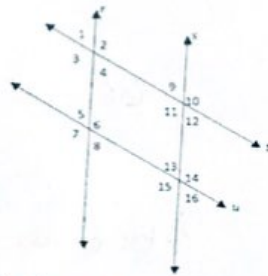


Parallel Lines cut by a Transversal

Use the figure below for problems 1-2.



1. Identify 2 pairs of angles that fit into each category.

Linear Pairs	Vertical Angles	Corresponding Angles	
1. $\angle 1$ & $\angle 2$	1. $\angle 1$ & $\angle 4$	1. $\angle 3$ & $\angle 7$	
2. $\angle 3$ & $\angle 4$	2. $\angle 2$ & $\angle 3$	2. $\angle 1$ & $\angle 5$	
Circle one: Congruent OR <u>Supplementary</u>	Circle one: <u>Congruent</u> OR Supplementary	Circle one: <u>Congruent</u> OR Supplementary	
Alternate Interior Angles	Alternate Exterior Angles	Same Side Interior	Same Side Exterior
1. $\angle 4$ & $\angle 5$	1. $\angle 1$ & $\angle 8$	1. $\angle 4$ & $\angle 6$	1. $\angle 2$ & $\angle 8$
2. $\angle 3$ & $\angle 6$	2. $\angle 7$ & $\angle 2$	2. $\angle 3$ & $\angle 5$	2. $\angle 1$ & $\angle 7$
<u>Congruent</u> OR Supplementary	<u>Congruent</u> OR Supplementary	Congruent OR <u>Supplementary</u>	Congruent OR <u>Supplementary</u>

2. Given $m\angle 4 = 35^\circ$ and $m\angle 17 = 95^\circ$, find the measure of the following angles
 $m\angle 2 = 145^\circ$ $m\angle 13 = 35^\circ$ $m\angle 7 = 145^\circ$ $m\angle 11 = 145^\circ$ $m\angle 16 = 35^\circ$

$180 - 35 = 145$

3. Find $m\angle 1$ and $m\angle 2$. State the theorems or postulate that justify your answers.

a)

$\angle 1 = 180 - 46$
 $\angle 1 = 134$ Same side Int
 $\angle 2 = 46$ Alt Int.

b)

$180 - 125 = 55 = \angle 2$
 $\angle 2 = 55$ linear pair
 $\angle 1 = 125$ corresponding

4. Solve for x. State the theorems or postulates that justify your answers.

a)

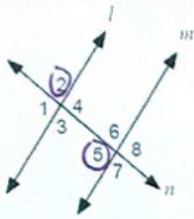
Alt. Int. Angles
 $x + 15 = 2x - 30$
 $-x + 30 = -x + 30$
 $45 = x$

b)

Corresponding
 $3y - 35 = 2y$
 $-3y = -3y$
 $-35 = -y$
 $y = 35$
 Alternate Exterior
 $5x = 3x + 34$
 $-2x = 34$
 $\frac{2x}{2} = \frac{34}{2}$
 $x = 17$

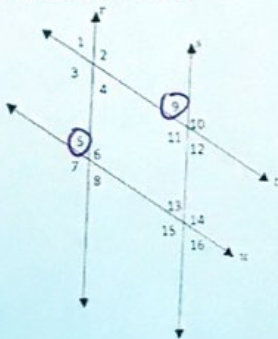
Construct a proof for the following problems:

5. Given: $l \parallel m$, prove that $m\angle 2 + m\angle 5 = 180^\circ$.



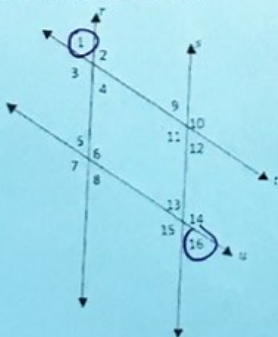
Statement	Reason
1. $l \parallel m$	1. Given
2. $\angle 1 + \angle 2 = 180^\circ$	2. Linear Pair
3. $\angle 1 \cong \angle 5$	3. Corresponding
4. $\angle 2 + \angle 5 = 180^\circ$	4. Substitution

6. Given: $r \parallel s$ and $t \parallel u$
Prove: $\angle 5 \cong \angle 9$.



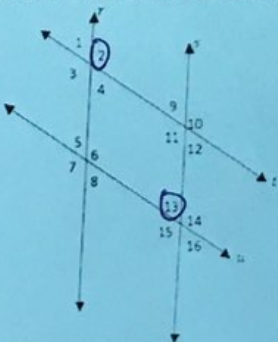
Statement	Reason
1. $r \parallel s, t \parallel u$	1. Given
2. $\angle 5 \cong \angle 1$	2. Corresponding
3. $\angle 1 \cong \angle 9$	3. Corresponding
4. $\angle 5 \cong \angle 9$	4. Substitution

7. Given: $r \parallel s$ and $t \parallel u$
Prove: $\angle 1 \cong \angle 16$.



Statement	Reason
1. $r \parallel s, t \parallel u$	1. Given
2. $\angle 1 \cong \angle 9$	2. corresponding
3. $\angle 9 \cong \angle 16$	3. Alt Ext. Angles
4. $\angle 1 \cong \angle 16$	4. By Substitution

8. Given: $r \parallel s$ and $t \parallel u$
Prove: $\angle 2$ and $\angle 13$ are supplementary. 180°



Statement	Reason
1. $r \parallel s, t \parallel u$	1. Given
2. $\angle 2 + \angle 9 = 180^\circ$	2. Same Side Int
3. $\angle 9 \cong \angle 13$	3. Corresponding
4. $\angle 2 + \angle 13 = 180$	4. Substitution