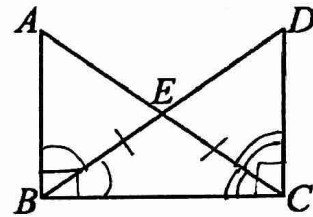


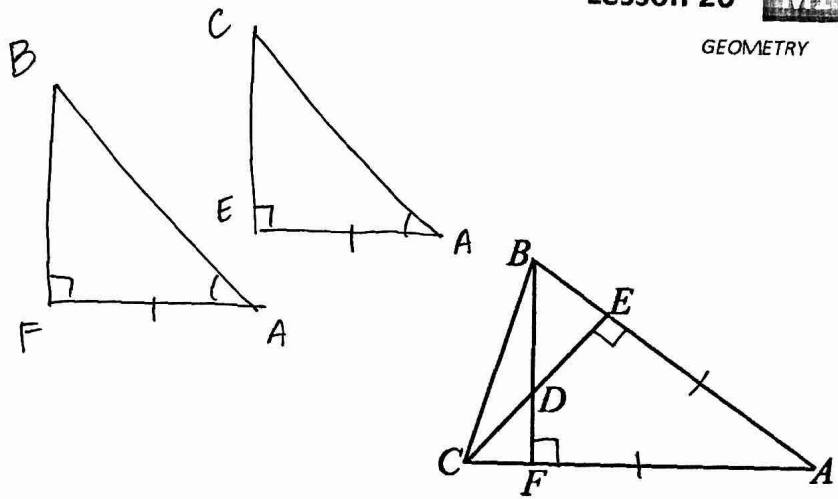
Triangle Congruency Proofs

Exercises

1. Given: $\overline{AB} \perp \overline{BC}, \overline{BC} \perp \overline{DC}$
 \overline{DB} bisects $\angle ABC, \overline{AC}$ bisects $\angle DCB$
 $EB = EC$
 Prove: $\triangle BEA \cong \triangle CED$



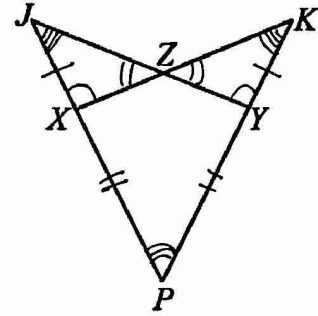
Statements	Reasons
1. $\overline{AB} \perp \overline{BC}, \overline{BC} \perp \overline{DC}$	1. given
2. $m\angle ABC = 90^\circ, m\angle BCD = 90^\circ$	2. Def of the perpendicular
3. $m\angle ABC = m\angle DCB$	3. Substitution
4. \overline{DB} bisects $\angle ABC, \overline{AC}$ bisects $\angle DCB$	4. given
5. $m\angle ABE = 45^\circ, m\angle DCE = 45^\circ$	5. Def of bisects
6. $EB = EC$	6. given
7. $m\angle AEB = m\angle DEC$	7. vertical \angle 's thm
8. $\triangle BEA \cong \triangle CED$	8. ASA



2. Given: $\overline{BF} \perp \overline{AC}$, $\overline{CE} \perp \overline{AB}$
 $AE = AF$
 Prove: $\triangle ACE \cong \triangle ABF$

Statements	Reasons
1. $\overline{BF} \perp \overline{AC}$, $\overline{CE} \perp \overline{AB}$	1. given
2. $m\angle BFA = 90^\circ$, $m\angle CEA = 90^\circ$	2. Def of \perp .
3. $\triangle BFA$ & $\triangle CEA$ are right	3. Def of right \triangle .
4. $AE = AF$	4. given
5. $m\angle A = m\angle A$	5. reflexive prop of =
8. $\triangle ACE \cong \triangle ABF$	8. ASA

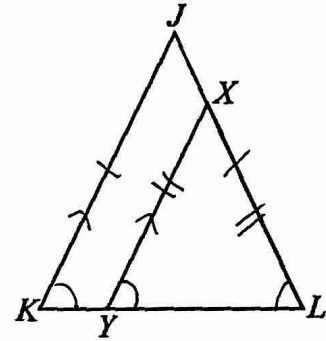
3. Given: $XJ = YK, PX = PY, m\angle ZXJ = m\angle ZYK$
 Prove: $JY = KX$



Statements	Reasons
1. $XJ = YK, PX = PY, \angle ZXJ \cong \angle ZYK$	1. given
2. $JX + XP = JP, KY + YP = KP$	2. Segment Addition Postulate
3. $\angle JZX \cong \angle KZY$	3. If 2 angles are vertical then their measure is equal
4. $\triangle JZX \cong \triangle KZY$ $\angle J \cong \angle K$	4. if 2 triangles are congruent \rightarrow corresponding parts are congruent
5. $\angle P \cong \angle P$	5. reflexive prop of \cong
6. $\triangle JPY \cong \triangle KPX$ $\triangle JPY \cong \triangle KPX$	6. If AAS \rightarrow congruent triangles
7. $\overline{JY} \cong \overline{KX}$	7. if 2 triangles are congruent \rightarrow corresponding parts are congruent
8. $JY = KX$	8. If 2 segments are congruent \rightarrow they have the same length

4. Given: $JK = JL, \overline{JK} \parallel \overline{XY}$
 Prove: $XY = XL$

Plan:



Statements	Reasons
1. $JK = JL, \overline{JK} \parallel \overline{XY}$	1. given
2. $\angle K \cong \angle L$	2. Thm. 4.7
3. $\angle K \cong \angle Y$	3. Corr. \angle 's Post
4. $\angle Y \cong \angle L$	4. vertex transitive prop of \cong
5. the two triangles are congruent $\overline{XY} \cong \overline{XL}$	5. CPCTC Thm. 4.8
6. $XY = XL$	6. Def of \cong segments