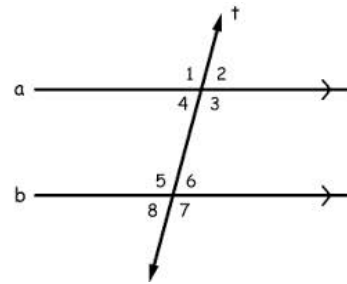
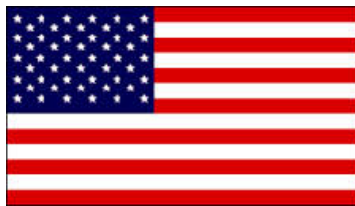
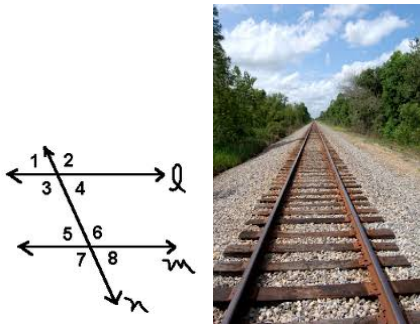
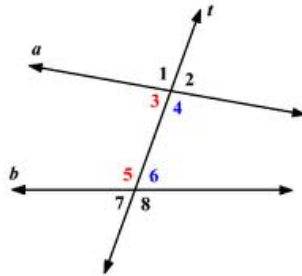
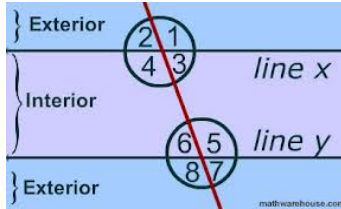


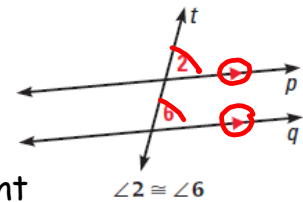
3.2 Use Parallel Lines and Transversals

Goal: Use angles formed by parallel lines and transversals.



Corresponding Angles Postulate -

if two parallel lines are cut by a transversal,
then the pairs of corresponding angles are congruent



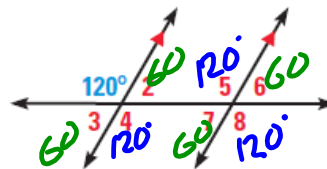
$$\angle 2 \cong \angle 6$$

Identify congruent angles

Find the remaining angle measures.

$$\angle 2 + 120^\circ = 180^\circ$$

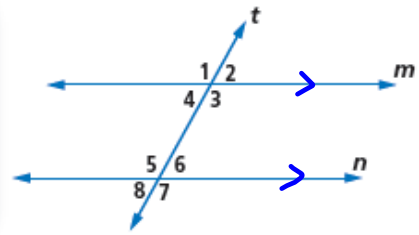
$$\angle 2 = 60^\circ$$



Parallel Lines Theorem

If two parallel lines are cut by a transversal:

1. Alternate interior angles are congruent.
2. Alternate exterior angles are congruent.
3. Same-side interior angles are supplementary.



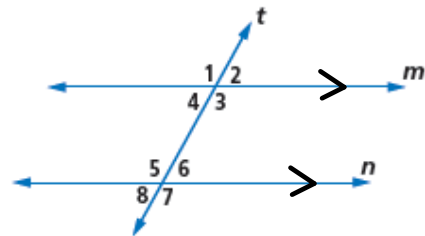
alternate interior angles - $\frac{\angle 4}{\angle 3} \cong \frac{\angle 6}{\angle 5}$

alternate exterior angles - $\frac{\angle 1}{\angle 2} \cong \frac{\angle 7}{\angle 8}$

same side interior angles - $\frac{\angle 4}{\angle 3} + \frac{\angle 5}{\angle 6} = 180^\circ$
(consecutive side)

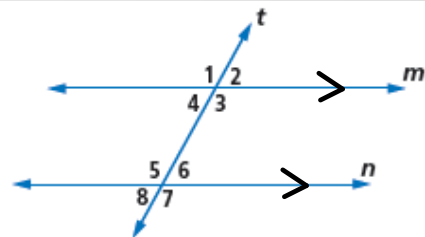
Alternate Interior Angles Theorem -

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



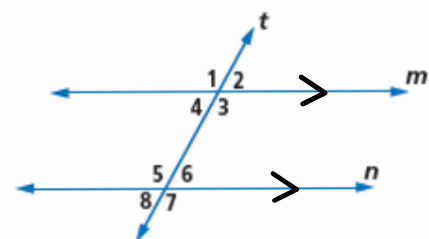
Alternate Exterior Angles Theorem -

if two parallel lines are cut by a transversal,
then the pairs of alternate exterior angles are
congruent



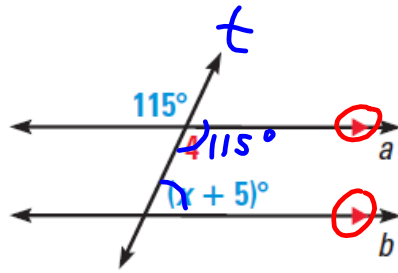
Consecutive Interior Angles Theorem -

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



Use properties of parallel lines

xy ALGEBRA Find the value of x .



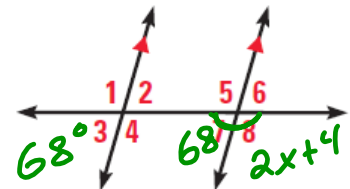
$$115 + x + 5 = 180^\circ$$

$$x + 120 = 180$$

$$x = 60$$

Use the diagram at the right.

- If $m\angle 1 = 105^\circ$, find $m\angle 4$, $m\angle 5$, and $m\angle 8$. Tell which postulate or theorem you use in each case.
- If $m\angle 3 = 68^\circ$ and $m\angle 8 = (2x + 4)^\circ$, what is the value of x ? Show your steps.



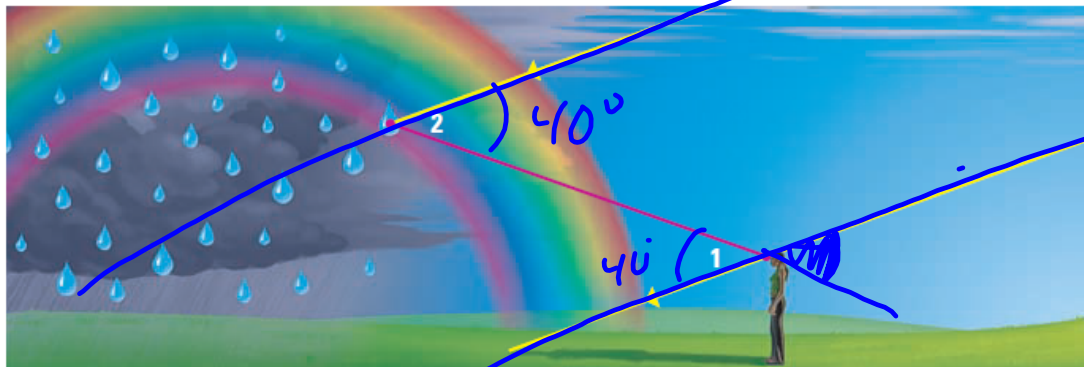
$$68 + 2x + 4 = 180^\circ$$

$$2x + 72 = 180$$

$$2x = 108$$

$$x = 54$$

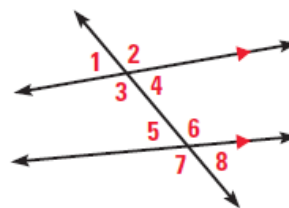
SCIENCE When sunlight enters a drop of rain, different colors of light leave the drop at different angles. This process is what makes a rainbow. For violet light, $m\angle 2 = 40^\circ$. What is $m\angle 1$? How do you know?



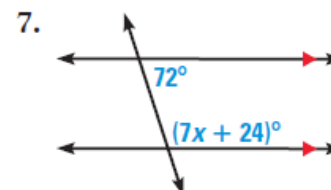
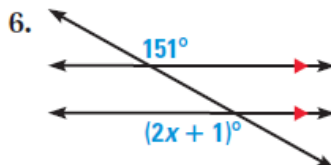
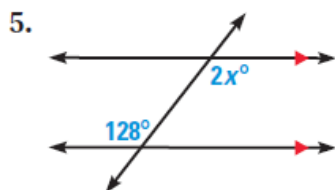
Alternate Interior Angles

Test Your Knowledge

- $\angle 2$ and $\underline{\quad ? \quad}$ are corresponding angles.
- $\angle 3$ and $\underline{\quad ? \quad}$ are consecutive interior angles.
- $\angle 3$ and $\underline{\quad ? \quad}$ are alternate interior angles.
- $\angle 2$ and $\underline{\quad ? \quad}$ are alternate exterior angles.



Find the value of x .



HW: Pg 149 #'s 1-33, 35