Ch 2 Proofs

1.)

Statements	Reasons
① $\angle 1 \cong \angle 2$	① Given
② $\angle 2 \cong \angle 3$	② Vertical $\angle$'s are $\cong$
③ $\angle 1 \cong \angle 3$	③ Transitive Property

2.)

Statements	Reasons
① $\overline{AD} \perp \overline{DC}$	① Given
② $\angle 2$ is compl. to $\angle 3$	② If the ext. sides of 2 adj. acute $\angle$'s are $\perp$, then the $\angle$'s are compl.
③ $\angle 3$ is compl to $\angle 4$	③ Given
④ $m\angle 2 + m\angle 3 = \boxed{90}$ $m\angle 3 + m\angle 4 = \boxed{90}$	④ Def'n of Compl. $\angle$'s.
⑤ $m\angle 2 + m\angle 3 = m\angle 3 + m\angle 4$	⑤ Substitution
⑥ $m\angle 3 = m\angle 3$	⑥ Reflexive
⑦ $m\angle 2 = m\angle 4$	⑦ Subtraction Prop of =

3.

Statements	Reasons
① $\angle AEC \cong \angle DEB$	① Given
② $m\angle AEC = m\angle DEB$	② Def'n of $\cong$ $\angle$'s
③ $\boxed{m\angle AEC} = m\angle AEB + m\angle BEC$ $\boxed{m\angle DEB} = m\angle BEC + m\angle CED$	③ Angle (+) Postulate
④ $m\angle AEB + m\angle BEC = m\angle BEC + m\angle CED$	④ Substitution
⑤ $m\angle BEC = m\angle BEC$	⑤ Reflexive Property
⑥ $m\angle AEB = m\angle CED$	⑥ Subtraction Prop of =
⑦ $\angle AEB \cong \angle CED$	⑦ Def'n of $\cong$ $\angle$'s

4.

Statements	Reasons
(1) $\angle 2 \cong \angle 3$	(1) Given
(2) $\angle 3 \cong \angle 2$	(2) Symmetric Prop ($\cong$)
(3) $\angle 2 \cong \angle 1$	(3) Vert $\angle$'s are $\cong$
(4) $\angle 3 \cong \angle 1$	(4) Transitive Prop ($\cong$)
(5) $\angle 1 \cong \angle 3$	(5) Symmetric Prop ($\cong$)
(6) $\angle 3 \cong \angle 4$	6.) Vert $\angle$'s are $\cong$
(7) $\angle 1 \cong \angle 4$	(7) Transitive Prop ($\cong$)

5.

Statements	Reasons
(1) $\angle 3 \cong \angle 5$	(1) Given
(2) $\angle 5 \cong \angle 3$	(2) Symmetric Prop ($\cong$)
(3) $\angle 3 \cong \angle 1$	(3) Vertical $\angle$'s are $\cong$
(4) $\angle 5 \cong \angle 1$	(4) Transitive Prop ($\cong$)
(5) $\angle 5$ & $\angle 6$ are suppl	(5) Def'n of linear pair
(6) $m\angle 5 + m\angle 6 = 180$	(6) def'n of suppl $\angle$'s
(7) $m\angle 1 + m\angle 6 = 180$	(7) Substitution
(8) $\angle 1$ is suppl $\angle 6$	(8) def'n of suppl $\angle$'s

6.

Statements	Reasons
(1) $DW = ON$	(1) Given
(2) $\boxed{DW}: DO + OW$ $\boxed{ON}: OW + WN$	(2) Segment (+) Post
(3) $DO + OW = OW + WN$	(3) Substitution
(4) $OW = OW$	(4) Reflexive Prop
(5) $DO = WN$	(5) Subtraction Prop of =