Lesson 25 Assigned Problem Solutions:

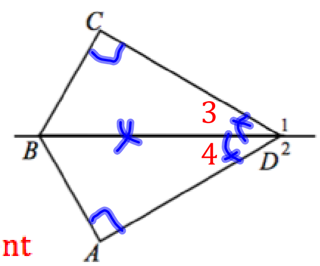
List all the triangle congruence criteria here: ____________________

List the criteria that do not determine congruence here: ____________________

Examples

1. Given: $BC \perp CD,\ AB \perp AD,\ \angle 1 = \angle 2$

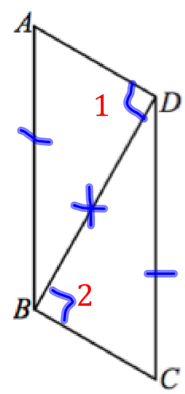
   Prove: $\triangle BCD \cong BAD$



1) BC ⊥ CD, AB ⊥. to AD - given
2) ∠C and ∠D are right angles - def of perp.
3) ∠C ≅ ∠ D - all right angles are congruent
4) ∠1 ≅ ∠ 2 - given
5) ∠1 and ∠3 make a linear pair - diagram
   ∠2 and ∠4 make a linear pair
6) ∠1 and ∠3 are supplementary - def. of linear pair
   ∠2 and ∠4 are supplementary
7) ∠3 ≅ ∠4 - supplements of congruent angles are congruent
8) BD ≅ BD - reflexive POE
9) △ BCD ≅ △BAD - SAA

2. Given: $AD \perp BD,\ BD \perp BC,\ AB = CD$

   Prove: $\triangle ABD \cong CDB$



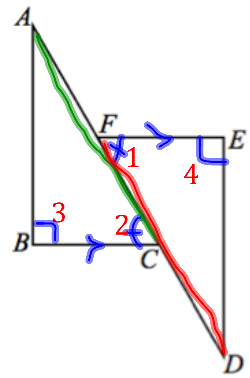
1) AD ⊥ BD, BD ⊥ BC - given
2) ∠1 and ∠2 are right angles - def of perp.
3) ∠1 ≅ ∠ 2 - all right angles are congruent
4) BD ≅ BD - reflexive POE
5) AB ≅ CD - given
6) △ ABD ≅ △CDB - HL

Problem Set

Use your knowledge of triangle congruence criteria to write proofs for each of the following problems.

1. Given: $AB \perp BC,\ DE \perp EF,\ BC \parallel EF,\ AF = DC$

   Prove: $\triangle\, ABC \cong DEF$



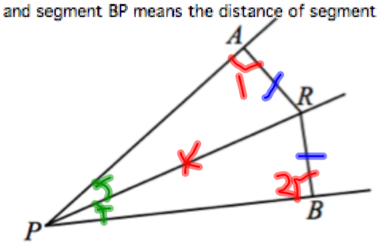
Here is what I would do for #1:

1)	AB perp. BC, DE perp. EF	-	given
	BC //EF	-	given
	AF = DC	-	given
2)	FC = FC	-	Reflexive POE
3)	AF + FC = AC	-	segment addition
	DC + FC = FD		
4)	AF +FC = DC + FC	-	addition property of equality
5)	AC = FD	-	transitive POE
6)	<1 = <2	-	alt interior <s are congruent
7)	<3 and <4 are right <s	-	def of perpendicular
8)	<3 = <4	-	all right <s are congruent
9)	triangle ABC = DEF	-	SAA

2. In the figure, $PA \perp AR$ and $PB \perp BR$ and R is equidistant from the lines PA and PB. Prove that PR bisects $\angle APB$.

Here is what I would do for #2)

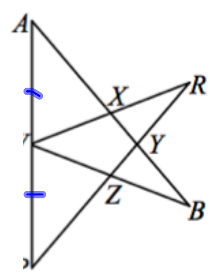
For problem # 2 I'm not too sure what equidistant is trying to tell me - if R is equidistant from segment AP and segment BP means the distance of segment l



1)	PA perp. AR, PB perp. BR	-	given
2)	<1and <2 are right <s	-	def of perpendicular
3)	<1 = <2	-	all right angles are congruent
4)	PR = PR	-	reflexive POE
5)	R is equidistant from PA and PB	-	given
6)	AR = BR	-	definition of equistant
7)	triangle APR = triangle BPR	-	HL
8)	<APR = <BPR	-	CPCTC
9)	<APR + <BPR = < APB	-	angle addition
10)	PR bisects <APB	-	def of bisect

3. Given: $\angle A = \angle P,\ \angle B = \angle R$, W is the midpoint of AP

   Prove: $RW = BW$



Here is what I would do for #3)

1)	<A = <P, <B = <P	-	given
2)	W is the midpoint of AP	-	given
3)	AW = WP	-	def of midpoint
4)	triangle AWB = triangle PWR	-	SAA
5)	RW = BW	-	CPCTC