L-I-N-E-S LAB

Names________________________________

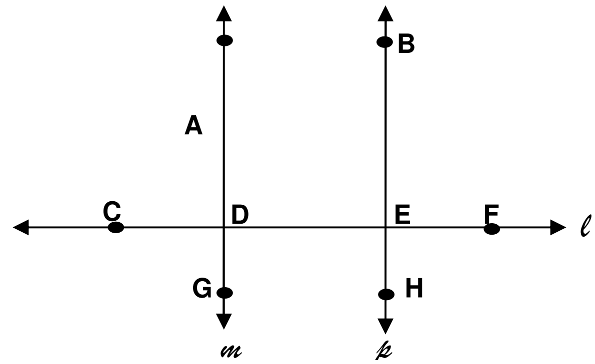
Visit each station, in any order, with your group.
Check in with the teacher to correct your work before beginning at another station.

L	I	N	E	S

L.

Given: $m \perp \ell$ and $p \perp \ell$

Prove: $m \parallel p$



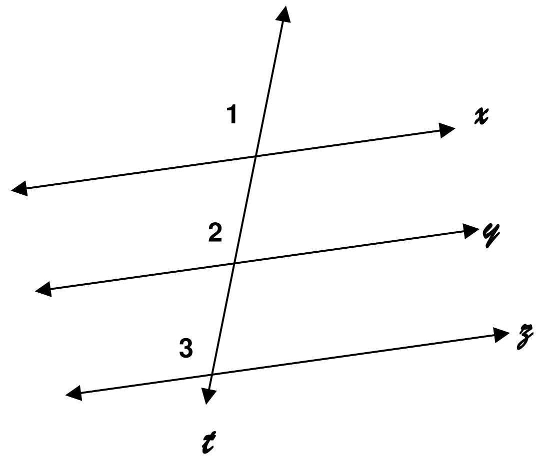
STATEMENTS		REASONS	
1)	$m \perp \ell$ and $p \perp \ell$	1)	Given
2)	Line ℓ is a transversal	2)	Def of Transversal
3)	$m\angle ADC = 90^\circ$ $m\angle BED = 90^\circ$	3)	Def of Perpendicular Lines
4)	$\angle ADC \cong \angle BED$	4)	Transitive Property
5)	$m \parallel p$	5)	Converse of Corresponding Angles Postulate

Theorem: If two coplanar lines are perpendicular to the same line, then the two lines are parallel.

I.

Given: $x \parallel z$ and $y \parallel z$, and t is a transversal to all 3 lines

Prove: $x \parallel y$



STATEMENTS	REASONS
1) $x \parallel z$ and $y \parallel z$, and t is a transversal	1) Given
2) $\angle 1 \cong \angle 3$ and $\angle 2 \cong \angle 3$	2) Corresponding Angles Postulate
3) $\angle 1 \cong \angle 2$	3) Transitive Property
4) $x \parallel y$	4) Converse of Corresponding Angles Postulate

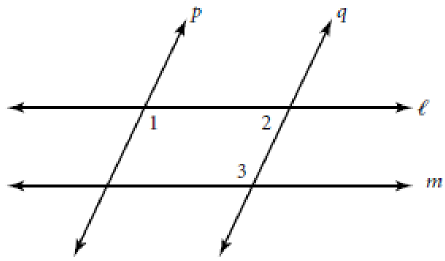
Theorem: **If two lines are parallel to the same line, then the two lines are parallel.**

N.

Given: $m\angle 1 = m\angle 3$

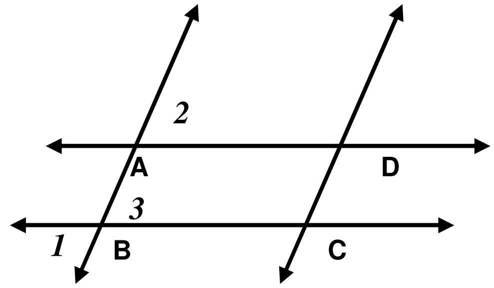
$p \parallel q$

Prove: $\ell \parallel m$



STATEMENTS	REASONS
1) ______________________	1) Given
2) $\angle 1$ and $\angle 2$ are supplementary	2) Same-Side Interior Angles Theorem
3) $m\angle 1 + m\angle 2 = 180^0$	3) Definition of Supplementary Angles
4) ______________________	4) Given (def of Congruence)
5) $m\angle 2 + m\angle 3 = 180^0$	5) Substitution
6) $\angle 2$ and $\angle 3$ are supplementary	6) Definition of Supplementary Angles
7) ______________________	7) Converse of Same-Side Interior Angles Theorem

E.



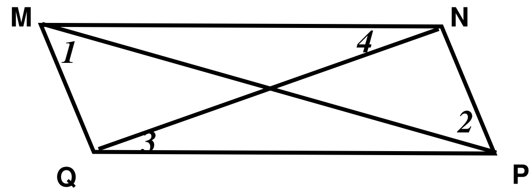
Given: $\angle 1 \cong \angle 2$

$\angle 3$ and $\angle BCD$ are supplementary

Prove: ABCD is a parallelogram

STATEMENTS	REASONS
1) $\angle 1 \cong \angle 2$	1) Given
2) $\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$	2) Converse of Alternate Exterior Angles Theorem
3) ______________________________	3) Given
4) $\overleftrightarrow{AB} \parallel \overleftrightarrow{DC}$	4) Converse of Same-Side Interior Angles Theorem
5) ___________________________	5) Definition of a parallelogram

S.



Given: ∠1 ≅ ∠2; ∠3 ≅ ∠4

Prove: MNPQ is a parallelogram

STATEMENTS	REASONS
1) ∠1 ≅ ∠2	1) Given
2) $\overline{MQ} \parallel \overline{NP}$	2) Converse of Alternate Interior Angles Theorem
3) ____________________________	3) Given
4) $\overline{MN} \parallel \overline{QP}$	4) Converse of Alternate Interior Angles Theorem
5) ________________________	5) Definition of a parallelogram

**Additional Question: If m∠1 = m∠MPQ, MNPQ would be a Rhombus.