

Questions on lesson 2.4?

Look over Lesson 2.4's homework,
we will be taking our content
mastery quiz soon!

2.5

A Reversed Condition

Parallel Line Converse Theorems

PG. 185-6 IN YOUR BOOK

Conditional statement:
"If p , then q ." $p \rightarrow q$

The converse of a conditional statement written in the form "If p , then q " is the statement written in the form "If q , then p ." The converse is a new statement that results when the hypothesis and conclusion of the conditional statement are interchanged. $q \rightarrow p$

The Corresponding Angle Postulate states: "If two parallel lines are intersected by a transversal, then the corresponding angles are congruent."

The Corresponding Angle Converse Postulate states: "If two lines intersected by a transversal form congruent corresponding angles, then the lines are parallel."

The Corresponding Angle Converse Postulate is used to prove new conjectures formed by writing the converses of the parallel lines theorems.

1. For each theorem:

- Identify the hypothesis p and conclusion q .
- Write the converse of the theorem as a conjecture.

a. Alternate Interior Angle Theorem: If two parallel lines are intersected by a transversal, then the alternate interior angles are congruent.

Hypothesis p : two parallel lines are intersected by a transversal

Conclusion q : the alternate interior angles are congruent

Alternate Interior Angle Converse Conjecture: $q \rightarrow p$

If the alternate interior angles are congruent when two lines are intersected by a transversal, then the two lines are parallel.

SKIP #2 on pg.187

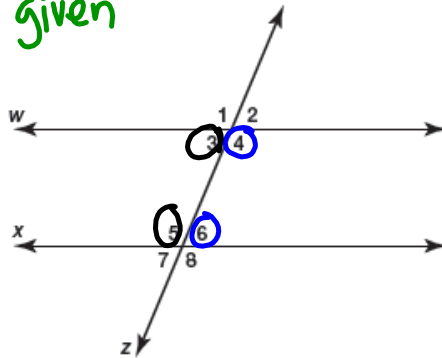
PG. 190 IN YOUR BOOK

3. The Same-Side Interior Angle Converse Conjecture states: "If two lines intersected by a transversal form supplementary same-side interior angles, then the lines are parallel."

P given

Q prove

$\angle 3$ & $\angle 7$
are corr.
 $\angle 5$ & $\angle 1$
are corr.



a. Use the diagram to write the given and prove statements for the Same-Side Interior Angle Converse Conjecture.

Given: $\angle 4$ & $\angle 6$ are supplementary OR $\angle 3$ & $\angle 5$ are supplementary

Prove: $w \parallel x$

b. Prove the Same-Side Interior Angle Converse Conjecture.

Statements	Reasons
1. $\angle 3$ & $\angle 5$ are supplementary	1. Given
2. $\angle 1$ & $\angle 3$ are a linear pair	2. Def'n of a linear pair
3. $\angle 1$ & $\angle 3$ are supplementary	3. Linear Pair Post.
4. $\angle 1 \cong \angle 5$	4. Supplementary to the same \angle , so they're \cong
5. $w \parallel x$	5. Corresponding Angle Converse Post.

PG. 192 IN YOUR BOOK - THIS IS HELPFUL
*I ALSO RECOMMEND COMPLETING "TALK THE TALK ON
PGS. 192-3 FOR HOMEWORK

Corresponding Angle Converse Postulate: If two lines intersected by a transversal form congruent corresponding angles, then the lines are parallel.

Alternate Interior Angle Converse Theorem: If two lines intersected by a transversal form congruent alternate interior angles, then the lines are parallel.

Alternate Exterior Angle Converse Theorem: If two lines intersected by a transversal form congruent alternate exterior angles, then the lines are parallel.

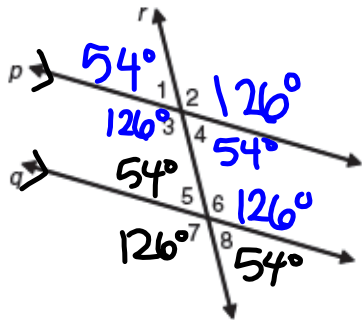
Same-Side Interior Angle Converse Theorem: If two lines intersected by a transversal form supplementary same-side interior angles, then the lines are parallel.

Same-Side Exterior Angle Converse Theorem: If two lines intersected by a transversal form supplementary same-side exterior angles, then the lines are parallel.

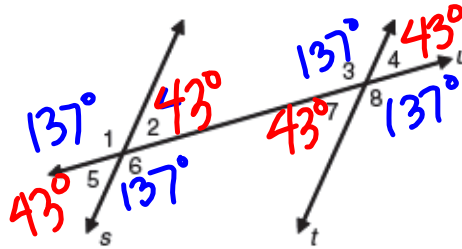
FROM LESSON 2.4 - NOT IN YOUR BOOK

1. Use the given information to determine the measures of each of the numbered angles.

a. $p \parallel q$ and $m\angle 1 = 54^\circ$

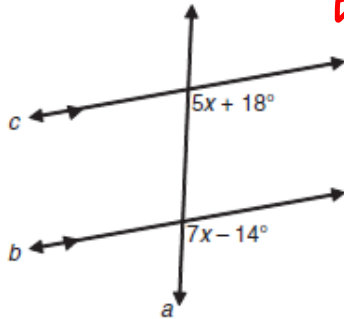


b. $s \parallel t$ and $m\angle 1 = 137^\circ$

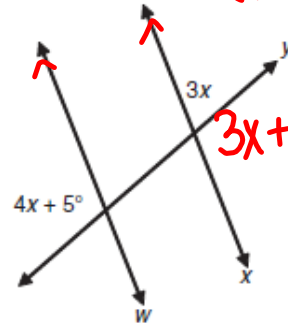


3. Solve for x in each figure.

a. Corresponding \cong
 $5x + 18 = 7x - 14$

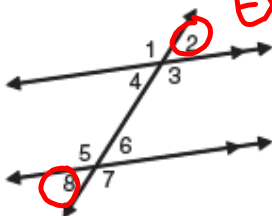


b. Same-side exterior (supp)
 $3x + 4x + 5 = 180$

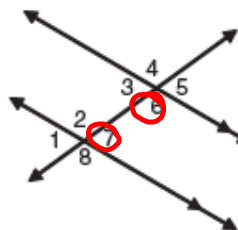


5. Determine the relationship between the indicated angles and write a postulate or theorem that justifies your answer.

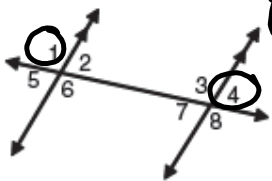
a. Angles 2 and 8 Alternate Exterior \angle Thm.



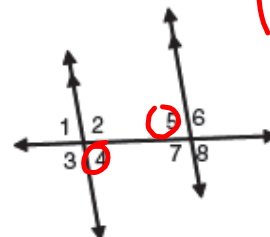
b. Angles 6 and 7 Same Side Interior \angle Thm.



c. Angles 1 and 4 Same Side Exterior \angle Thm.



d. Angles 4 and 5 Alternate Interior \angle Thm.



FROM LESSON 2.5 - NOT IN YOUR BOOK

1. Use the figure to write the postulate or theorem that justifies each statement.

a. $m\angle 1 = m\angle 8$, so $a \parallel b$

Alt. Ext. \angle Converse Thm.

b. $m\angle 4 + m\angle 6 = 180^\circ$, so $a \parallel b$

Same Side Int. \angle Converse Thm.

c. $a \parallel b$, so $m\angle 3 = m\angle 7$

Corr. \angle Post.

d. $m\angle 2 + m\angle 8 = 180^\circ$, so $a \parallel b$

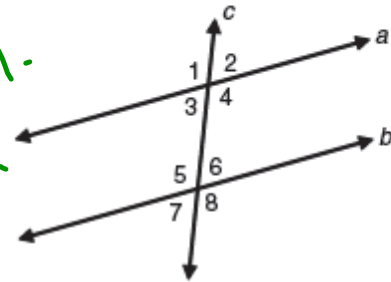
Same Side Ext. \angle Converse Thm.

e. $m\angle 4 = m\angle 5$, so $a \parallel b$

Alt. Int. \angle Converse Thm.

f. $a \parallel b$, so $m\angle 3 + m\angle 5 = 180^\circ$

Same Side Interior Thm.



2. Use the given information to determine the pair of lines that are parallel. Write the postulate or theorem that justifies your answer.

a. $m\angle 4 = m\angle 5$

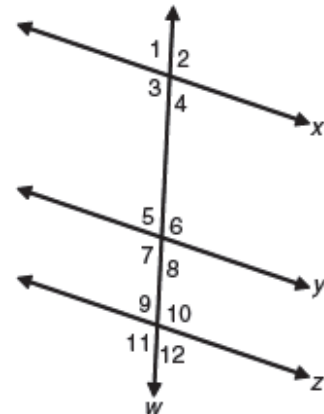
b. $m\angle 2 + m\angle 12 = 180^\circ$

c. $m\angle 7 = m\angle 11$

d. $m\angle 8 + m\angle 10 = 180^\circ$

e. $m\angle 1 + m\angle 7 = 180^\circ$

f. $m\angle 2 = m\angle 11$



Homework

Finish 2.5