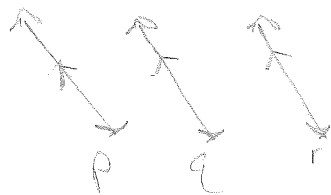


### 3.5: Using Properties of $\parallel$ Lines

Objective: Use properties of  $\parallel$  lines

#### Theorem 3.11

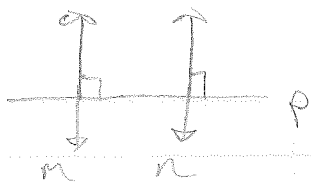
If two lines are  $\parallel$  to the same line, then they are  $\parallel$  to each other



If  $p \parallel q$ ,  $q \parallel r$ , then  $p \parallel r$

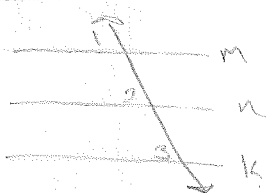
#### Theorem 3.12

In a plane, if two lines are  $\perp$  to the same line, then they are  $\parallel$  to each other



If  $m \perp p$  and  $n \perp p$ , then  $m \parallel n$

#### Proof of Theorem 3.11



Statement	Reason
1) $m \parallel n$	1) Given
2) $\angle 1 \cong \angle 2$	2) Corresponding Angles Postulate
3) $n \parallel k$	3) Given
4) $\angle 2 \cong \angle 3$	4) Corresponding Angles Postulate
5) $\angle 1 \cong \angle 3$	5) Transitive
6) $m \parallel k$	6) Corr. Angles Converse

G:  $m \parallel n$ ,  $n \parallel k$

P:  $m \parallel k$

Now try

