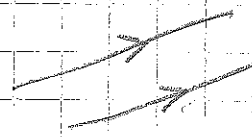


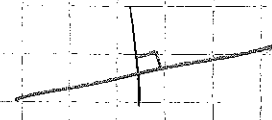
Transversal: a line that crosses at least two other lines.



Parallel lines: at least two lines that have the same slope; they never intersect
 $\overline{AB} \parallel \overline{CD}$

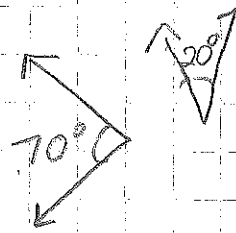
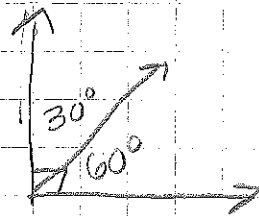


Perpendicular lines: two lines that intersect at a 90° angle
 $\overline{AB} \perp \overline{CD}$

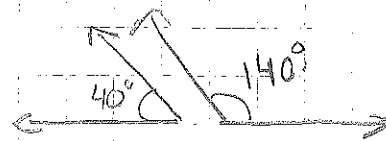
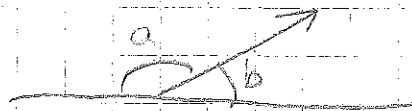


Congruent: equal length or angle measure
 \cong

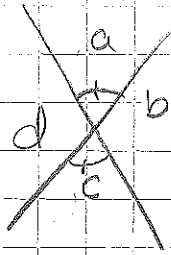
Complimentary angles: two angles that add up to be 90°



Supplementary angles: two angles that add up to be 180°



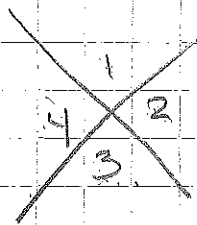
Vertical angles: the angles opposite each other when 2 lines cross



$$\angle a \cong \angle c \quad \angle d \cong \angle b$$

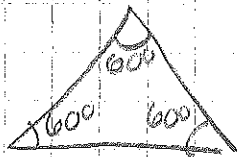
* are congruent

Linear pair (straight angles): a pair of adjacent angles that are formed when 2 lines intersect. The two angles of a linear pair are always supplementary.



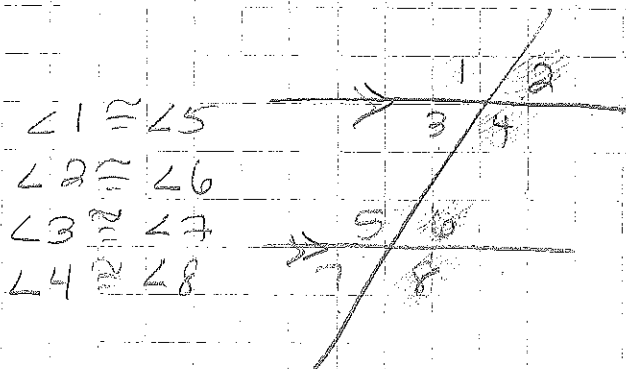
$$\begin{aligned} \angle 1 + \angle 2 &= 180^\circ \\ \angle 4 + \angle 3 &= 180^\circ \\ \angle 4 + \angle 1 &= 180^\circ \\ \angle 2 + \angle 3 &= 180^\circ \end{aligned}$$

Triangle Angle Sum Theorem: the 3 angles of any triangle add up to be 180°

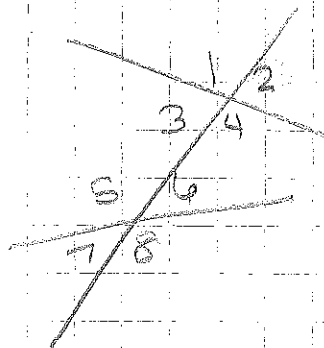


$$60^\circ + 60^\circ + 60^\circ = 180^\circ$$

Corresponding angles: when 2 lines are crossed by a transversal, the angles in matching corners are corresponding angles.

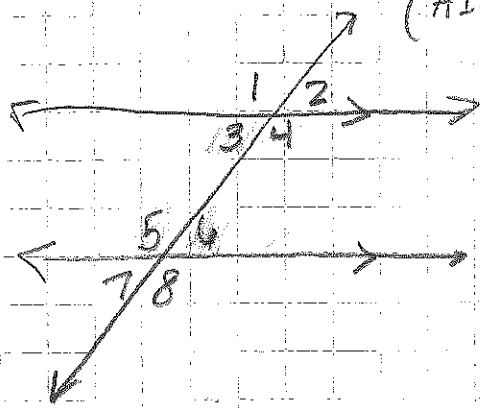


$$\begin{aligned} \angle 1 &\cong \angle 5 \\ \angle 2 &\cong \angle 6 \\ \angle 3 &\cong \angle 7 \\ \angle 4 &\cong \angle 8 \end{aligned}$$



With parallel lines:
(corresponding angles are congruent)

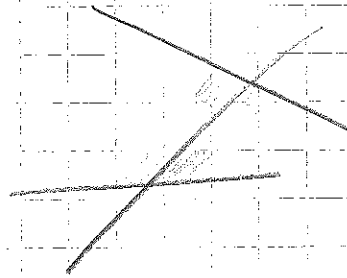
Alternate Interior Angles (AIA)



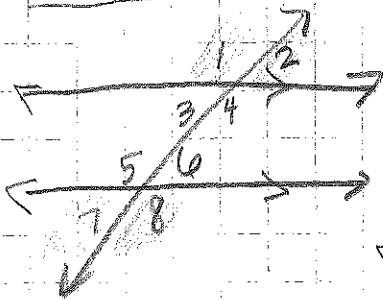
When two lines are crossed by a transversal, the two angles inside the two lines that are on opposite sides of the transversal are A.I.A.

* When the two lines are parallel, A.I.A. are congruent

ex) $\angle 3 \cong \angle 6$, $\angle 4 \cong \angle 5$



Alternate Exterior Angles (AEA)

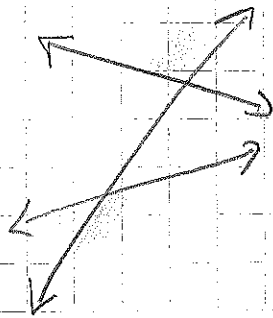


When two lines are crossed by a transversal, the two angles outside of the two lines that are on opposite sides of the transversal are A.E.A.

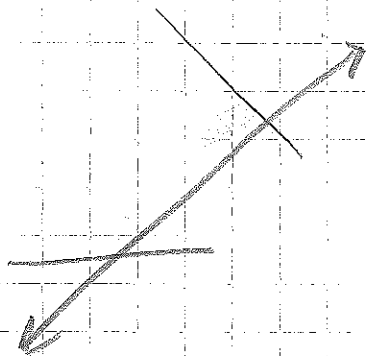
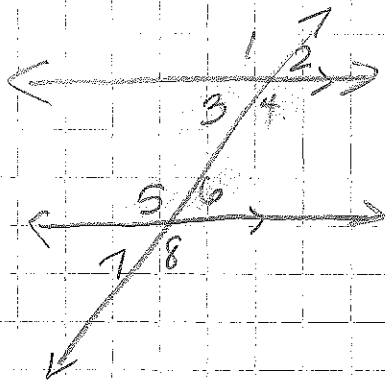
* When the two lines are parallel, AEA are congruent

$\angle 1 \cong \angle 8$

$\angle 2 \cong \angle 7$



Same Side Interior Angles: angles that are on the same side of the transversal inside of the two lines

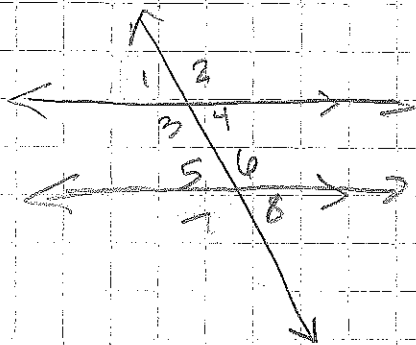


* when the two lines are parallel, SSI A are supplementary

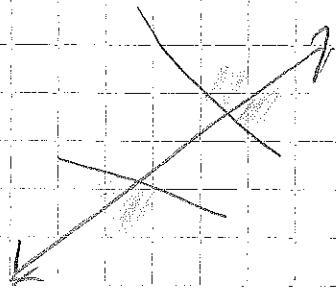
$$\angle 3 + \angle 5 = 180^\circ$$

$$\angle 4 + \angle 6 = 180^\circ$$

Same Side Exterior Angles: angles that are on the same side of the transversal outside of the two lines



* when the two lines are parallel, SSEA are supplementary



$$\angle 1 + \angle 7 = 180^\circ$$

$$\angle 2 + \angle 8 = 180^\circ$$