

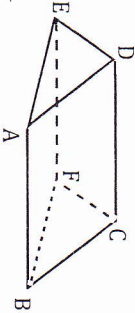
### NOTES 3.1 & 3.2 - PARALLEL LINES & TRANSVERSALS

Objective: I can use special  $\angle$  pairs to find  $\angle$  measures.

CONCEPT	DESCRIPTION	DIAGRAM
Parallel Lines $\parallel$	Coplanar lines that do not intersect	
Parallel Planes	Planes that do not intersect	

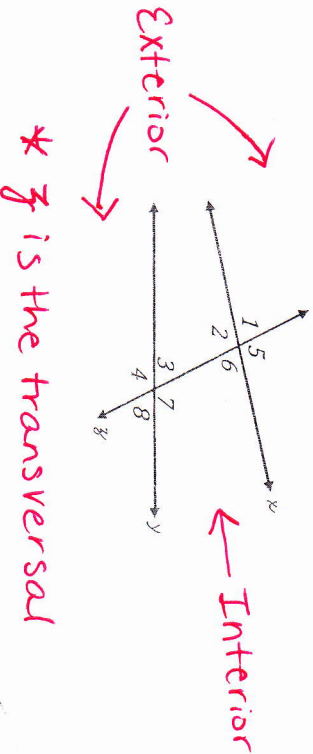
Use the figure below to answer the questions that follow.

- (a) What lines are parallel to  $\overline{AB}$ ?  $\overline{DC} \parallel \overline{EF}$
- (b) What are the other sets of parallel lines?  $\overline{DE} \parallel \overline{CF}$ ,  $\overline{CB} \parallel \overline{DA}$ ,  $\overline{EA} \parallel \overline{FB}$
- (c) Name a pair of parallel planes:  $\overline{DEA} \parallel \overline{CFB}$

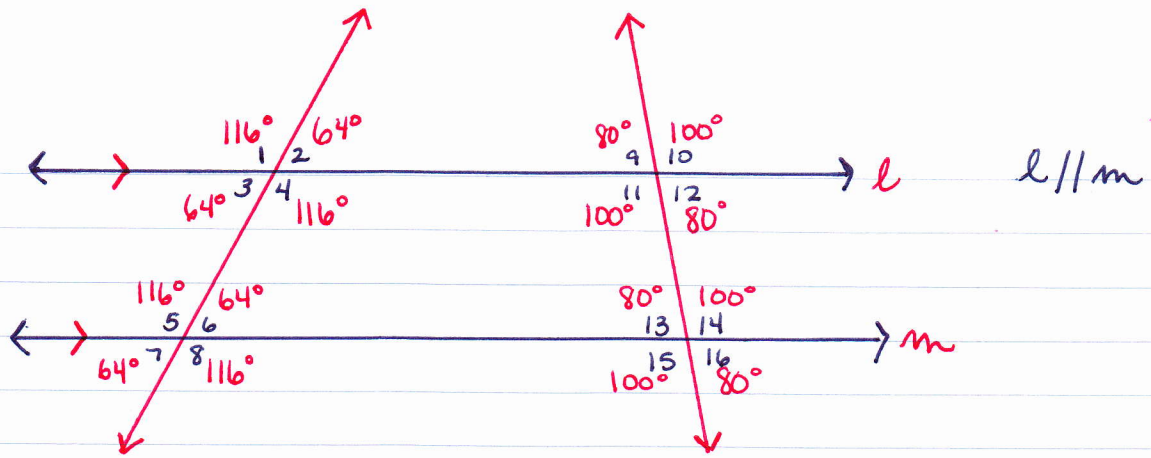


CONCEPT	DESCRIPTION	DIAGRAM
Transversal	A line that intersects 2 coplanar lines at 2 different points	

When two lines are cut by a transversal, several types of angle pairs are formed.



CONCEPT	DESCRIPTION	EXAMPLES
Alternate Interior Angles	Non-adjacent, interior $\angle$ s on opposite sides of the transversal	$\angle 2 \angle 7$ , $\angle 3 \angle 6$
Alternate Exterior Angles	Non-adjacent, exterior $\angle$ s on opposite sides of the transversal	$\angle 1 \angle 8$ , $\angle 5 \angle 4$
Same-Side Interior Angles	Interior $\angle$ s on the same side of the transversal	$\angle 2 \angle 3$ , $\angle 6 \angle 7$
Same-Side Exterior Angles	Exterior $\angle$ s on the same side of the transversal	$\angle 1 \angle 4$ , $\angle 5 \angle 8$
Corresponding Angles	$\angle$ s that are in the same position relative to the lines and the transversal	$\angle 1 \angle 3$ , $\angle 2 \angle 4$ , $\angle 5 \angle 7$ , $\angle 6 \angle 8$



• Alternate Interior Angles:  $\cong$

Ex:  $\angle 3 \cong \angle 6$

$m\angle 3 = 64^\circ, m\angle 6 = 64^\circ$

• Alternate Exterior Angles:  $\cong$

Ex:  $\angle 9 \cong \angle 16$

$m\angle 9 = 80^\circ, m\angle 16 = 80^\circ$

• Same-side Interior Angles: Supplementary

Ex:  $\angle 11$  &  $\angle 13$  are supplementary

$m\angle 11 = 100^\circ, m\angle 13 = 80^\circ$

• Same-side Exterior Angles: Supplementary

Ex:  $\angle 1$  &  $\angle 7$  are supplementary

$m\angle 1 = 116^\circ, m\angle 7 = 64^\circ$

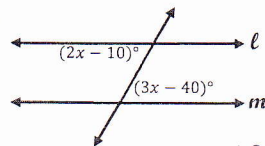
• Corresponding Angles:  $\cong$

Ex:  $\angle 2 \cong \angle 6$

$m\angle 2 = 64^\circ, m\angle 6 = 64^\circ$

For each of the examples below, identify the type of angle pair, and given that lines  $l$  and  $m$  are parallel, find the value of 'x'.

EXAMPLE 1:



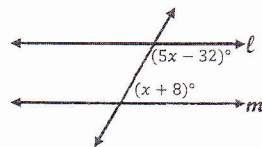
Type of angle pair: Alternate Interior  $\angle$ s

$x =$  30

$$2x - 10 = 3x - 40$$

$$30 = x$$

EXAMPLE 2:



Type of angle pair: Same-side Interior  $\angle$ s

$x =$  34

$$5x - 32 + x + 8 = 180$$

$$6x - 24 = 180$$

$$6x = 204$$

$$x = 34$$