

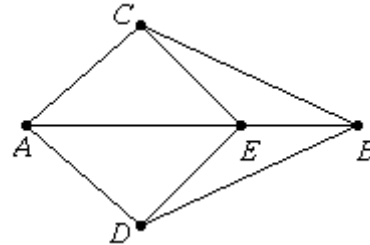
5-4: Using Two Pairs of Congruent Triangles

- Often the line segments or angles that we want to prove congruent are not corresponding parts of triangles that can be proved congruent by using the given information. However, it may be possible to use the given information to prove a different pair of triangles congruent. Then the congruent corresponding parts of this second pair of triangles can be used to prove the required triangles congruent. The following is an example of this method of proof.

Example:

Given: \overline{AEB} , $\overline{AC} \cong \overline{AD}$, $\overline{CB} \cong \overline{DB}$

Prove: $\overline{CE} \cong \overline{DE}$



Plan: Since \overline{CE} and \overline{DE} are corresponding parts of $\triangle ACE$ and $\triangle ADE$, we need to prove these triangles congruent. From the given, we cannot prove immediately that $\triangle ACE \cong \triangle ADE$. However, we can prove $\triangle CAB \cong \triangle DAB$. Using corresponding parts of these larger triangles, we can then prove the smaller triangles congruent.

| <i>Proof:</i> | <i>Statements</i> | <i>Reasons</i> |
|---------------|--|--------------------|
| S,S | 1. $\overline{AC} \cong \overline{AD}$ | |
| S | 2. | Given |
| S | 3. | |
| | 3. $\triangle CAB \cong \triangle DAB$ | |
| A | 4. $\angle CAB \cong \angle DAB$ | |
| | 5. | |
| S | 6. | Reflexive Property |
| | 7. $\triangle ACE \cong \triangle ADE$ | |
| | \therefore | |