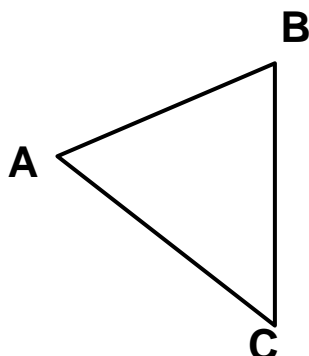


TOPIC 6-2: USING SSS, SAS, ASA, AAS, & HL TO PROVE TRIANGLES CONGRUENT

Important descriptions/terms to know before we begin:



- 1) \overline{AB} is _____ $\angle C$
- 2) \overline{AB} is _____ $\angle A$ and $\angle B$.
- 3) $\angle A$ is _____ \overline{BC} .
- 4) $\angle A$ is _____ \overline{AB} and \overline{AC} .

If 2 triangles with their corresponding sides are congruent **and** their corresponding angles are congruent, then the 2 triangles are congruent.

The converse is also true. Write its converse.

But we don't have to know all three sides and all three angles ...usually **three out of the six** is enough.

You can show that two triangles are congruent, if any of the following criteria are met: **SSS, SAS, ASA, AAS, or HL**.

****REFER TO YOUR FACT SHEET!!!**

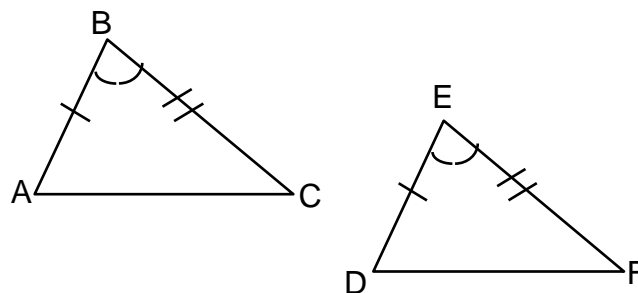
EXAMPLES: In each example, answer each of the following questions.

- a) State the congruent parts.
- b) How are the triangles congruent?
- c) State the congruence.

1. a) _____

b) _____

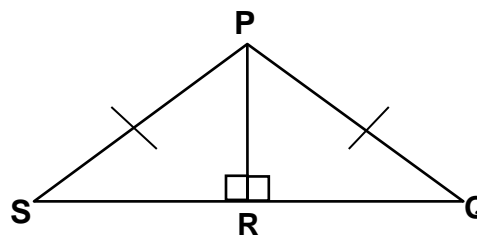
c) $\triangle ABC \cong \triangle$ _____



2. a) _____

b) _____

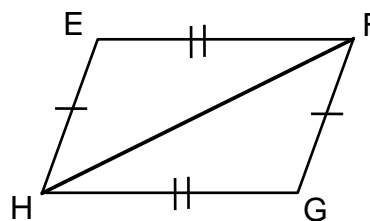
c) $\triangle SPR \cong \triangle$ _____



3. a) _____

b) _____

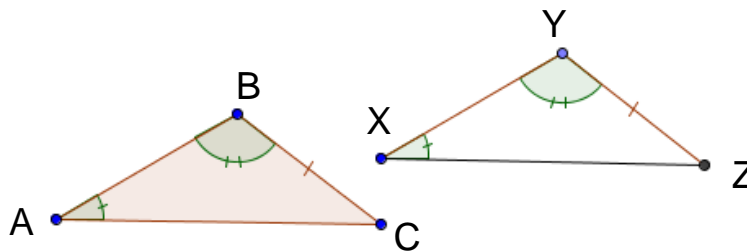
c) $\triangle HEF \cong \triangle$ _____



4. a) _____

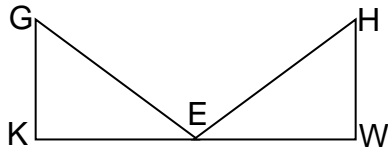
b) _____

c) $\triangle ABC \cong \triangle$ _____



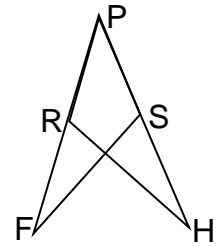
EXAMPLES: Mark the drawing to show the given information and fill in the blanks.

5. E is the midpoint of \overline{KW} . $\angle KEG \cong \angle WEH$, and $\angle K \cong \angle W$.



$\triangle KEG \cong \triangle$ _____ by _____.

6. $\overline{FP} \cong \overline{HP}$ and $\angle F \cong \angle H$.



$\triangle PFS \cong \triangle$ _____ by _____.

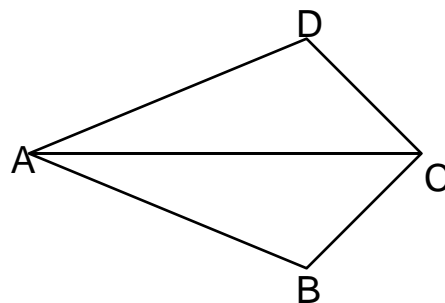
NOWPROOFS WITH TRIANGLES

- 1) Your first statement(s) are what is GIVEN or already marked on the picture.
- 2) Mark the **GIVEN** information on the picture.
- 3) Look for congruencies **not in** GIVEN. Any of our properties used?
 - o Vertical Angles: Vertical angles form an "X" and the angles across from each other are \cong
 - o Reflexive Property: shared lines, segments or angles – mark congruent segments or angles on the diagram.
- 4) Look at what you have marked in the picture and determine how the Triangles are congruent? (**SSS, SAS, ASA, AAS, or HL**)
- 5) Your last statement should be the PROVE statement, and your reason should be **SSS, SAS, ASA, AAS, or HL**

EXAMPLE 7:

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

Prove: $\triangle ADC \cong \triangle ABC$

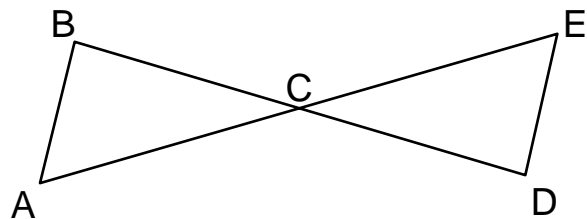


STATEMENTS	REASONS
1.	1. Given
2.	2. Given
3. $\overline{AC} \cong \overline{AC}$	3.
4. $\triangle ADC \cong \triangle ABC$	4.

EXAMPLE 8:

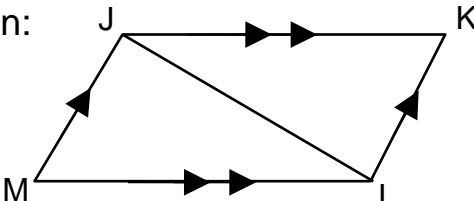
Given: C is the midpoint of \overline{BD} ; C is the midpoint of \overline{AE} .

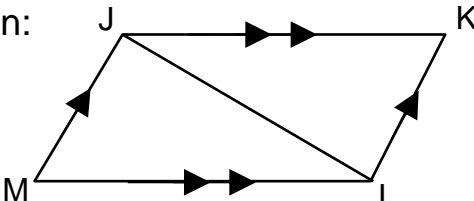
Prove: $\triangle ABC \cong \triangle EDC$



STATEMENTS	REASONS
1. C is the midpoint of \overline{BD}	1.
2.	2. Given
3. $\overline{BC} \cong \overline{DC}$	3.
4.	4. Def. of midpt.
5. $\angle BCA \cong \angle DCE$	5.
6. $\triangle ABC \cong \triangle EDC$	6.

EXAMPLE 9:

Given:  Prove: $\triangle MJL \cong \triangle KLJ$



STATEMENTS	REASONS
1. $\overline{JK} \parallel \overline{ML}$	1.
2.	2. Given
3. $\angle MJL \cong \angle KLJ$	3.
4. $\angle MLJ \cong \angle KJL$	4.
5.	5. Reflexive Property
6. $\triangle MJL \cong \triangle KLJ$	6.