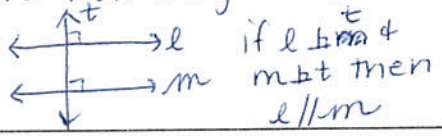
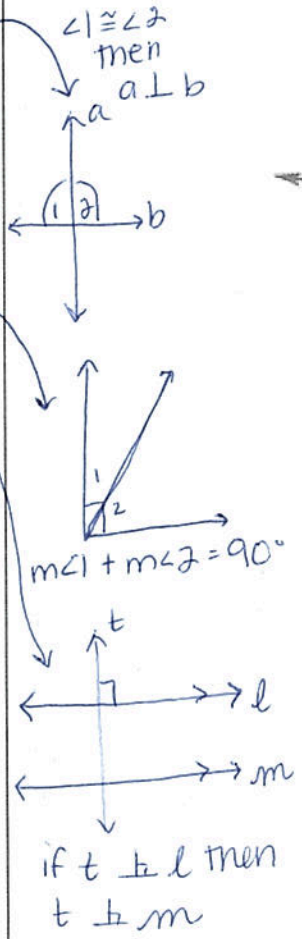
Name, Date, Hour:	Learning Target:	Homework:
Key	3.6: Prove theorems about perpendicular lines	Day 9

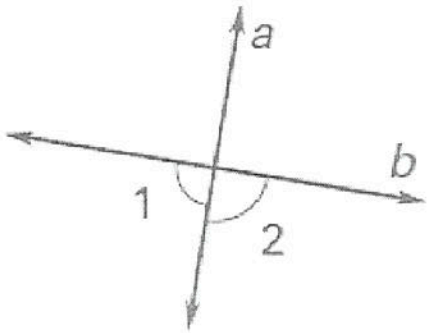
BOX 1

Theorem 3.8	if two lines intersect to form a linear pair of $\cong$ $\angle$'s, Then the lines are $\perp$
Theorem 3.9	if two lines are $\perp$, then they intersect to form 4 right angles
Theorem 3.10	if two sides of two adjacent acute angles are $\perp$ then the $\angle$'s are complementary
Perpendicular Transversal Theorem	If a transversal is $\perp$ to one of 2 parallel lines, then it is $\perp$ to the other.
Lines Perpendicular to a Transversal Theorem	In a plane, if two lines are $\perp$ to the same line then they are $\parallel$ to each other  if $l \perp t$ & $m \perp t$ then $l \parallel m$
Distance from a point to a line	the length of the $\perp$ segment from the point to the line.
Distance between two parallel lines	= the length of any $\perp$ segment joining the two lines

BOX 2 - Example 1

In the diagram at below, $\angle 1 \cong \angle 2$. What can you conclude about lines *a* and *b*?

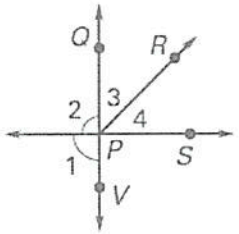




Because $\angle 1 \cong \angle 2$ and they form a linear pair, $a \perp b$ by Thm 3.8

BOX 3 - Example 2

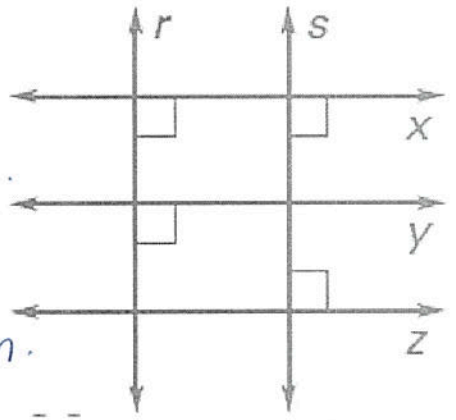
In the diagram at below, $\angle 1 \cong \angle 2$. Prove that $\angle 3$ and $\angle 4$ are complementary.



S	R
1. $\angle 1 \cong \angle 2$	Given
2. $\overline{QV} \perp \overline{PS}$	Thm 3.8
3. $\angle QPS$ is right	Thm 3.9
4. $m\angle QPS = 90°$	Def of rt. $\angle$'s
5. $m\angle 3 + m\angle 4 = m\angle QPS$	Angle Addition
6. $m\angle 3 + m\angle 4 = 90°$	Substitution
7. $\angle 3$ + $\angle 4$ are Comp	Def of comp.

BOX 4 - Example 3

Determine which lines, if any, are parallel in the diagram. Explain.



x // y by Lines ⊥ to a transversal thm.

y // z by Lines ⊥ to a transversal thm.

r // s by Lines ⊥ to a transversal Thm

x // z by Transitive Property of // Lines