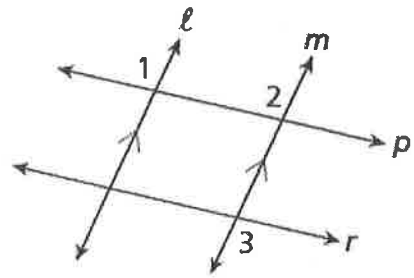
KEY

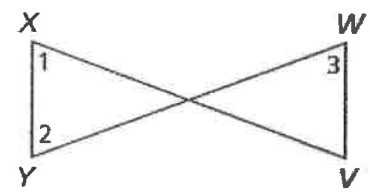
Geometry – Chapter 3 Proof Practice

1 **Given:** $\ell \parallel m$, $\angle 1 \cong \angle 3$
Prove: $r \parallel p$



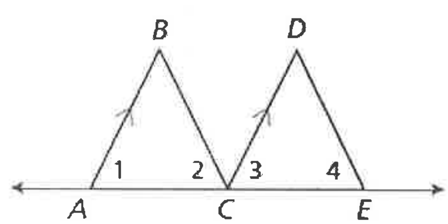
S	R
$\ell \parallel m$, $\angle 1 \cong \angle 3$	Given
$\angle 1 \cong \angle 2$	Corresponding ∠'s Thm
$\angle 2 \cong \angle 3$	Transitive POC
$r \parallel p$	Alternate Ext. ∠'s Converse

2 **Given:** $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 1$
Prove: $XY \parallel WV$



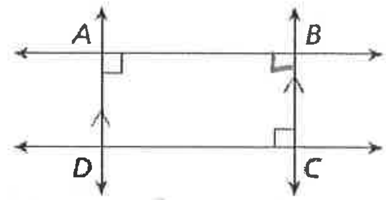
S	R
$\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 1$	Given
$\angle 2 \cong \angle 3$	Transitive POC
$\overline{XY} \parallel \overline{WV}$	Alternate Interior ∠'s Converse

3 **Given:** $\overline{AB} \parallel \overline{CD}$, $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$
Prove: $\overline{BC} \parallel \overline{DE}$



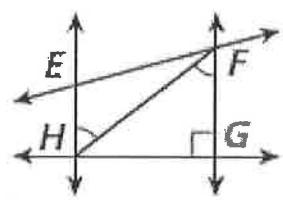
S	R
$\overline{AB} \parallel \overline{CD}$	Given
$\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$	Given
$\angle 1 \cong \angle 3$	Corresponding ∠'s Thm
$\angle 2 \cong \angle 3$	Transitive POC
$\angle 2 \cong \angle 4$	Transitive POC
$\overline{BC} \parallel \overline{DE}$	Corresponding ∠'s Converse

4 **Given:** $\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$, $\overleftrightarrow{AD} \perp \overleftrightarrow{AB}$, $\overleftrightarrow{BC} \perp \overleftrightarrow{DC}$
Prove: $\overleftrightarrow{AB} \parallel \overleftrightarrow{DC}$



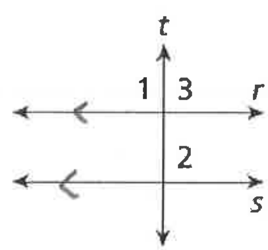
S	R
$\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$, $\overleftrightarrow{AD} \perp \overleftrightarrow{AB}$	Given
$\overleftrightarrow{BC} \perp \overleftrightarrow{DC}$	Given
$\overleftrightarrow{BC} \perp \overleftrightarrow{AB}$	$\perp$ Transversal Thm
$\overleftrightarrow{AB} \parallel \overleftrightarrow{DC}$	Lines $\perp$ to Transversal Thm

5 **Given:** $\angle EHF \cong \angle HFG$, $\overleftrightarrow{FG} \perp \overleftrightarrow{GH}$
Prove: $\overleftrightarrow{EH} \perp \overleftrightarrow{GH}$



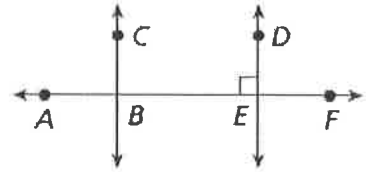
S	R
$\angle EHF \cong \angle HFG$	Given
$\overleftrightarrow{EH} \parallel \overleftrightarrow{FG}$	Alternate Interior $\angle$'s converse
$\overleftrightarrow{FG} \perp \overleftrightarrow{GH}$	Given
$\overleftrightarrow{EH} \perp \overleftrightarrow{GH}$	$\perp$ Transversal Thm

6 **Given:** $r \parallel s$, $\angle 1 \cong \angle 2$
Prove: $r \perp t$



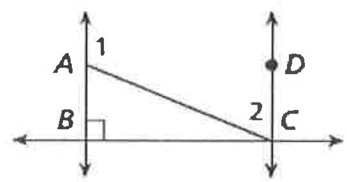
S	R
$r \parallel s$, $\angle 1 \cong \angle 2$	Given
$\angle 3 \cong \angle 2$	Corresponding $\angle$'s Thm
$\angle 1 \cong \angle 3$	Transitive POC
$r \perp t$	Linear Pair $\perp$ Thm

7 Given: $\angle ABC \cong \angle CBE$, $\overleftrightarrow{DE} \perp \overleftrightarrow{AF}$
Prove: $\overleftrightarrow{CB} \parallel \overleftrightarrow{DE}$



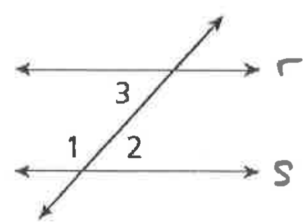
S	R
$\angle ABC \cong \angle CBE$, $\overleftrightarrow{DE} \perp \overleftrightarrow{AF}$	Given
$\overleftrightarrow{CB} \perp \overleftrightarrow{AF}$	Linear Pair ⊥ Thm
$\overleftrightarrow{CB} \parallel \overleftrightarrow{DE}$	Lines ⊥ to Transversal Theorem

8 Given: $\overleftrightarrow{AB} \perp \overleftrightarrow{BC}$, $m\angle 1 + m\angle 2 = 180°$
Prove: $\overleftrightarrow{BC} \perp \overleftrightarrow{CD}$



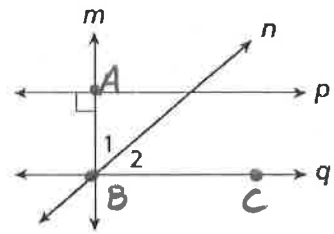
S	R
$\overleftrightarrow{AB} \perp \overleftrightarrow{BC}$	Given
$m\angle 1 + m\angle 2 = 180$	Given
$\angle 1$ and $\angle 2$ are Supp. $\angle$'s	Def. of Supp
$\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$	Consecutive Interior $\angle$'s Converse
$\overleftrightarrow{BC} \perp \overleftrightarrow{CD}$	⊥ Transversal Thm

Given: $\angle 1$ is supplementary to $\angle 3$.
9 Prove: $\angle 2 \cong \angle 3$



S	R
$\angle 1$ supp to $\angle 3$	Given
$r \parallel s$	Consecutive Interior $\angle$'s Converse
$\angle 2 \cong \angle 3$	Alternate Interior $\angle$'s

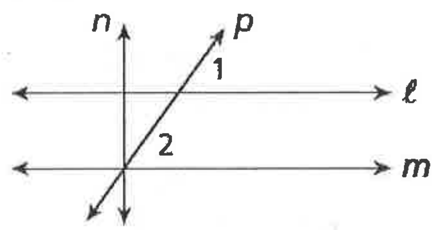
10 **Given:** $m \perp p$, $\angle 1$ and $\angle 2$ are complementary.
Prove: $p \parallel q$



S	R
$m \perp p$, $\angle 1$ comp to $\angle 2$	Given
$m\angle 1 + m\angle 2 = 90°$	Def. of comp
$m\angle 1 + m\angle 2 = m\angle ABC$	$\angle$ Add. Postulate
$m\angle ABC = 90$	Sub
$\angle ABC$ is a right $\angle$	Def. of Right $\angle$
$m \perp q$	def. of $\perp$
$p \parallel q$	Lines $\perp$ to a transversal thm

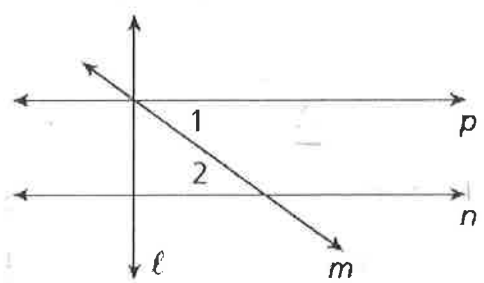
11 Given: $\angle 1 \cong \angle 2$, $n \perp \ell$

Prove: $n \perp m$



S	R
$\angle 1 \cong \angle 2$, $n \perp \ell$	Given
$\ell \parallel m$	Corresponding $\angle$'s Postulate
$n \perp m$	$\perp$ Transversal Theorem

12 **Given:** $\angle 1 \cong \angle 2$, $\ell \perp n$
Prove: $\ell \perp p$



S	R
$\angle 1 \cong \angle 2$, $\ell \perp n$	Given
$p \parallel n$	Alternate Int. $\angle$'s Converse
$\ell \perp p$	$\perp$ Transversal Thm