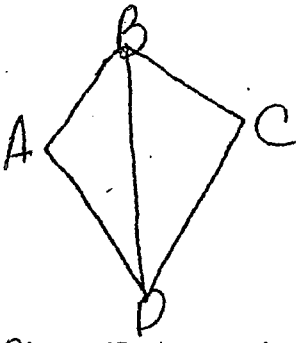
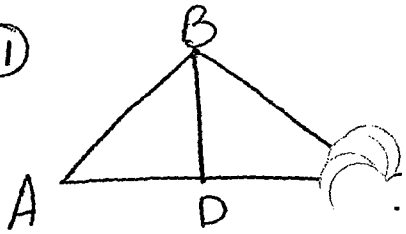
⑧ 

⑨ 

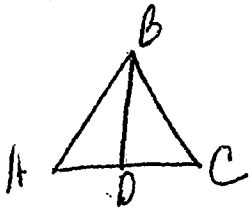
Given: $\overline{BA}$ bisects $\overline{CD}$
$\overline{CA} \perp \overline{CD}$
$\overline{BD} \perp \overline{CD}$

⑩ 

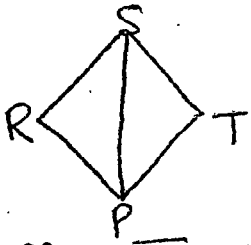
Given: $\overline{BD}$ bisects $\angle B$
$\angle A \cong \angle C$

⑪ 

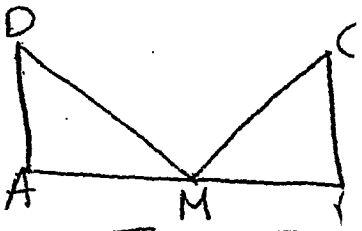
Given: $\overline{BD} \perp \overline{AC}$
$\overline{AB} \cong \overline{CB}$

⑫ 

Given: $\overline{BD}$ bisects $\overline{AC}$
$\overline{BD} \perp \overline{AC}$

⑬ 

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

⑭ 

Given: $\overline{DA} \perp \overline{AB}$
$\overline{CB} \perp \overline{AB}$
$\overline{DA} \cong \overline{CB}$
M is the midpt.

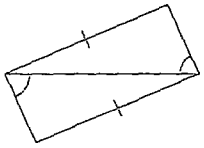
Name_____

SSS, SAS, ASA, and AAS Congruence

Date_____ Period____

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

1)



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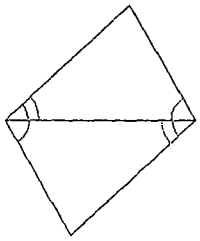

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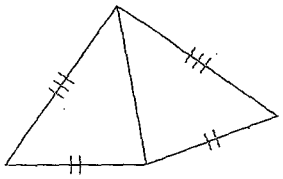

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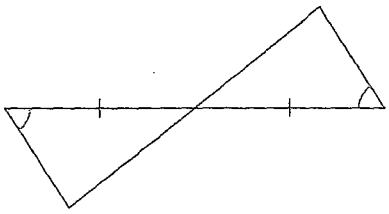

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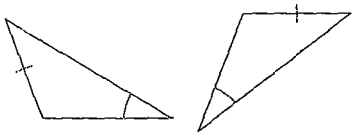

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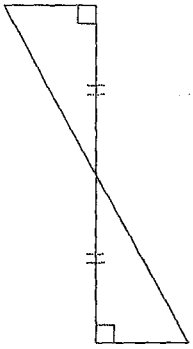

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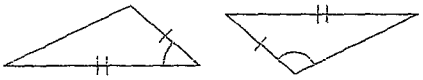

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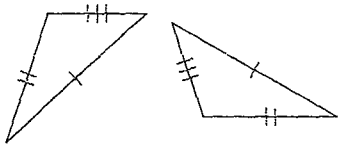

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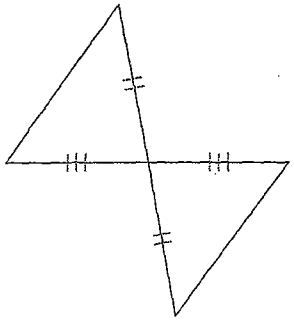

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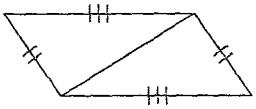
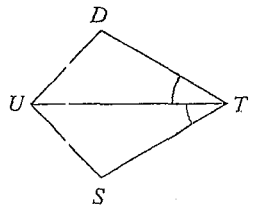
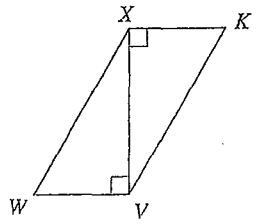


State what additional information is required in order to know that the triangles are congruent for the reason given.

11) ASA



12) SAS



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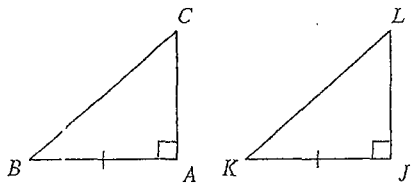

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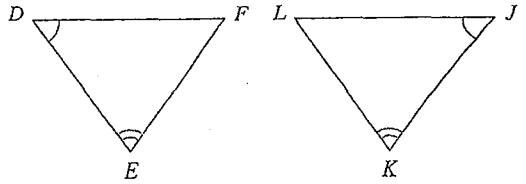
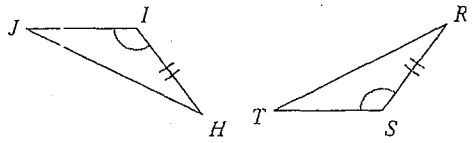
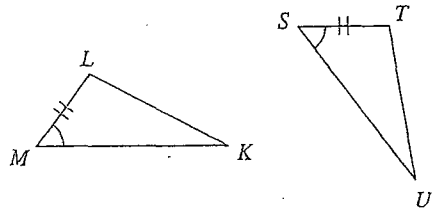


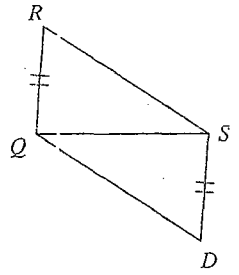
15) SAS



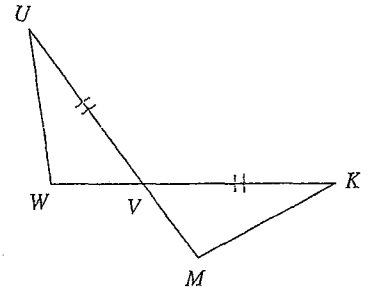
16) ASA



17) SSS



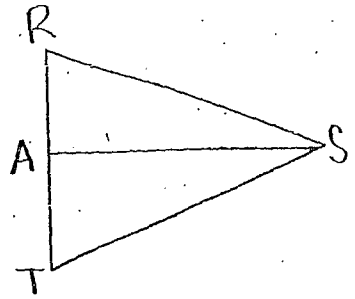
18) SAS



Name _____ Date _____

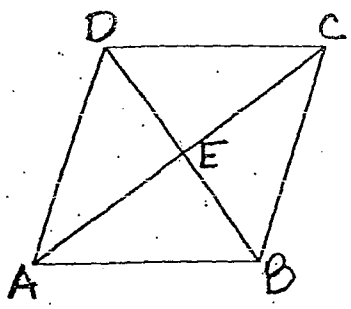
Period _____

PROVING TRIANGLES CONGRUENT

1) 

Prove: $\Delta RAS \cong \Delta TAS$

Statements	Reasons
1) $\overline{AS} \perp \overline{RT}$	1) Given
A is midpoint of $\overline{RT}$	
2) $\angle RAS$ and $\angle TAS$	2)
are right $\angle$ s	
3) $\angle RAS \cong \angle TAS$	3)
4) $\overline{RA} \cong \overline{TA}$	4)
5) $\overline{AS} \cong \overline{AS}$	5)
6) $\Delta RAS \cong \Delta TAS$	6)

2) 

Prove: $\Delta AEB \cong \Delta CED$

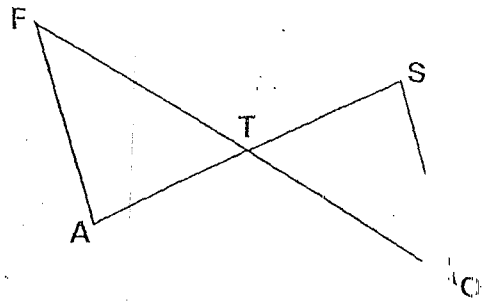
Statements	Reasons
1) $\overline{DB}$ and $\overline{AC}$ bisect at E	1) Given
2) $\overline{DE} \cong \overline{BE}$	2)
$\overline{EC} \cong \overline{EA}$	
3) $\angle DEC$ and $\angle BEA$ are	3)
vertical $\angle$s	
4) $\angle DEC \cong \angle BEA$	4)
5) $\Delta AEB \cong \Delta CED$	5)

Name: _____

Triangle proofs

Do the following proofs on a separate sheet of paper.

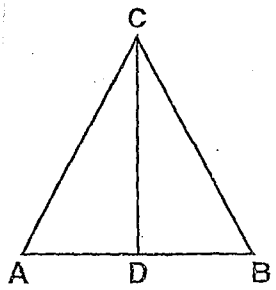
1)



Given: $\overline{FO}$ bisects $\overline{AS}$
$\angle A \cong \angle S$

Prove: by any method: $\triangle FAT \cong \triangle OST$

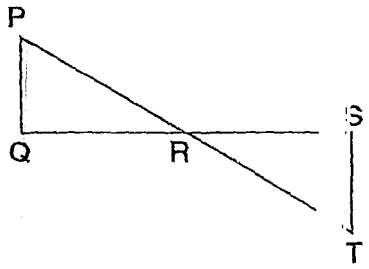
2)



Given: $\overline{AC} \cong \overline{CB}$
D is the midpoint of $\overline{AB}$

Prove by any method: $\triangle ACD \cong \triangle BCD$

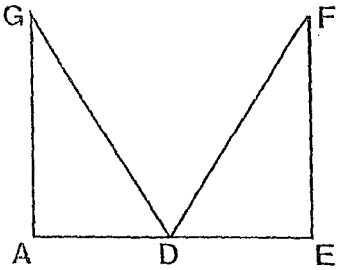
3)



Given: $\overline{PT}$ bisects $\overline{QS}$
$\overline{PQ} \perp \overline{QS}$
$\overline{TS} \perp \overline{QS}$

Prove by any method: $\triangle PQR \cong \triangle TS$

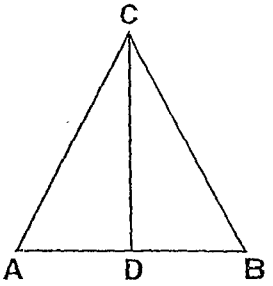
4)



Given: GA = FE
D is the midpoint of $\overline{AE}$
$\overline{GA} \perp \overline{AE}$
$\overline{FE} \perp \overline{AE}$

Prove by any method: a) $\triangle DAG \cong \triangle DEF$
b) $\overline{GD} \cong \overline{FD}$

5)

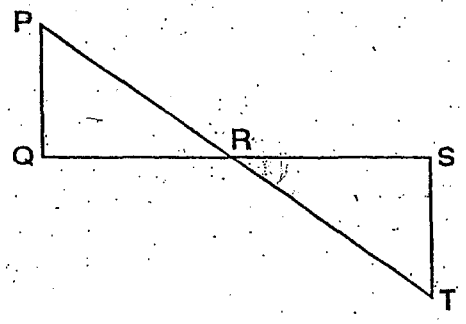


Given: $\overline{CD} \perp \overline{AB}$
D is the midpoint of $\overline{AB}$

Prove by any method: a) $\triangle ADC \cong \triangle BDC$
b) $\measuredangle ACD \cong \measuredangle BCD$

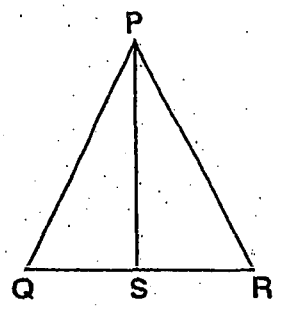
Proofs Involving "Corresponding Parts of Congruent Triangles are Congruent"

me: _____ Date _____



Given: $\overline{PQ} \perp \overline{QS}$
$\overline{TS} \perp \overline{QS}$
R is the midpoint of $\overline{QS}$

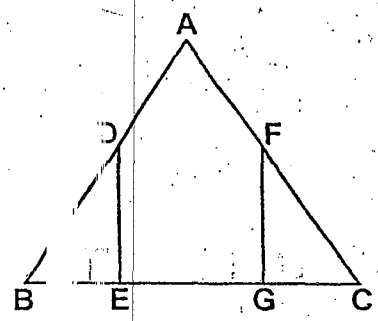
Prove: $\angle P \cong \angle T$



Given: $\overline{PS} \perp \overline{QR}$
$\overline{PS}$ bisects $\angle QPR$

Prove: $\angle Q \cong \angle R$

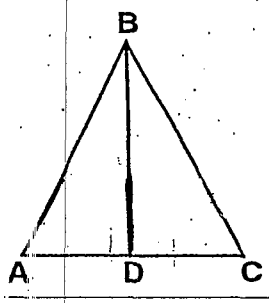
3)



Given: $\overline{ADB}$, $\overline{AFC}$, $\overline{BEGC}$, $\overline{AB} \cong \overline{AC}$, $\overline{DE} \perp \overline{BC}$, $\overline{FG} \perp \overline{BC}$, and $\overline{BG} \cong \overline{CE}$.

Prove: $\overline{BD} \cong \overline{CF}$

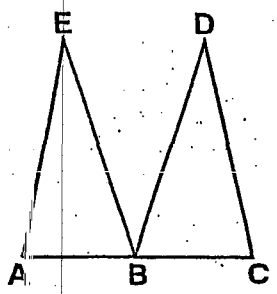
4)



Given: $\triangle ABC$, $\overline{BD}$ is *both* the median and the altitude to $\overline{AC}$.

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

5)

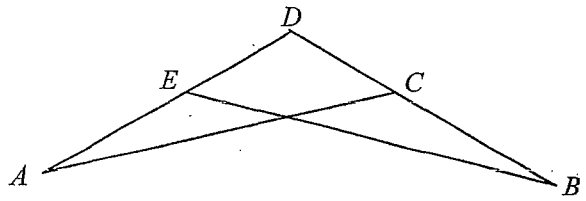


Given: $\angle E \cong \angle D$
$\angle A \cong \angle C$
B is the midpoint of $\overline{AC}$

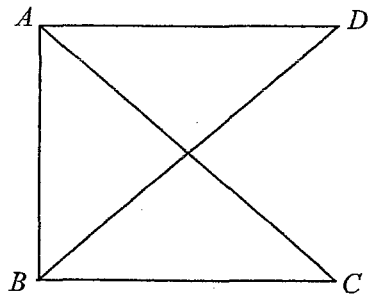
Prove: $\overline{EA} \cong \overline{DC}$

Name: _____
Date: _____

Separate and redraw ΔACD *and* ΔBED. Identify the common side or angle.

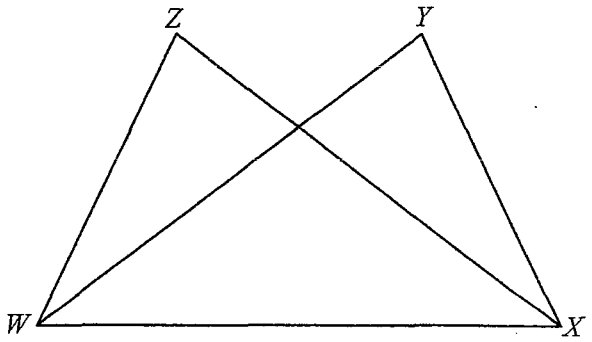


2) Separate and redraw ΔABD *and* ΔBAC. Identify the common side or angle.



Write a Two-Column Proof

3) Given: $\angle ZWX \cong \angle YWX, \angle ZXW \cong \angle YWX$
Prove: $\overline{WZ} \cong \overline{XY}$



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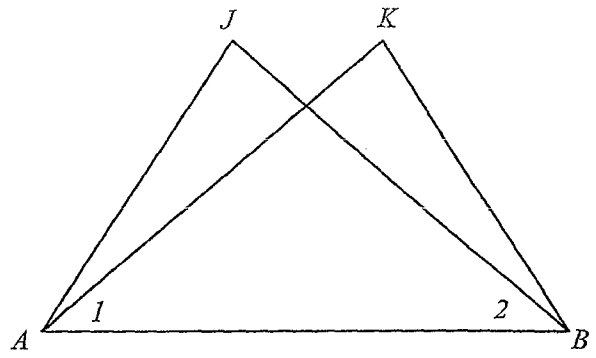
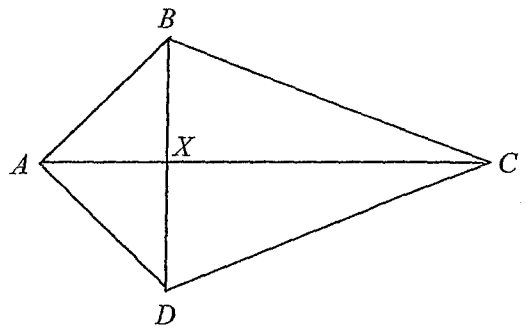
4) Given: $\angle JAB \cong \angle KBA$, $\angle 1 \cong \angle 2$
Prove: $\angle J \cong \angle K$



Write a Two-Column Proof using more tha one pair of congruent triangles.

5) Given: X is the midpoint of $\overline{BD}$; $\overline{AC} \perp \overline{BD}$
Prove $\angle ABC \cong \angle ADC$



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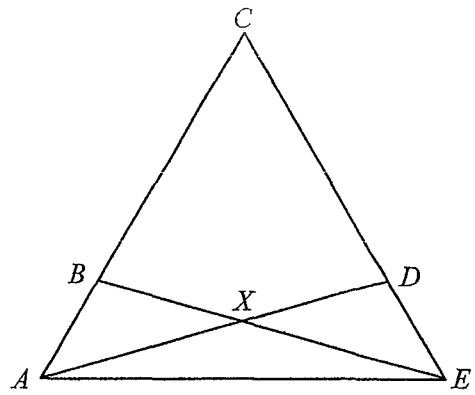
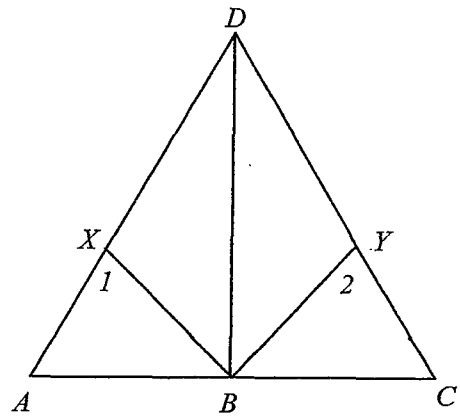
6) Given: $\overline{CA} \cong \overline{CE}$; $\overline{BA} \cong \overline{DE}$
Prove: $\overline{BX} \cong \overline{DX}$



7) Given: $\overline{DB} \perp \overline{AC}$; $\overline{AB} \cong \overline{CB}$; $\angle 1 \cong \angle 2$
Prove: $\overline{XB} \cong \overline{YB}$



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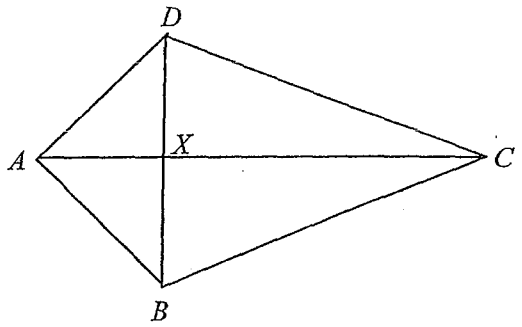
8) Given: $\overline{AB} \cong \overline{AD}$; $\overline{BC} \cong \overline{DC}$
Prove: $\overline{AC} \perp \overline{BD}$



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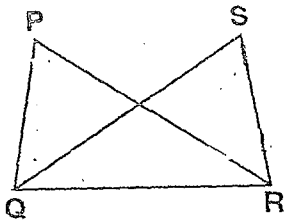
Name_____ Date_____

Period _____

1)

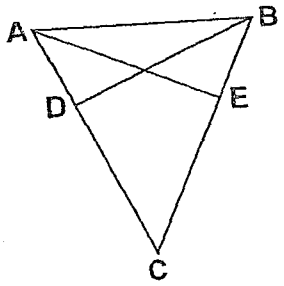


Given: $\angle PQR \cong \angle SRQ$

$\angle P \cong \angle S$

Prove: $\Delta PQR \cong \Delta SRQ$

2)



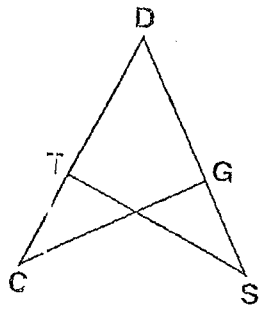
Given: $\overline{CD} \cong \overline{CE}$

$\overline{AE} \perp \overline{BC}$

$\overline{BD} \perp \overline{AC}$

Prove: $\overline{AE} \cong \overline{BD}$

3)

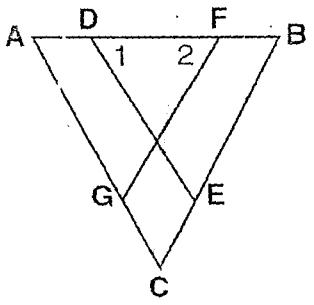


Given: $\overline{DTC} \cong \overline{DGS}$

$\angle C \cong \angle S$

Prove: $\overline{ST} \cong \overline{CG}$

4)



Given: $\overline{ADFB}$

$\overline{AD} \cong \overline{FB}$

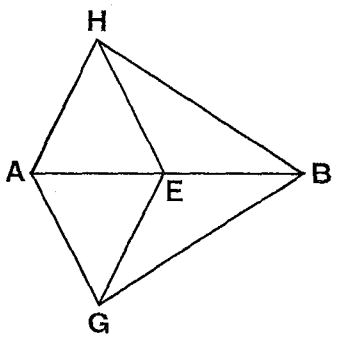
$\angle 1 \cong \angle 2$

$\angle A \cong \angle B$

Prove: $\triangle AGF \cong \triangle DEB$

Name: _____ Date _____

1)

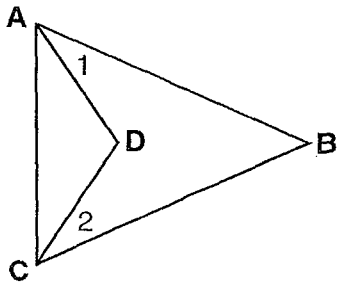


Given: $\overline{AH} \cong \overline{AG}$

$\overline{HB} \cong \overline{GB}$

Prove: $\overline{HE} \cong \overline{GE}$

2)

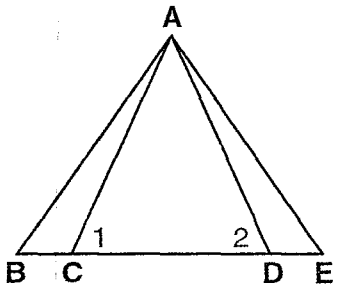


Given: $\overline{AB} \cong \overline{BC}$

$\angle 1 \cong \angle 2$

Prove: ΔADC is isosceles

3)



Given: $\overline{BD} \cong \overline{CE}$

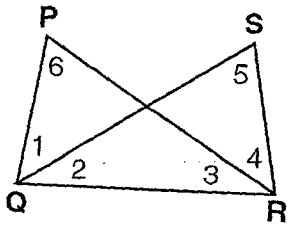
$\overline{AC} \cong \overline{AD}$

Prove: $\overline{AB} \cong \overline{AE}$

Name: _____ Date _____

Geometry Pd. _____ Practice Proofs

1)

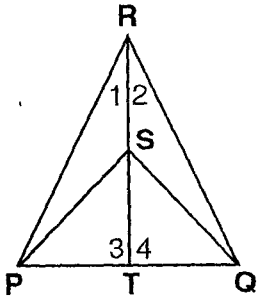


Given: $\angle 1 \cong \angle 4$
$\angle 2 \cong \angle 3$

Prove: $\angle 5 \cong \angle 6$

S	R

2)

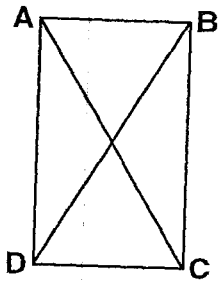


Given: $\overline{RT} \perp \overline{PQ}$
$\overline{PS} \cong \overline{SQ}$

Prove: $\angle 1 \cong \angle 2$

S	R

3)



Given: $\overline{AB} \perp \overline{BC}$

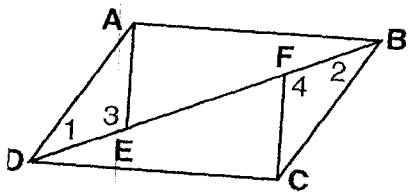
$\overline{DC} \perp \overline{BC}$

$\angle ACB \cong \angle DBC$

Prove: $\overline{AC} \cong \overline{DB}$

S	R

4)



Given: $\angle 1 \cong \angle 2$

$\overline{DF} \cong \overline{BE}$

$\angle 3 \cong \angle 4$

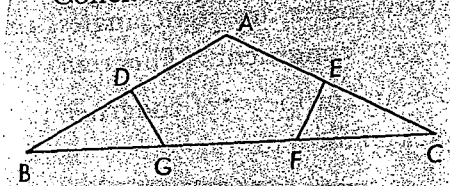
Prove: $\overline{AB} \cong \overline{DC}$

S	R

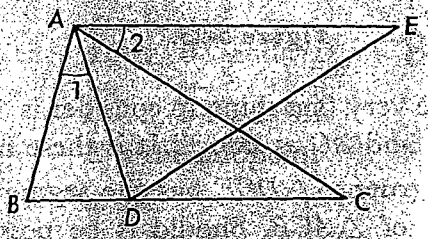
Name_____

Proofs with Overlapping Triangles, Isosceles Triangles, and Two Pairs of triangles

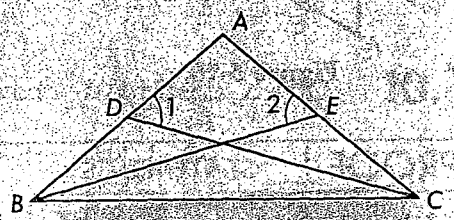
Given: $\angle B \cong \angle C$
$\overline{AE} \cong \overline{AD}$
$\overline{AB} \cong \overline{AC}$
$\overleftrightarrow{FE} \perp \overleftrightarrow{AC}$
$\overleftrightarrow{GD} \perp \overleftrightarrow{AB}$
Concl.: $\overline{BF} \cong \overline{GC}$



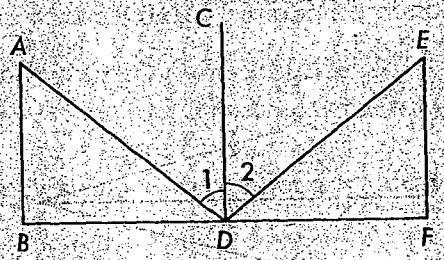
Given: $\overline{AC} \cong \overline{AE}$
$\overline{AB} \cong \overline{AD}$
$\angle 1 \cong \angle 2$
Concl.: $\overline{BC} \cong \overline{DE}$



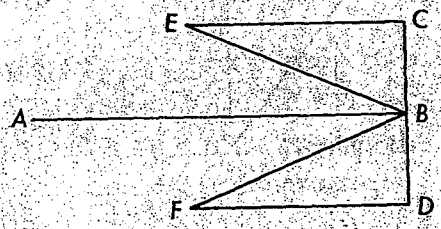
Given: $\overline{AB} \cong \overline{AC}$
E is the midpoint of $\overline{AC}$.
D is the midpoint of $\overline{AB}$.
Concl.: $\angle 1 \cong \angle 2$



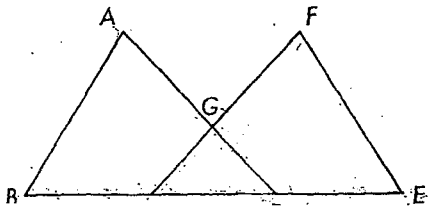
4). Given: $\overleftrightarrow{CD} \perp \overleftrightarrow{BF}$
$\angle 1 \cong \angle 2$
$\angle A \cong \angle E$
$\overline{AD} \cong \overline{ED}$
Concl.: D is the midpoint of $\overline{BF}$.



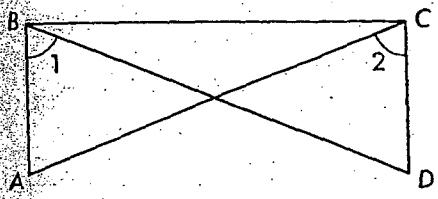
5). Given: $\overleftrightarrow{EC} \perp \overleftrightarrow{CD}$
$\overleftrightarrow{FD} \perp \overleftrightarrow{CD}$
$\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$
$\overline{FD} \cong \overline{EC}$
B is the midpoint of $\overline{CD}$.
Concl.: $\overrightarrow{BA}$ bisects $\angle EBF$.



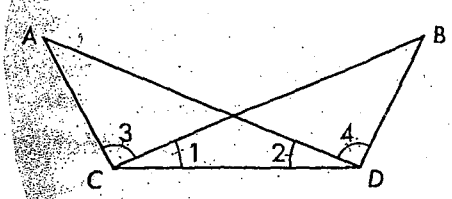
6) Given: $\overleftrightarrow{AD}$ and $\overleftrightarrow{FC}$ trisect $\overline{BE}$.
$\angle B \cong \angle E$
$\overline{AB} \cong \overline{FE}$
Concl.: $\triangle GCD$ is isosceles.



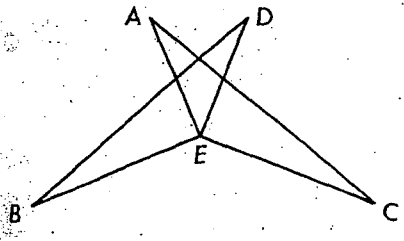
7). Given: $\overleftrightarrow{AB} \perp \overleftrightarrow{BC}$
$\overleftrightarrow{DC} \perp \overleftrightarrow{BC}$
$\angle 1 \cong \angle 2$
Concl.: $\overline{AB} \cong \overline{DC}$



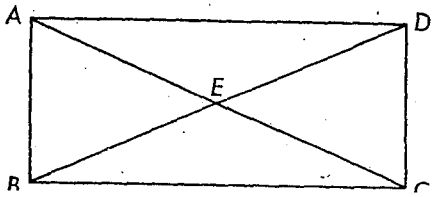
8). Given: $\angle 1 \cong \angle 2$
$\angle 3 \cong \angle 4$
Concl.: $\angle A \cong \angle B$



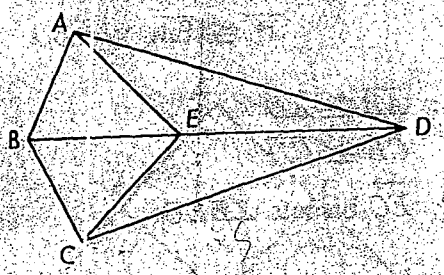
9) Given: $\overline{AE} \cong \overline{DE}$
$\overline{BE} \cong \overline{CE}$
$\overleftrightarrow{AE} \perp \overleftrightarrow{BE}$
$\overleftrightarrow{DE} \perp \overleftrightarrow{EC}$
Concl.: $\angle A \cong \angle D$



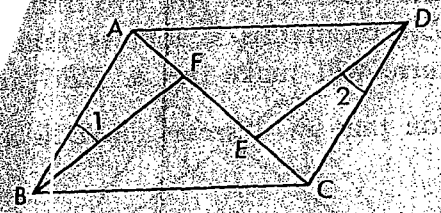
10) Given: $\overleftrightarrow{AB}$ and $\overleftrightarrow{DC} \perp \overleftrightarrow{BC}$
$\overline{AB} \cong \overline{DC}$
Concl.: $\triangle EBC$ is isosceles.



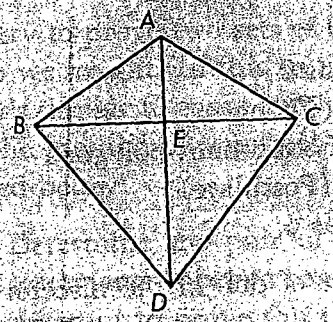
11) Given: $\overline{AB} \cong \overline{CB}$
$\overline{AD} \cong \overline{CD}$
Concl.: $\angle AED \cong \angle CED$



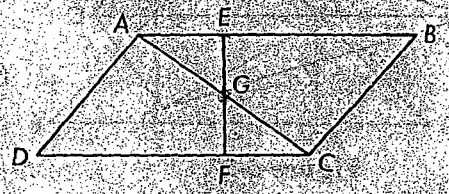
12) Given: $\overline{AB} \cong \overline{CD}$
$\overline{AD} \cong \overline{BC}$
$\angle 1 \cong \angle 2$
Concl.: $\overline{AF} \cong \overline{CE}$



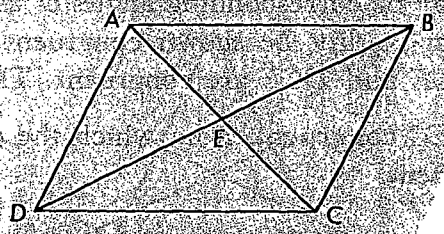
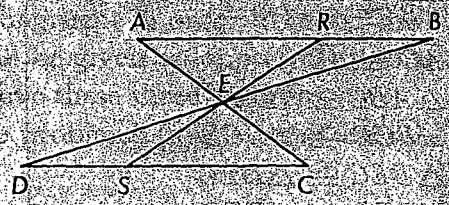
13) Given: $\overline{AB} \cong \overline{AC}$
$\overline{DB} \cong \overline{DC}$
Concl.: $\overleftrightarrow{AD}$ bisects $\overline{BC}$.



14) Given: $\overline{AB} \cong \overline{DC}$
$\overline{AD} \cong \overline{BC}$
G is the midpoint of $\overline{AC}$.
Concl.: G is the midpoint of $\overline{EF}$.



15) Given: $\overline{AB} \cong \overline{DC}$
$\overline{AD} \cong \overline{BC}$
Concl.: $\overline{AE} \cong \overline{EC}$



16) Given: $\overline{AC}$ and $\overline{BD}$ bisect each other at E.
Concl.: E is the midpoint of $\overline{RS}$.