p157 # 4-20 all, 23-33 odd

TOPIC: **3.2 Use Parallel Lines and Transversals**	NAME: KEY DATE:

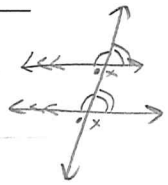
ESSENTIAL QUESTION: How are corresponding angles and alternate interior angles related for two // lines and a transversal?

QUESTIONS:

Given parallel lines cut by a tranversal, what type of angles are $\cong$? supp?

Postulate 15: Corresponding Angles Postulate

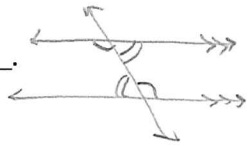
If two parallel lines are cut by a transversal then the pairs of corresponding angles are congruent.



If ⫽ lines then $\angle 1 \cong \angle 2$

Theorem 3.1: Alternate Interior Angles Theorem

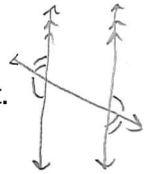
If two parallel lines are cut by a transversal, then pairs of alternate interior angles are congruent.



If ⫽ lines then $\angle 1 \cong \angle 2$

Theorem 3.2: Alternate Exterior Angles Theorem

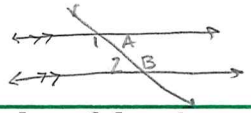
If 2 parallel lines are cut by a transversal, then pairs of alternate exterior angles are congruent.



If ⫽ lines then $\angle 1 \cong \angle 2$

Theorem 3.3: Consecutive Interior Angles Theorem

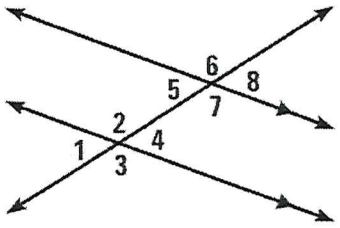
If two parallel lines are cut by a transversal, then the pairs of consecutive interior angles are supplementary



If ⫽ lines then $m\angle 1 + m\angle 2 = 180°$, $m\angle A + m\angle B = 180°$

Name the $\angle$'s that are congruent and supplementary.

A1. Name two examples of the given angle pair from the figure.



a. Corresponding Angles:
$\angle 1 \cong \angle 5$, $\angle 2 \cong \angle 6$, $\angle 3 \cong \angle 7$, $\angle 4 \cong \angle 8$

b. Consecutive Interior Angles:
2,5 4,7
$m\angle 2 + m\angle 5 = 180°$ $m\angle 4 + m\angle 7 = 180°$

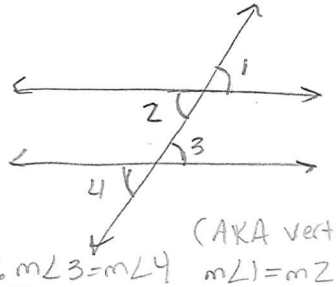
c. Alternate Interior Angles:
$\angle 2 \cong \angle 7$ $\angle 4 \cong \angle 5$

d. Alternate Exterior Angles:
$\angle 1 \cong \angle 8$ $\angle 3 \cong \angle 6$

SUMMARY:

CA and AIA of // lines and a transversal are $\cong$

$m\angle 1 = m\angle 3$ CA
$m\angle 2 = m\angle 4$ CA
$m\angle 2 = m\angle 3$ AIA



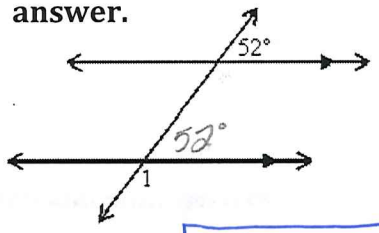
$\therefore m\angle 3 = m\angle 4$ $m\angle 1 = m\angle 2$ (AKA vertical $\angle$)

QUESTIONS:

Find the missing angles given 2 // lines and a transv.

A2. Find the numbered angle measure and give the reason for your answer.

a.



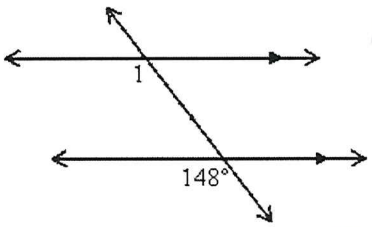
2nd

180
−52
128

$m\angle 1 = 128°$

CA post then linear pair

b.



1st

$m\angle 1 = 148°$

CA Postulate

Find the value of x by setting up an equation based on postulates.

A3. Find the value of *x*.

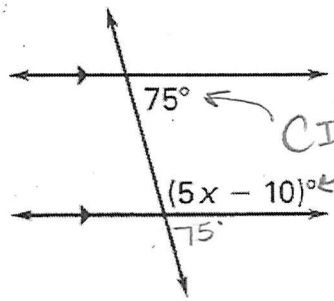
$75 + 5x - 10 = 180$

$65 + 5x = 180$

-65

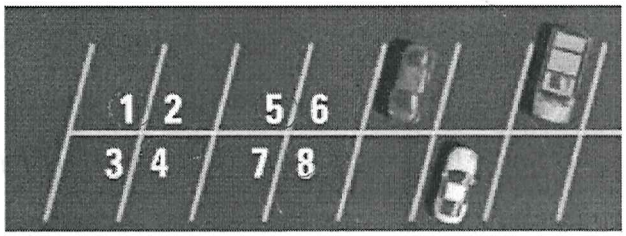
$\frac{5x}{5} = \frac{115}{5}$

$x = 23$



Use the diagram to list ≅ and supp. ∠s

A4. In the diagram, the "almost" vertical segments are parallel.



a. List the angles congruent to ∠1.

$\angle 1 \cong \angle 4$ VA

$\cong \angle 5$ CA

$\cong \angle 8$ AEA

b. If ∠4 is 50 degrees more than ∠7, find $m\angle 4$.

* compare to get the 'x'

∠4 and ∠7 CIA

∴ supplementary

$m\angle 7 + m\angle 4 = 180$

$m\angle 7 = 65°$

$m\angle 4 = 65 + 50$

$m\angle 4 = 115°$

$x + x + 50 = 180$

$2x = 130$

$x = 65$

A5. Without using Postulate ~~13~~ 15, give reasons why ∠1 ≅ ∠3.

$\angle 1 \cong \angle 2$ AEA

$\angle 2 = \angle 3$ Vertical ∠s

$\angle 1 \cong \angle 3$ Transitive