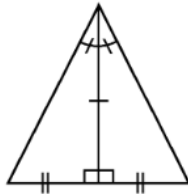


Name: _____
Homework **06-04**

Questions 1 and 2 refer to the following:

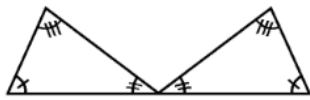
What is the congruence correspondence, if any, that will prove the given triangles congruent?

C 1)



- A) SSS
B) SSA
C) ASA
D) none

D 2)



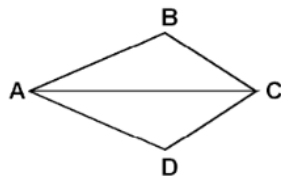
- A) AAS
B) SSS
C) ASA
D) none

A 3)

- Two triangles are congruent if
A) corresponding sides and corresponding angles are congruent
B) the angles in each triangle have a sum of 180°
C) corresponding angles are congruent
D) corresponding sides are proportional

D 4)

In the accompanying diagram of quadrilateral ABCD, diagonal AC bisects $\angle BAD$ and $\angle BCD$.

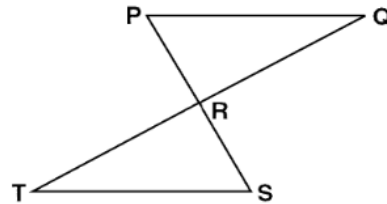


Which statement can be used to prove that $\triangle ABC \cong \triangle ADC$?

- A) SAS \cong SAS
B) SSS \cong SSS
C) HL \cong HL
D) ASA \cong ASA

C 5)

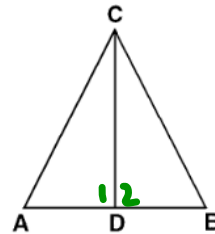
In the diagram below, $\triangle PQR \cong \triangle STR$.



Complete the statement $\overline{PQ} \cong ?$

- A) \overline{RQ}
B) \overline{RS}
C) \overline{ST}
D) \overline{RT}

6)



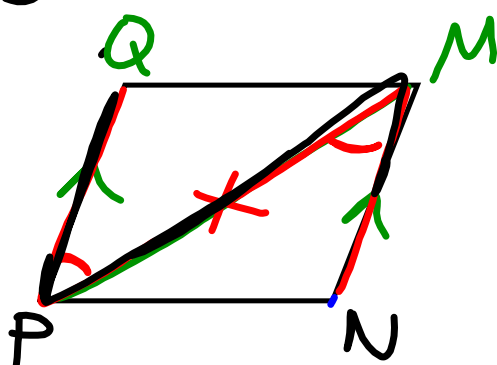
Given: $\overline{CD} \perp \overline{AB}$

D is the midpoint of \overline{AB}

Prove: $\triangle ADC \cong \triangle BDC$

Statements	Reasons
1. $\overline{CD} \perp \overline{AB}$ D is midpt of \overline{AB}	1. Given
2. $\overline{AD} \cong \overline{BD}$	2. A pt is a midpt iff it \div 's a segmt into 2 \cong segmts.
3. $\angle 1$ & $\angle 2$ are rt \angle 's	3. 2 lines are \perp iff they intersect to form rt \angle 's.
4. $\angle 1 \cong \angle 2$	4. All right angles are \cong .
5. $\overline{CD} \cong \overline{CD}$	5. Reflexive
6. $\triangle ADC \cong \triangle BDC$	6. SAS \cong SAS

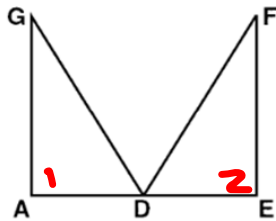
5



$$\overline{QP} \cong \overline{NM}$$

SAS

7)

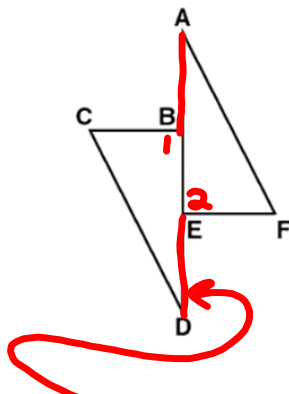


Given: $\overline{GA} \cong \overline{FE}$
 D is the midpoint of \overline{AE}
 $\overline{GA} \perp \overline{AE}$
 $\overline{FE} \perp \overline{AE}$

Prove: $\triangle DAG \cong \triangle DEF$

Statements	Reasons
1. $\overline{GA} \cong \overline{FE}$ D is midpt of \overline{AE} $\overline{GA} \perp \overline{AE}$ $\overline{FE} \perp \overline{AE}$	1. Given
2. $\overline{AD} \cong \overline{ED}$	2. A pt is a midpt iff it \div 's a segmt into 2 \cong segmts. (1)
3. $\angle 1$ & $\angle 2$ are rt \angle 's	3. 2 lines are \perp iff they intersect to form rt \angle 's. (1)
4. $\angle 1 \cong \angle 2$	4. All right angles are \cong . (3)
5. $\triangle DAG \cong \triangle DEF$	5. SAS \cong SAS (1,4,2)

8)



Given: $\overline{AB} \cong \overline{ED}$
 $\overline{FE} \cong \overline{CB}$
 $\overline{FE} \perp \overline{AD}$
 $\overline{CB} \perp \overline{AD}$

Prove: $\triangle AEF \cong \triangle CBD$

Statements	Reasons
1. $\overline{AB} \cong \overline{ED}$, $\overline{FE} \cong \overline{CB}$ $\overline{FE} \perp \overline{AD}$, $\overline{CB} \perp \overline{AD}$	1. Given
2. $\angle 1$ & $\angle 2$ are rt \angle 's	2. 2 lines are \perp iff they intersect to form rt \angle 's.
3. $\angle 1 \cong \angle 2$	3. All right angles are \cong .
4. $\overline{BE} \cong \overline{BE}$	4. Reflexive
5. $\overline{AB} + \overline{BE} \cong \overline{ED} + \overline{BE}$ $\overline{AE} \cong \overline{DB}$	5. Addition
6. $\triangle AEF \cong \triangle CBD$	6. SAS \cong SAS

Statements	Reasons
1. $\overline{AB} \cong \overline{ED}$, $\overline{FE} \cong \overline{CB}$ $\overline{FE} \perp \overline{AD}$, $\overline{CB} \perp \overline{AD}$	1. Given
2. $\overline{FE} \parallel \overline{CB}$	2. If 2 lines are \perp to the same line then those lines are parallel.
3. $\angle 1 \cong \angle 2$	3. If 2 parallel lines are cut by a transversal then alt. int. angles are congruent.
4. $\overline{BE} \cong \overline{BE}$	4. Reflexive
5. $\overline{AB} + \overline{BE} \cong \overline{ED} + \overline{BE}$ $\overline{AE} \cong \overline{DB}$	5. Addition
6. $\triangle AEF \cong \triangle CBD$	6. SAS \cong SAS

- ① List the ways we are able to prove triangles congruent:

AAS, SAS, ASA, SSS
SAA

- ② Mark the pairs of triangles appropriately to show the difference between ASA and AAS:



AAS



ASA

Turn to Page 19 of your note packet...

Work on Example 6...there are 5 steps

http://www.mathwarehouse.com/geometry/congruent_triangles/angle-side-side-postulate.php



5 steps

Ex 6: Given: $\angle E \cong \angle B$ $\overline{EF} \parallel \overline{BC}$ $\overline{DC} \cong \overline{AF}$

parts

Prove: $\triangle EDF \cong \triangle BAC$ 

Statements

Reasons

① $\angle E \cong \angle B$ (A) 1. Given

$\overline{EF} \parallel \overline{BC}$
 $\overline{DC} \cong \overline{AF}$

2. $\angle 1 \cong \angle 2$ (A) 2. $\parallel \rightarrow \cong$ alt. int. \angle s

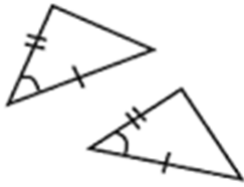
3. $\overline{CF} \cong \overline{FC}$ 3. Reflexive

4. $\overline{DC} + \overline{CF} \cong \overline{AF} + \overline{FC}$ 4. Addition
 $\overline{DF} \cong \overline{AC}$ (S)

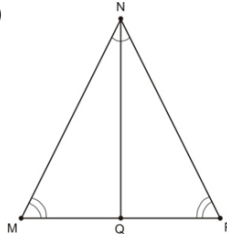
5. \rightarrow 5. AAS \cong AAS

Lesson 5: Proving Triangle Congruency Using HL**Warm up:** Which method can be used to prove each pair of triangles congruent?

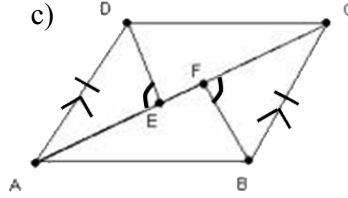
a)



b)

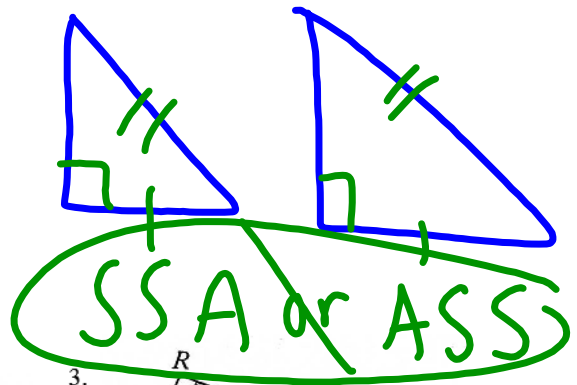
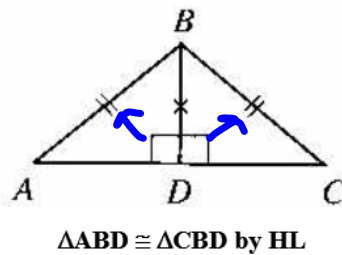


c)

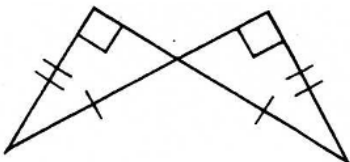


HL - If the hypotenuse and one leg of a right triangle are congruent to the hypotenuse and leg of a second right triangle, then the two right triangles are congruent. Note: You must show that you have right triangles to use this method!

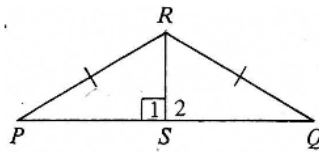
- ① Rt. Δ 's
 ② $H \cong H$
 ③ $L \cong L$

**Ex 1:** Are the triangles congruent by HL?

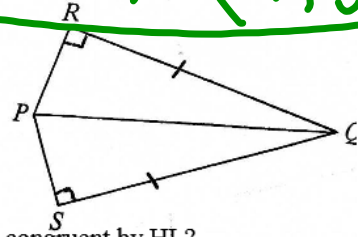
1.



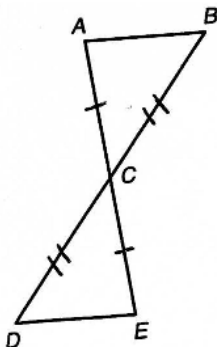
2.



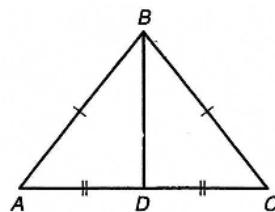
3.

**Ex 2:** What additional information do you need in order to say the triangles are congruent by HL?

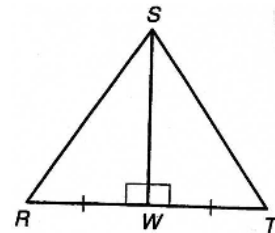
1.



2.

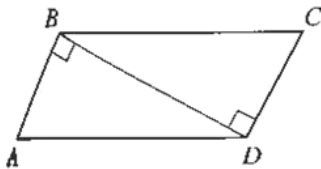


3.



Ex 3: Given: $\angle ABD$ is a right angle
 $\angle CDB$ is a right angle
 $\overline{AD} \cong \overline{CB}$

Prove: $\triangle ABD \cong \triangle CDB$

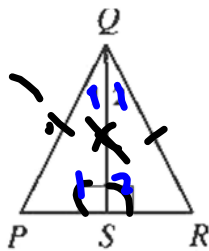


Statements

Reasons

Ex 4: Given: $\overline{QS} \perp \overline{PR}$
 $\overline{PQ} \cong \overline{RQ}$

Prove: $\triangle PQS \cong \triangle RQS$



Statements

Reasons

1. $\overline{QS} \perp \overline{PR}$ $\overline{PQ} \cong \overline{RQ}$ (H)

1. Given

2. $\angle 1$ and $\angle 2$
are Rt. \angle 's2. \perp segs. int. to form
Rt. \angle 's3. $\triangle PQS$ & $\triangle RQS$
are Rt. Δ 's3. A Δ with a Rt.
 \angle is a Rt. Δ \rightarrow ① $H \cong H$ ✓ \rightarrow ② $L \cong L$ ✓ \rightarrow ③ Rt. Δ 's ✓4. $\overline{QS} \cong \overline{QS}$ (L)

4. Reflexive

⑤ $\triangle PQS \cong \triangle RQS$ 5. $H \cong H$
 $L \cong L$

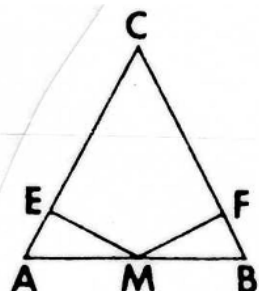
Ex 5: Given: $\overline{EM} \perp \overline{AC}$

$\overline{FM} \perp \overline{BC}$

$\overline{EA} \cong \overline{FB}$

M is the midpoint of \overline{AB}

Prove: $\triangle EMA \cong \triangle FMB$



Statements

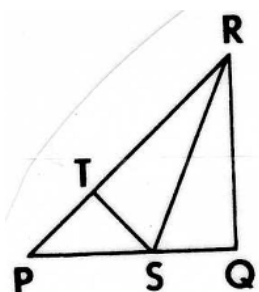
Reasons

Ex 6: Given: $\angle Q$ is a right angle

$\overline{ST} \perp \overline{PR}$

$\overline{RT} \cong \overline{RQ}$

Prove: $\triangle TRS \cong \triangle QRS$



Statements

Reasons