5.5 Proving Overlapping Triangles are congruent

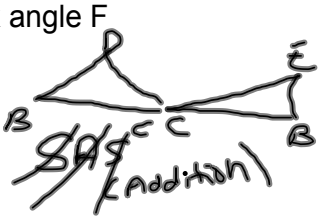
✪ When proofs involve overlapping triangles that share sides and/or angles it is helpful to separate the triangles visually.

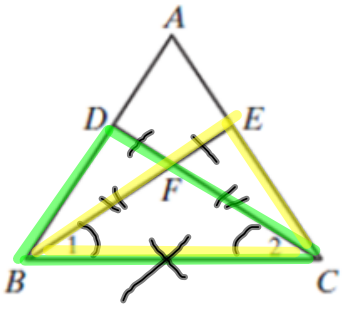
- Redraw the triangles separately
  - label each part the same as the original drawing.
- Color code each triangle a separate color (highlight)
  - use pencil to mark all original given information
  - use another colored pencil (or pen) to label congruence that you *need* to establish to reach your final prove.
- Use an index card to cover distracting parts of the picture from view.

Given: Δ BFC is Isosceles, with vertex angle F

$\overline{DF} \cong \overline{EF}$,

Prove: ΔBDC ≅ ΔCEB

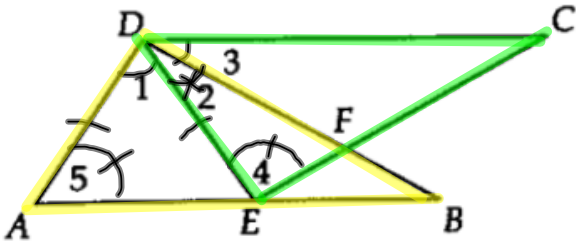




Statements	Reasons
1) Δ BFC is Isosceles, with vertex angle F • $\overline{DF} \cong \overline{EF}$	1) Given
2) $\overline{BC} \cong \overline{BC}$ (S)	2) Reflexive Property
3) $\angle 1 \cong \angle 2$ (A)	3) ISOS Δ thm
4) $\overline{CF} \cong \overline{BF}$	4) def of isos Δ
5) $\overline{DF} + \overline{CF} \cong \overline{EF} + \overline{BF}$	5) addition
6) $\overline{DC} \cong \overline{EB}$ (S)	6) Partition
7) $\triangle BDC \cong \triangle CEB$	7) SAS

Given: $\overline{AD} \cong \overline{ED}$, $\angle 1 \cong \angle 3$, $\angle 4 \cong \angle 5$

Prove: $\triangle ADB \cong \triangle EDC$



ASA → Addition

Statements	Reasons
1) $\overline{AD} \cong \overline{ED}$, $\angle 1 \cong \angle 3$, $\angle 4 \cong \angle 5$ (S) (A)	1) given
2) $\angle 2 \cong \angle 2$	2) Reflexive Property
3) $\angle 2 + \angle 1 \cong \angle 2 + \angle 3$	3) Addition
4) $\angle ADB \cong \angle EDC$ (A)	4) Partition
5) $\triangle ADB \cong \triangle EDC$	5) ASA

Homework:

Page 190

4,6,7