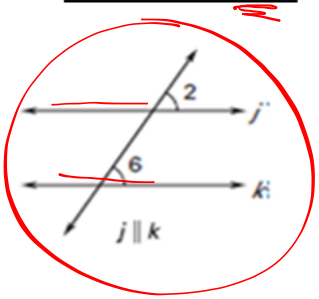
Geometry 1.2
Class-Notes

Name_____
Date_____Period_____

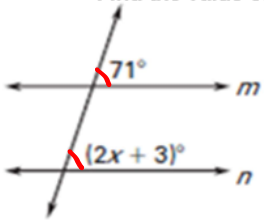
3.3 Use Angle Relationships to Prove Parallel

I. Corresponding angles converse postulate: If two lines are cut by a transversal, so that corresponding angles are congruent, then the lines are parallel.



Example 1: Apply the corresponding angles converse.

Find the value of x that makes m ll n.

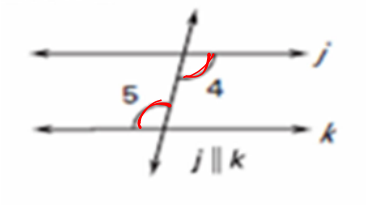


$71 = 2x + 3$

$68 = 2x$

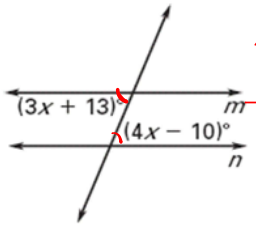
$34 = x$

II. Alternate Interior angles converse postulate: If two lines are cut by a transversal, so that alternate interior angles are congruent, then the lines are parallel.



Example 2: Apply the alternate interior angles converse

Find the value of x that makes m ll n.



$3x + 13 = 4x - 10$

$-3x \quad -3x$

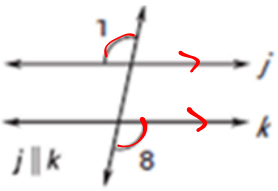
$13 = x - 10$

$+10 \quad +10$

$23 = x$

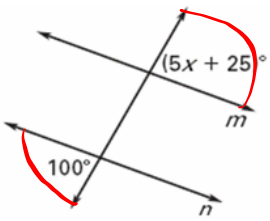
m ll n if

II. Alternate Exterior angles converse postulate: If two lines are cut by a transversal, so that alternate exterior angles are congruent, then the lines are parallel.



Example 3: Apply the alternate exterior angles converse.

Find the value of x so that m ll n.

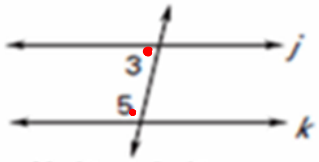


$5x+25=100$

$5x=75$

$x=15$

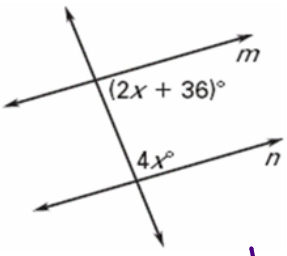
IV. Consecutive interior angles converse postulate: If two lines are cut by a consecutive interior/ transversal, so that same side interior angles are supplementary, then the lines are parallel.



If ∠3 and ∠5 are supplementary, then $j \parallel k$.

Example 4: Apply the consecutive interior angles converse.

Find the value of x that makes m ll n.



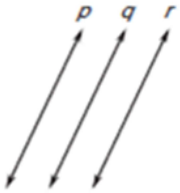
$2x+36+4x=180$

$6x+36=180$

$6x=144$

m ll n if $x=24$

Transitive property of parallel lines: If two lines are __parallel__ to the same line, then they are __parallel__ to each other.



If __p||q__ and __q||r__, then __p||r__.

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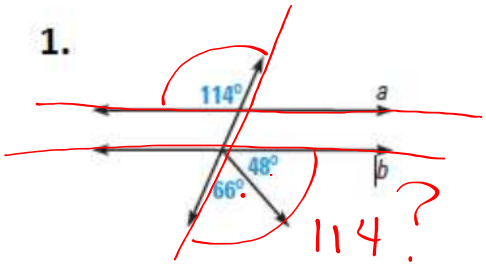
Example 5: Is there enough information to prove that lines a and b are parallel? If so, state the postulate or theorem used.

1.



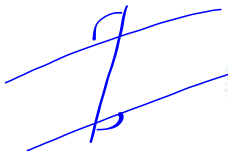
114 ?

66+48 = 114

a || b

ALT EXT ∠S ≅

2.



NOT ENOUGH INFO