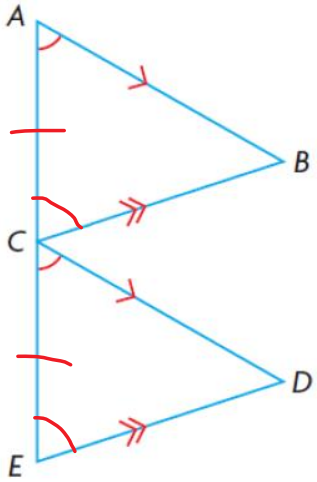
Math 2201 **Date:**_____

2.6 Proving Congruent Triangles

Here you will focus on formal geometric proofs. Where applicable, it would be beneficial to draw diagrams so that you can have a visual representation of what is given and can determine other relationships.

Remember, when you prove two triangles are congruent, their corresponding parts are congruent.

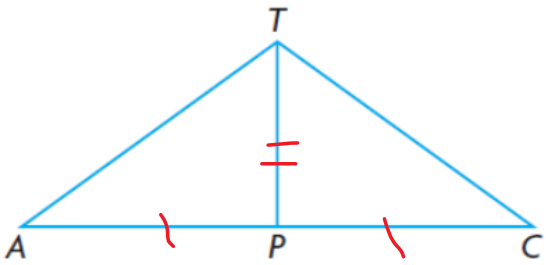
Example 1:
Given $AC = CE$
Prove $\triangle ABC \cong \triangle CDE$



Statement	Reason
$AB \parallel CD$	Given
$\angle CAB = \angle ECB$	Given
$\angle BCA = \angle DEC$	corresponding angles
$\triangle ABC \cong \triangle CDE$	ASA

Example 2:
Given $TP \perp AC$
$AP = CP$
Prove $\triangle TAC$ is isosceles.

$\perp$: perpendicular (meets at 90°)



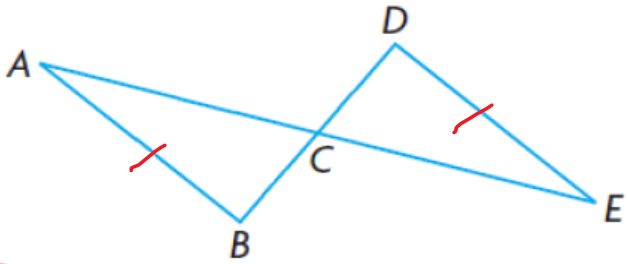
Statement	Reason
$AP = CP$	Given
$\angle APT = 90°$ $\angle CPT = 90°$	$TP \perp AC$
$TP = TP$	common side
$\triangle TAP = \triangle TCP$	SAS
$TA = TC$	matching sides
$\triangle TAC$ is isosceles	2 sides in a triangle are equal.

Example 3:

Given: AE and BD bisect each other at C.

$AB = ED$

Prove: $\angle A = \angle E$



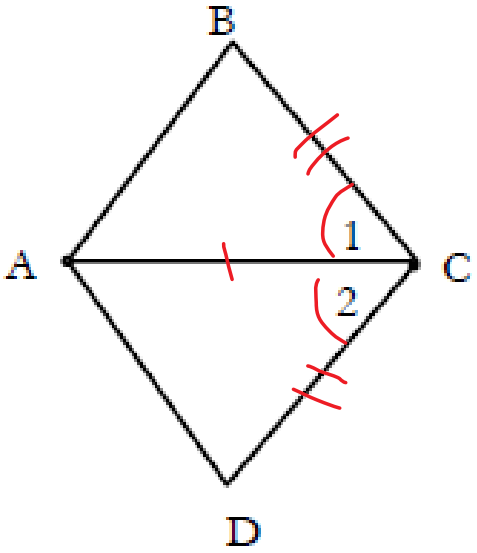
Statement	Reason
$AB = ED$	Given
$AC = EC$ $BC = DC$	AE and BD bisect each other at C. (given)
$\triangle ABC = \triangle EDC$	SSS
$\angle A = \angle E$	Matching angles of congruent triangles

Example 4:

Given: $BC = CD$

AC bisects $\angle BCD$

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



Statement	Reason
$\overline{BC} = \overline{CD}$	Given
$\angle BCA \cong \angle DCA$	$\angle C$ is bisected
$\overline{AC} = \overline{AC}$	Common side
$\triangle ABC \cong \triangle ACD$	SAS

Textbook Questions: page 112 - 114 #1, 2, 4, 5, 6, 8