

## Proof Presentations

Each group of students will be assigned to do one or two of these proofs. The group must have:

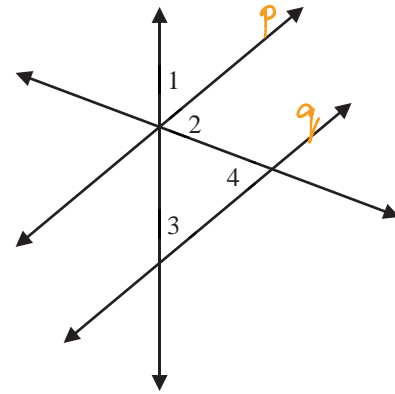
- a recorder who will fill out the proof on behalf of the group (everyone must still have their own completed sheet at the end of this activity)
- a chalkboard scribe who will go to the board to write the proof for the class to see
- an orator who will go to the board with the scribe and explain the logic of each step

1) Given  $\angle 1 \cong \angle 3$ , prove  $\angle 2 \cong \angle 4$

$$\angle 1 \cong \angle 3 \quad \text{Given}$$

$$p \parallel q \quad \text{Converse of Corresponding Angles Postulate}$$

$$\angle 2 \cong \angle 4 \quad \text{Alternate Interior Theorem}$$



2) Given  $\angle 1$  is supplementary to  $\angle 7$ , prove  $\angle 4 \cong \angle 5$

$$\angle 1 \text{ is supplementary to } \angle 7 \quad \text{Given}$$

$$m\angle 1 + m\angle 7 = 180 \quad \text{Definition of supplementary angles}$$

$$m\angle 7 + m\angle 5 = 180 \quad \text{Linear Pair Thm}$$

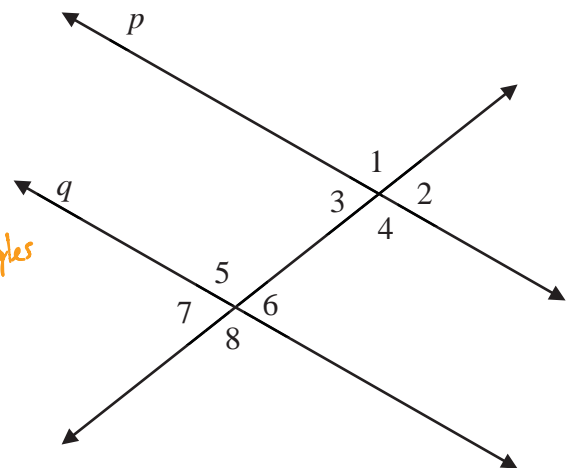
$$m\angle 1 + m\angle 7 = m\angle 7 + m\angle 5 \quad \text{Transitive Property of } \angle s$$

$$m\angle 1 = m\angle 5 \quad \text{Subtraction}$$

$$\angle 1 \cong \angle 5 \quad \text{Def of } \angle \text{ congruence}$$

$$p \parallel q \quad \text{Converse of corresponding } \angle s$$

$$\angle 4 \cong \angle 5 \quad \text{Alternate Interior Theorem}$$



3) Given  $\angle 2$  is supplementary to  $\angle 8$  and  $\angle 5$  is supplementary to  $\angle 10$ , prove  $p \parallel r$

$\angle 2$  supp  $\angle 8$ ,  $\angle 5$  supp  $\angle 10$       Given

$\angle 5 \cong \angle 8$       Vertical Angles Thm

$m\angle 2 + m\angle 8 = 180$       Def of supp  $\angle$ 's

$m\angle 5 + m\angle 10 = 180$

$m\angle 2 + m\angle 8 = m\angle 5 + m\angle 10$       Transitive

$m\angle 2 + m\angle 5 = m\angle 5 + m\angle 10$       Substitution

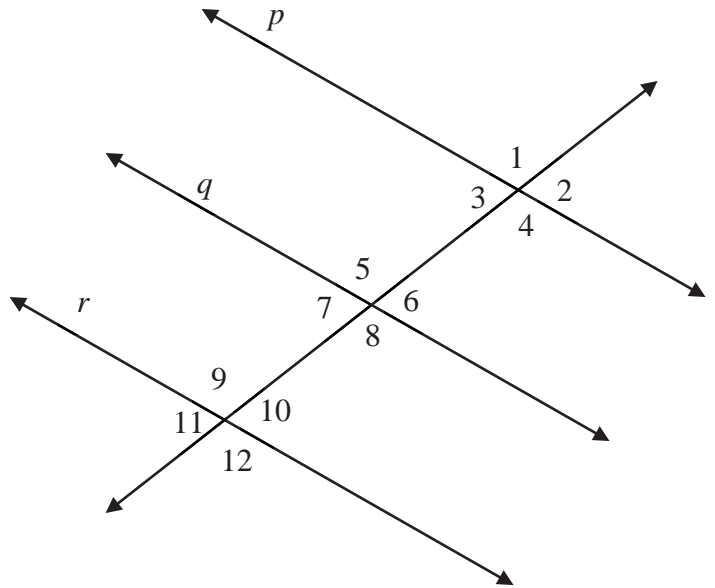
$m\angle 2 = m\angle 10$       Subtraction

$\angle 2 \cong \angle 10$

$p \parallel r$

Definition of Congruence

Converse of Corresponding Angles Postulate



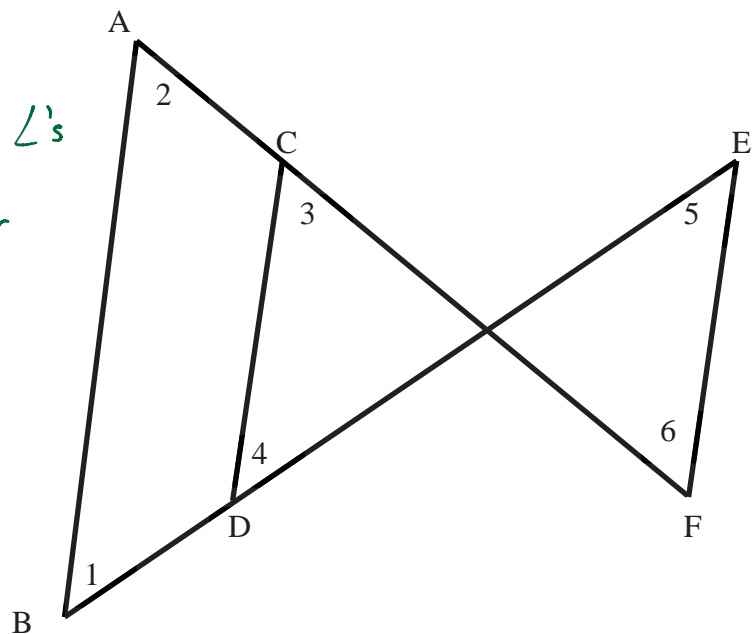
4) Given  $\angle 1 \cong \angle 5$  and  $\angle 2 \cong \angle 3$ , prove  $\angle 3 \cong \angle 6$

$\angle 1 \cong \angle 5$ ,  $\angle 2 \cong \angle 3$       Given

$\overline{AB} \parallel \overline{EF}$       Converse of Alt Interior  $\angle$ 's

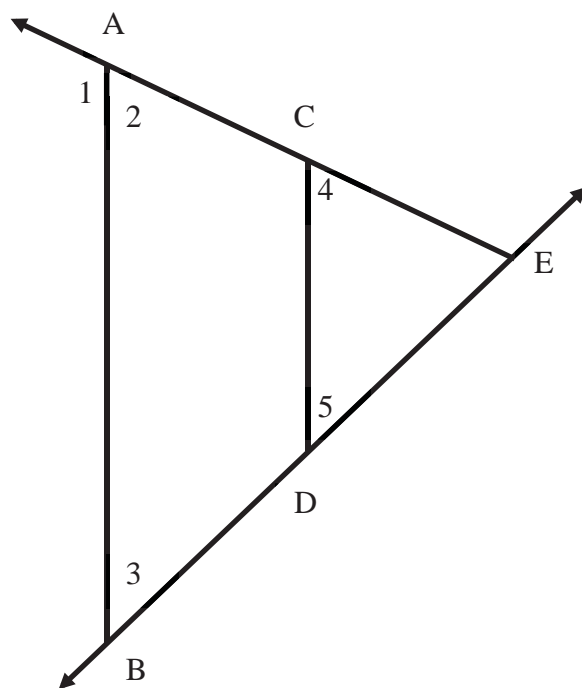
$\angle 2 \cong \angle 6$       Alternate Interior Angles Thm

$\angle 3 \cong \angle 6$       Transitive Property of Congruence



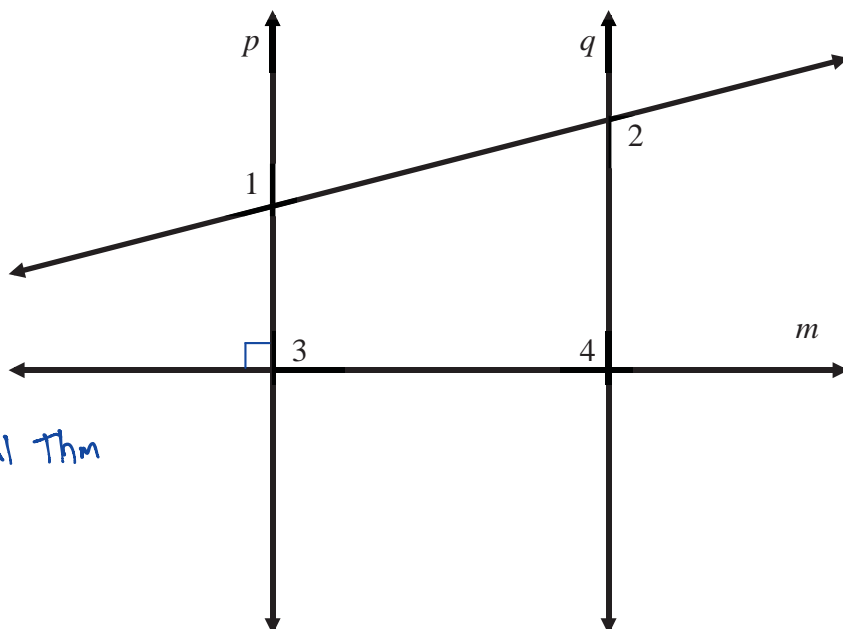
5) Given  $\angle 1$  is supplementary to  $\angle 4$  and  $\angle 2 \cong \angle 3$ , prove  $\angle 4 \cong \angle 5$

$\angle 1$  is supp. to  $\angle 4$       Given  
 $m\angle 1 + m\angle 4 = 180^\circ$       Def of supp.  $\angle$ 's  
 $m\angle 1 + m\angle 2 = 180^\circ$       Linear Pair Thm  
 $m\angle 1 + m\angle 4 = m\angle 1 + m\angle 2$       Transitive Property  
 $m\angle 4 = m\angle 2$       Subtraction  
 $\angle 4 \cong \angle 2$       Def of Congruent  $\angle$ 's  
 $\angle 4 \cong \angle 5$       Transitive Prop



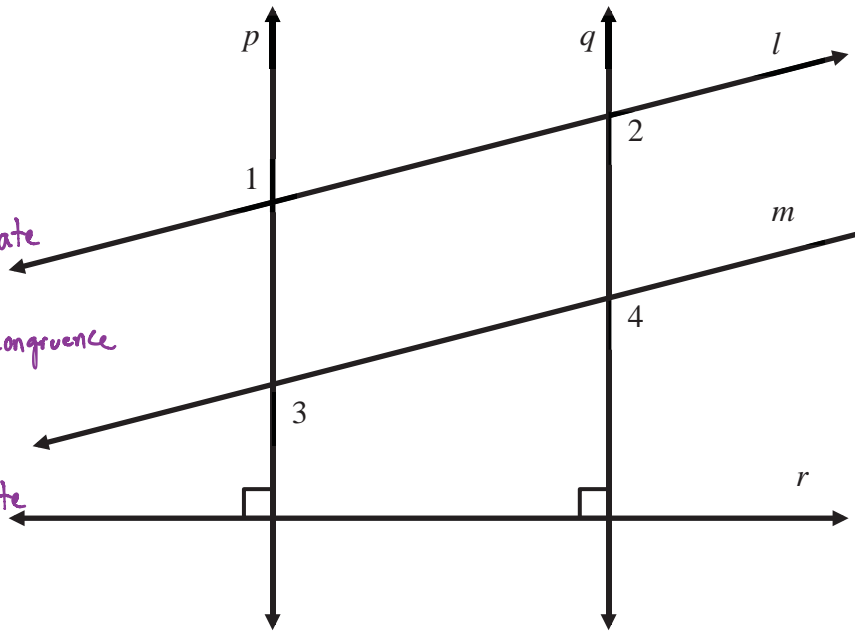
6) Given  $p \perp m$  and  $\angle 3 \cong \angle 4$ , prove  $\angle 1 \cong \angle 2$

$p \perp m, \angle 3 \cong \angle 4$       Given  
 $m\angle 3 = 90^\circ$       Def of  $\perp$  lines  
 $m\angle 4 = 90^\circ$       Substitution  
 $q \perp m$       Def of  $\perp$  lines  
 $p \parallel q$       Perpendicular Transversal Thm  
 $\angle 1 \cong \angle 2$       Alt Exterior  $\angle$ 's Thm



7) Given  $\angle 2 \cong \angle 3$ , prove  $l \parallel m$

$\angle 2 \cong \angle 3$       Given  
 $p \parallel q$        $\perp$  Transversal thm  
 $\angle 2 \cong \angle 4$       Corresponding  $\angle$ 's Postulate  
 $\angle 4 \cong \angle 3$       Transitive Property of Congruence  
 $l \parallel m$       Converse of Corresponding  $\angle$ 's Postulate



8) Given  $\angle 3$  is supplementary to  $\angle 4$  and  $\angle 1 \cong \angle 2$ , Prove  $\angle 4 \cong \angle 5$

$\angle 3$  supp.  $\angle 4$       Given  
 $\angle 1 \cong \angle 2$   
 $\overline{AB} \parallel \overline{CD}$       Converse of Same Side Interior Thm  
 $\angle 2 \cong \angle 4$       Alt. Interior  $\angle$ 's Thm  
 $\angle 1 \cong \angle 5$   
 $\angle 1 \cong \angle 4$       Transitive Prop of  $\cong$   
 $\angle 4 \cong \angle 5$       Transitive Prop of  $\cong$

