p165 # 1-19 odd # 23, 27, 29, 30, 31

TOPIC: **3.3 Prove Lines are Parallel**	NAME: Mrs. H DATE: KEY

ESSENTIAL QUESTION: How do you prove Lines are parallel?

QUESTIONS:

Vocabulary:

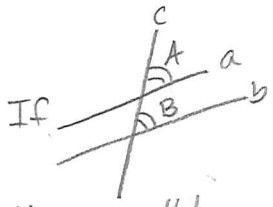
conditional statement (an If-then statement) — A type of logical statement that has 2 parts, a hypothesis and a conclusion.

converse statement — The statement formed by exchanging the hypothesis and conclusion. The converse of If A then B is If B then A

converse of post #15 ↳

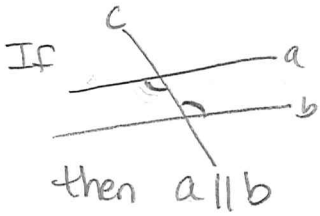
Postulate 16: Corresponding Angles Converse

If two lines are cut by transversal so the pairs of corresponding angles are congruent, then the lines are parallel.



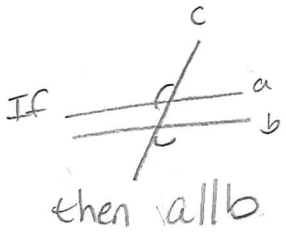
Theorem 3.4: Alternate Interior Angles Converse

If two lines are cut by transversal so the pairs of alternate interior angles are congruent, then the lines are parallel.



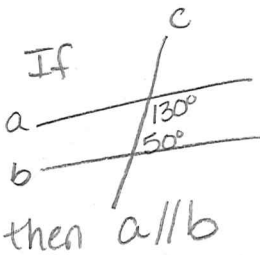
Theorem 3.5: Alternate Exterior Angles Converse

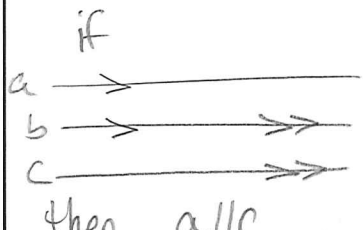
If two lines are cut by transversal so the pairs of alternate exterior angles are congruent, then the lines are parallel.



Theorem 3.6: Consecutive Interior Angles Converse

If two lines are cut by transversal so the pairs of consecutive interior angles are supplementary, then the lines are parallel.





Theorem 3.7: Transitive Property of Parallel Lines

If two lines are parallel to the same line, then they are parallel to each other.

SUMMARY:

If CA, AIA, AEA are ≅ then lines are //

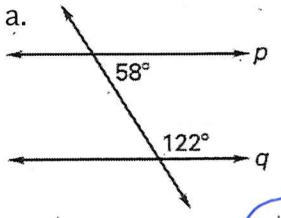
If CIA are supplementary then lines are //

Transitive property if a // b and b // c then a // c

QUESTIONS:

A1. Are lines p and q are parallel? If so, what is your reasoning?

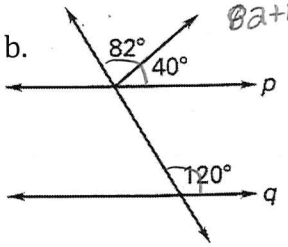
a.



58 + 122 = 180

YES (Thm 3.6) CIA converse are supp.

b.



82+40 = 122

122 ≠ 120

NO

Corresponding angles ≠

A2. What value of x would make $m \parallel n$?

a. $(5x + 23)°$, $(7x + 13)°$, lines m, n

CA converse

$5x + 23 = 7x + 13$

$10 = 2x$

$x = 5$

b. $80°$, $(x - 15)°$, lines m, n

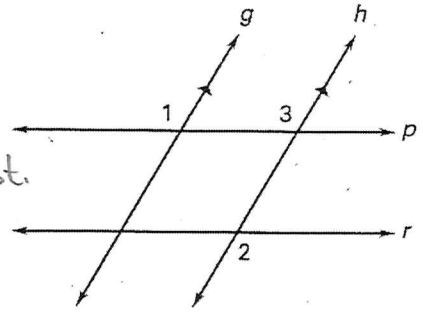
CIA converse

$80 + x - 15 = 180$

$65 + x = 180$

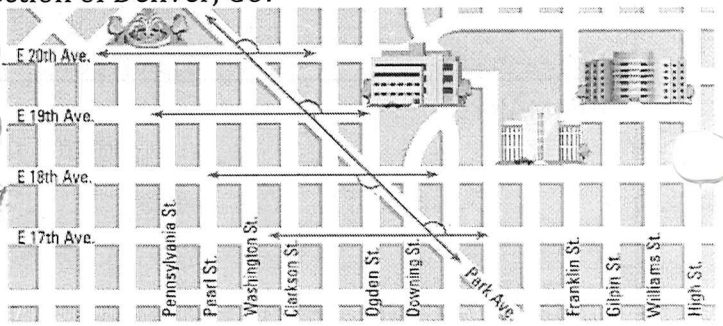
$x = 115$

A3. Complete the logical argument..."If $g \parallel h$ and $\angle 1 \cong \angle 2$, then $p \parallel r$."



Statement	Reason
$g \parallel h$	Given
$\angle 1 \cong \angle 3$	Corresponding $\angle$s Post.
$\angle 1 \cong \angle 2$	Given
$\angle 2 \cong \angle 3$	Transitive
$p \parallel r$	Alternate Exterior $\angle$s Converse

A5. Explain why pairs of the numbered roads are going to be parallel to each other in the section of Denver, CO.



20 // 19th CA conv.

19 // 18 AEA conv.

18 // 17 AIA conv.

By transitive property all lines are parallel