

Date:

Title:

(A) **Lesson Objectives:**

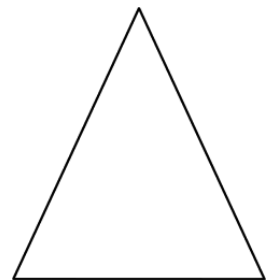
- Review the Triangle congruence postulates → SSS, SAS, ASA, AAS by means of constructions
- Introduce and derive/develop the Isosceles Triangle Theorem
- Use congruence of triangles to conclude congruence of corresponding parts (CPCTC)
- Introduce proofs → flow chart, 2 column, paragraph

(B) **Congruence Postulates** → we will “construct” the following triangles to determine their uniqueness:

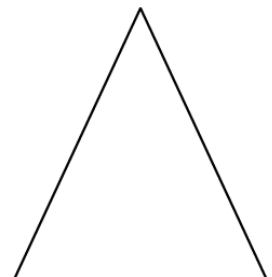
- In $\triangle ABC$ → $AB = 6$ cm, $m\angle B = 70^\circ$, and $m\angle A = 40^\circ$
- In $\triangle DEF$ → $DE = 5$ cm, $EF = 7$ cm, and $m\angle F = 30^\circ$
- In $\triangle JKL$ → $m\angle J = 50^\circ$, $m\angle K = 75^\circ$, and $m\angle L = 55^\circ$
- In $\triangle MNO$ → $MN = 8$ cm, $MO = 10$ cm, and $m\angle N = 90^\circ$
- In $\triangle PQR$ → $PQ = 6$ cm, $m\angle P = 45^\circ$, and $m\angle R = 100^\circ$

(C) **Isosceles Triangle Theorem (ITT)**

On pg 231 in the Geometry textbook, we will work through Q20 – 24 to develop the ITT



(D) **Converse of the ITT:**



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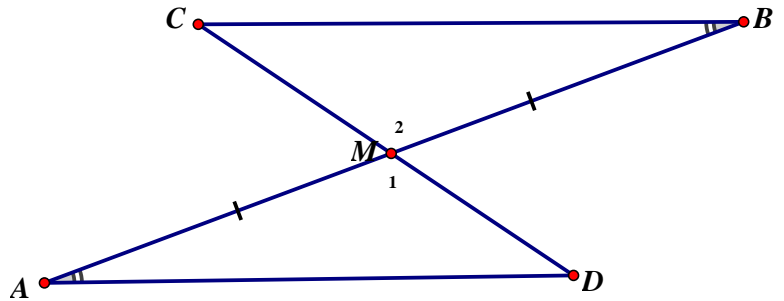
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(E) CPCTC: In lessons 48 and 49 you discovered five shortcuts for showing that two triangles are congruent: SSS, ASA, SAS, SAA and HL.

The definition of congruent triangles states that if two triangles are congruent, then the corresponding parts of those congruent triangles are congruent. This definition will be abbreviated with the letters **CPCTC**.

Example A

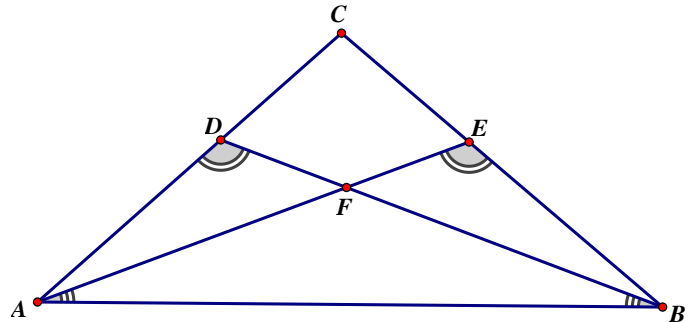
In the figure at right, is $\overline{AD} \cong \overline{BC}$? Complete the deductive argument below to explain why they must be congruent.



Proof: $\angle 1 \cong$ _____ because they are _____. And it is given that $\overline{AM} \cong$ _____ and \angle _____ \cong \angle _____. So $\triangle AMD \cong \triangle$ _____ by _____. If the triangles are congruent, then $\overline{AD} \cong \overline{BC}$ by _____.

Example B

Is $\overline{AE} \cong \overline{BD}$? Write a paragraph proof explaining why.



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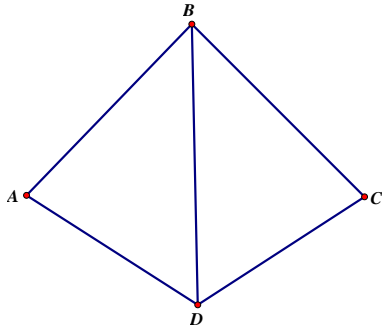
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Example C

$$\angle A \cong \angle C$$

$$\angle ABD \cong \angle CBD$$

Is $\overline{AB} \cong \overline{CB}$?

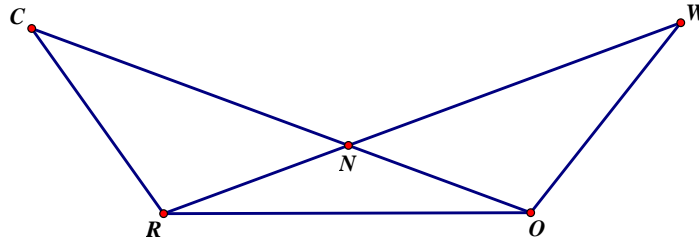


Example D

$$\overline{CN} \cong \overline{WN}$$

$$\angle C \cong \angle W$$

Is $\overline{RN} \cong \overline{ON}$?



(1) <http://www.kutasoftware.com/FreeWorksheets/GeoWorksheets/4-Isosceles%20and%20Equilateral%20Triangles.pdf>

(2) http://richardmath.weebly.com/uploads/4/9/2/1/4921578/ws_cpctc_proofs.pdf

(F) Video Links for Help

a) <http://www.onlinemathlearning.com/geometry-proofs.html>

b) <http://www.onlinemathlearning.com/cpctc-2.html>

c) <http://www.5min.com/Video/How-to-Use-Corresponding-Parts-of-Congruent-Triangles-516909804>