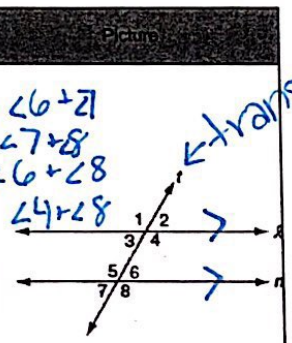
GUIDED NOTES: Geometric Properties

Important Vocabulary		Picture
Vertical Angles: congruent	two angles that are directly across from each other and share a vertex	∠1+∠4, ∠2+∠3, ∠5+∠8, ∠6+∠7, ∠7+∠8, ∠6+∠8, ∠4+∠8
Linear Pair: supplement	two angles that form a line	∠1+∠2, ∠3+∠4, ∠5+∠6, ∠1+∠3, ∠2+∠4, ∠5+∠7
Corresponding Angles: ≅	two angles in the same position on different parallel lines	∠2+∠6, ∠3+∠7, ∠1+∠5
Alternate Interior Angles: ≅	two angles between parallel lines and on different sides of the transversal	∠3+∠6, ∠4+∠5
Alternate Exterior Angles: ≅	two angles outside parallel lines and on different sides of the transversal	∠1+∠8, ∠2+∠7
Consecutive Interior Angles: supplement	two angles between parallel lines and on the same side of the transversal	∠3+∠5, ∠4+∠6
Consecutive Exterior Angles: supplement.	two angles outside parallel lines and on the same side of the transversal	∠1+∠7, ∠2+∠8



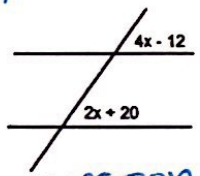
"consecutive" 4 same side

Triangle Congruence

Name:	Picture	Definition
Angle-Side-Angle (ASA)		two angles and the side between them of one triangle are congruent to two angles and the side between them of the other triangle
Side-Angle-Side (SAS)		two sides and the angle between them of one triangle are congruent to two sides and the angle between them of the other triangle
Side-Side-Side (SSS)		all three sides of one triangle are congruent to all three sides of the other triangle
Angle-Angle-Side (AAS)		two angles and a side not between them of one triangle are congruent to two angles and a side not between them of the other triangle
Hypotenuse-Leg (HL)		the hypotenuse and a leg of one right triangle are congruent to the hypotenuse and a leg of the other right triangle

The Donkey Theorem:
You can't travel (AAA) by Donkey (SSA) to triangle congruence!

EX1.



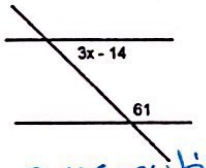
≅

corresponding angles

$4x-12=2x+20$

$x=16$

EX2.



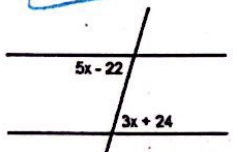
Supp.

consecutive interior angles

$3x-14+61=180$

$x=44.33$

EX3.



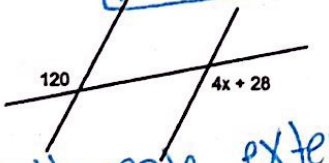
≅

Alternate interior angles

$5x-22=3x+24$

$x=23$

EX4.



≅

alternate exterior angles

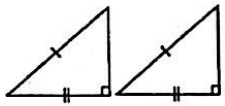
$120=4x+28$

$x=23$

EX5.

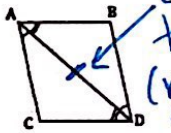
SAS

EX6.



HL

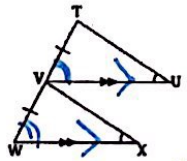
EX7.



congruent to itself (reflexive property)

ASA

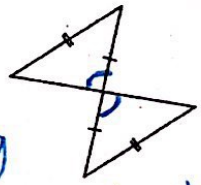
EX8.



corresponding angles

AAS

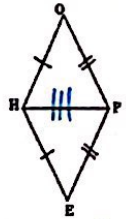
EX9.



vertical angle

SSA → can't prove congruence

EX10.



SSS