LESSON **3-2**

Angles Formed by Parallel Lines and Transversals

Know it! Note

Lesson Objectives (p. 155):

Key Concepts

1. Postulate 3-2-1—Corresponding Angles Postulate (p. 155):

THEOREM	HYPOTHESIS	CONCLUSION

2. Theorems—Parallel Lines and Angle Pairs (p. 156):

THEOREM	HYPOTHESIS	CONCLUSION
3-2-2 Alternate Interior Angles Theorem		
3-2-3 Alternate Exterior Angles Theorem		
3-2-4 Same-Side Interior Angles Theorem		

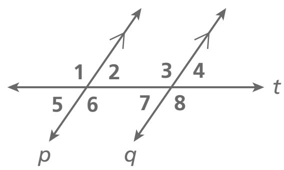
LESSON 3-2 Angles Formed by Parallel Lines and Transversals

Lesson Objectives (p. 155):

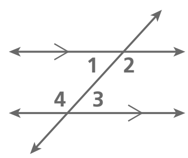
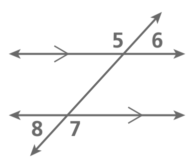
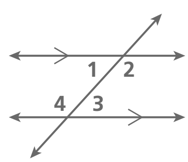
prove and use theorems about angles formed by parallel lines and a transversal.

Key Concepts

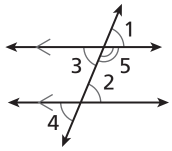
1. Postulate 3-2-1—Corresponding Angles Postulate (p. 155):

THEOREM	HYPOTHESIS	CONCLUSION
If two parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent.		$\angle 1 \cong \angle 3$ $\angle 2 \cong \angle 4$ $\angle 5 \cong \angle 7$ $\angle 6 \cong \angle 8$

2. Theorems—Parallel Lines and Angle Pairs (p. 156):

THEOREM	HYPOTHESIS	CONCLUSION
3-2-2 Alternate Interior Angles Theorem If two parallel lines are cut by a transversal, then the pairs of alternate interior angles are congruent.		$\angle 1 \cong \angle 3$ $\angle 2 \cong \angle 4$
3-2-3 Alternate Exterior Angles Theorem If two parallel lines are cut by a transversal, then the two pairs of alternate exterior angles are congruent.		$\angle 5 \cong \angle 7$ $\angle 6 \cong \angle 8$
3-2-4 Same-Side Interior Angles Theorem If two parallel lines are cut by a transversal, then the two pairs of same-side interior angles are supplementary.		$m\angle 1 + m\angle 4 = 180°$ $m\angle 2 + m\angle 3 = 180°$

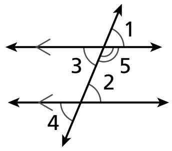
3. Get Organized Complete the graphic organizer by explaining why each of the three theorems is true. (p. 157).



Corr. ∠s Post.

Alt. Int. ∠s Thm.	Alt. Ext. ∠s Thm.	Same–Side Int. ∠s Thm.

3. Get Organized Complete the graphic organizer by explaining why each of the three theorems is true. (p. 157).



Corr. $\angle$s Post.

Alt. Int. $\angle$s Thm.

$\angle 1$ and $\angle 3$ are vert. $\angle$s, so $\angle 1 \cong \angle 3$. $\angle 1$ and $\angle 2$ are corr. $\angle$s, so $\angle 1 \cong \angle 2$. $\angle 2 \cong \angle 3$ by Trans. Prop. of $\cong$

Alt. Ext. $\angle$s Thm.

$\angle 2$ and $\angle 4$ are vert. $\angle$s, so $\angle 2 \cong \angle 4$. $\angle 1$ and $\angle 2$ are corr. $\angle$s, so $\angle 1 \cong \angle 2$. $\angle 1 \cong \angle 4$ by Trans. Prop. of $\cong$

Same–Side Int. $\angle$s Thm.

$\angle 1$ and $\angle 5$ form a lin. pair, so $m\angle 1 + m\angle 5 = 180°$. $\angle 1$ and $\angle 2$ are corr. $\angle$s, so $m\angle 1 = m\angle 2$. $m\angle 2 + m\angle 5 = 180°$ by subst. $m\angle 2$ and $m\angle 5$ are supp. $\angle$s by def. of supp. $\angle$s