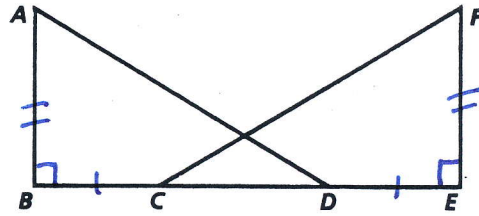


Worked Example – Proving Triangles Congruent

Given:  $\overline{AB} \perp \overline{BE}$ ;  $\overline{FE} \perp \overline{BE}$ ;  $\overline{AB} \cong \overline{FE}$ ;  
 $\overline{BC} \cong \overline{DE}$   
 Prove:  $\triangle ABD \cong \triangle FEC$



proof:

Statements	Reasons
① $\overline{AB} \perp \overline{BE}$ , $\overline{FE} \perp \overline{BE}$ , $\overline{AB} \cong \overline{FE}$ , $\overline{BC} \cong \overline{DE}$	① Given
② $\angle B$ and $\angle E$ are right $\angle$ s.	② Def. of $\perp$ lines. (1)
③ $\angle B \cong \angle E$	③ All right $\angle$ s are $\cong$ . (2)
④ $BC + CD = BD$ $CD + DE = CE$	④ Definition of betweenness of points.
⑤ $BC = DE$	⑤ Definition of $\cong$ segments. (1)
⑥ $BC + CD = CD + DE$	⑥ Addition property of equality. (5)
⑦ $BD = CE$	⑦ Substitution (4, 6)
⑧ $\overline{BD} \cong \overline{CE}$	⑧ Definition of $\cong$ segments. (7)
⑨ $\triangle ABD \cong \triangle FEC$	⑨ S.A.S. (1, 3, 8)

perpendicular congruent

Some books use "Segment addition postulate"

From the given

Note: These are numbers which are equal.

Note: These are segments which are congruent.

Side angle side theorem

These numbers indicate the previous line(s) of the proof used to show the current line.

Objective: Prove triangles congruent.