Level 1 Geometry Received:
Name:_____________________ Block: Due:11/14/08

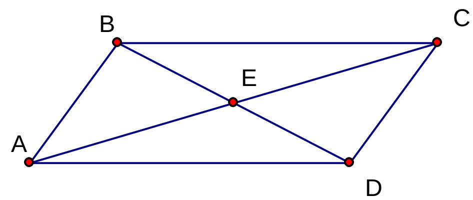
CPCTC

While it only takes 3 pieces of information to determine two triangles are congruent, it is important to remember that the definition of triangle congruence involves six. This gives us the opportunity to show two triangles are congruent using three pieces of information when what we really want to do show something we didn't know until we showed the triangles are congruent.

It works like this: $\overline{AB} \cong \overline{XY}, \overline{AC} \cong \overline{XZ}, \overline{BC} \cong \overline{YZ}$ which shows that $\triangle ABC \cong \triangle XYZ$ and then the definition of triangle congruence says $\triangle ABC \cong \triangle XYZ \Rightarrow \overline{AB} \cong \overline{XY}, \overline{AC} \cong \overline{XZ}, \overline{BC} \cong \overline{YZ}$ ***and*** $\angle A \cong \angle X, \angle B \cong \angle Y, \angle C \cong \angle Z$ so we learned $\angle A \cong \angle X, \angle B \cong \angle Y, \angle C \cong \angle Z$ which are three facts we didn't know when we started.

In a proof we could now claim any of the angle pairs are equal and the reason would be CPCTC which stands for "corresponding parts of congruent triangles are congruent."

Here's an example (fill in any blanks)



Given: E is the midpoint of $\overline{AC}$ and $\overline{BD}$

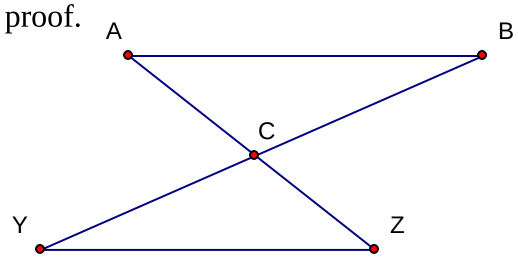
Prove: $\overline{AB} \cong \overline{CD}$

1. E is the midpoint of $\overline{AC}$	Given
2. ______________________________	Def of midpoint
3. E is the midpoint of $\overline{BD}$	_____________
4. $\overline{BE} \cong \overline{ED}$	_____________
5. $\angle AEB$ and $\angle CED$ are vertical angles	Given from Diagram
6. ______________________________	_____________
7. $\triangle AEB \cong \triangle CED$	_____________
8. ______________________________	CPCTC

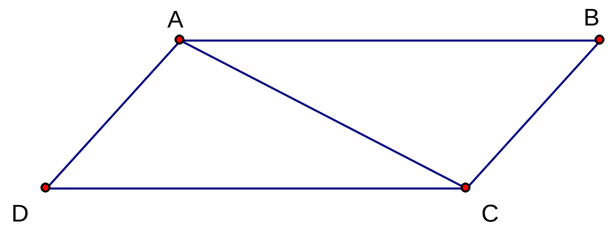
This concept is introduced in your textbook in section 3.3

Write proofs for each of these conjectures on a separate sheet of paper and attach it to this sheet. You may use two column or flow chart style of proof.

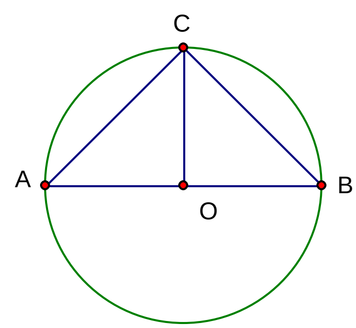
1. Given: $\angle B \cong \angle Y$
C is the midpoint of $\overline{BY}$
Prove: $\overline{AB} \cong \overline{YZ}$



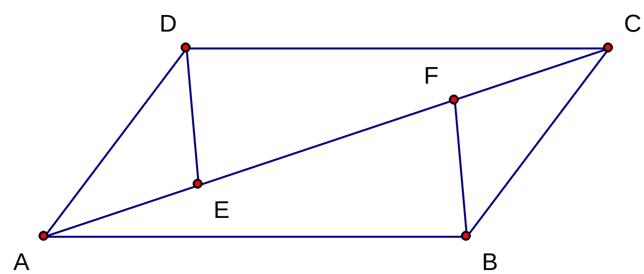
2. Given: $\angle DAC \cong \angle BCA$
$\angle ACD \cong \angle BAC$
Prove: $\angle B \cong \angle D$



3. Given: $\odot O$ (this means O is the center of the circle)
$\overline{AB} \perp \overline{OC}$
Prove: $\overline{AC} \cong \overline{BC}$



4. Given: $\angle CFB \cong \angle AED$
$\overline{AE} \cong \overline{FC}$
$\overline{FB} \cong \overline{DC}$
Prove: $\angle BAF \cong \angle DCE$



5. Given: $\odot O$
$\overline{XY} \cong \overline{YZ}$
Prove: $\overrightarrow{YO}$ bisects $\angle XYZ$