# PARALLEL LINES
# &
# TRANSVERSALS

*STUDENTS USE "PARALLEL LINES CUT BY A TRANSVERSAL GUIDED NOTES WORKSHEET" TO FOLLOW ALONG

# Parallel Lines Cut By A Transversal Guided Notes

## Definitions:

- <u>Parallel Lines:</u>  Two lines that never intersect.
- <u>Transversal:</u>  A line that intersects two or more lines.

- When parallel lines are intersected by a transversal, *many angles are formed*.
- They will form special relationships between pairs

# Parallel Lines Cut By A Transversal Guided Notes

- **Reminder:** Supplementary angles are two angles that add up to 180˚. They make a straight line.
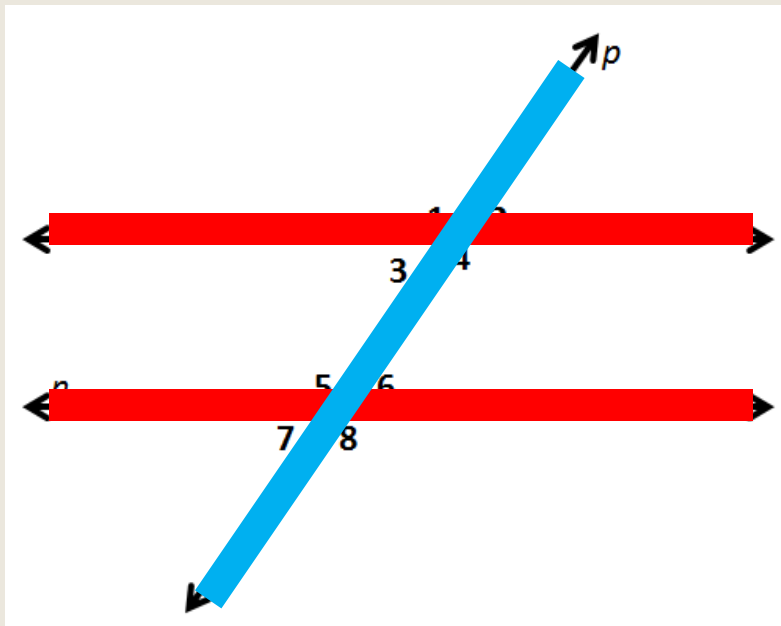
1. Name the parallel lines.

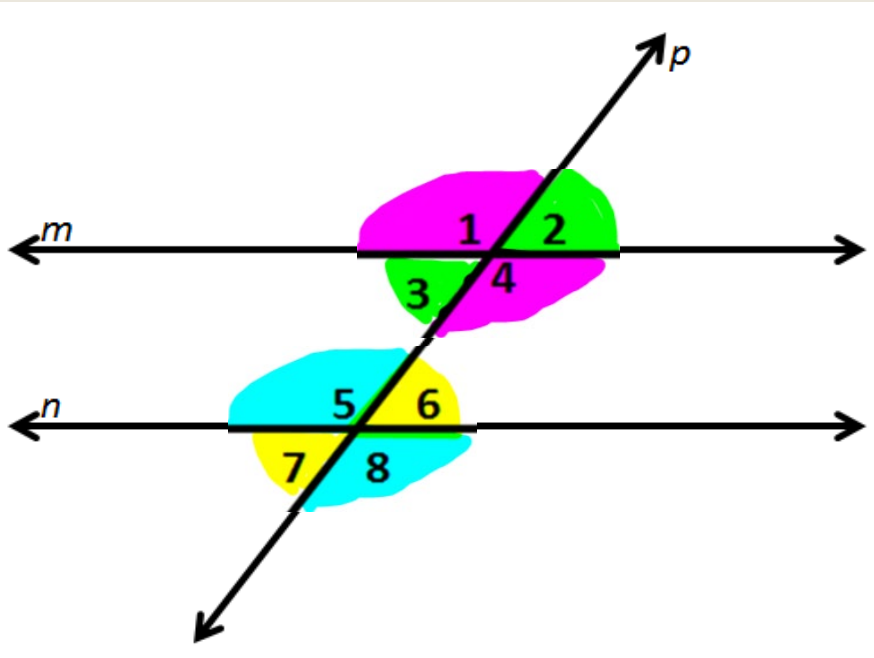   $\overleftrightarrow{m}$ and $\overleftrightarrow{n}$

2. Name the transversal.

   $\overleftrightarrow{p}$

The order the angles are numbered isn't important, that can change from problem to problem... What stays the same is their relationship!

# 3. Name and highlight the vertical angles.

■ <u>Vertical angles are congruent</u>



∠1 and ∠4
∠2 and ∠3
∠5 and ∠8
∠6 and ∠7

*TIP* basically means opposite from each other, across the <u>v</u>ertex, not adjacent/next to

# 4. Name and highlight the <span style="color:red">**corresponding**</span> angles.

■ <u>Corresponding angles are congruent</u>
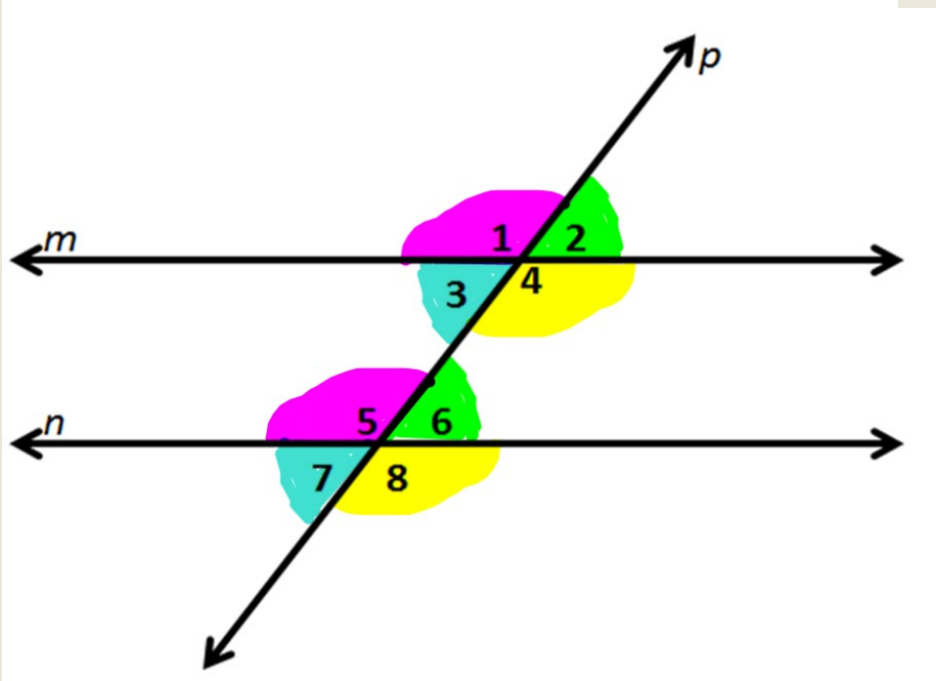


∠1 and ∠5
∠2 and ∠6
∠3 and ∠7
∠4 and ∠8

*TIP* think which ones 'match up' in the same location? like top left corner with top left corner

# 5. Name and highlight the <span style="color:red">alternate interior</span> angles.
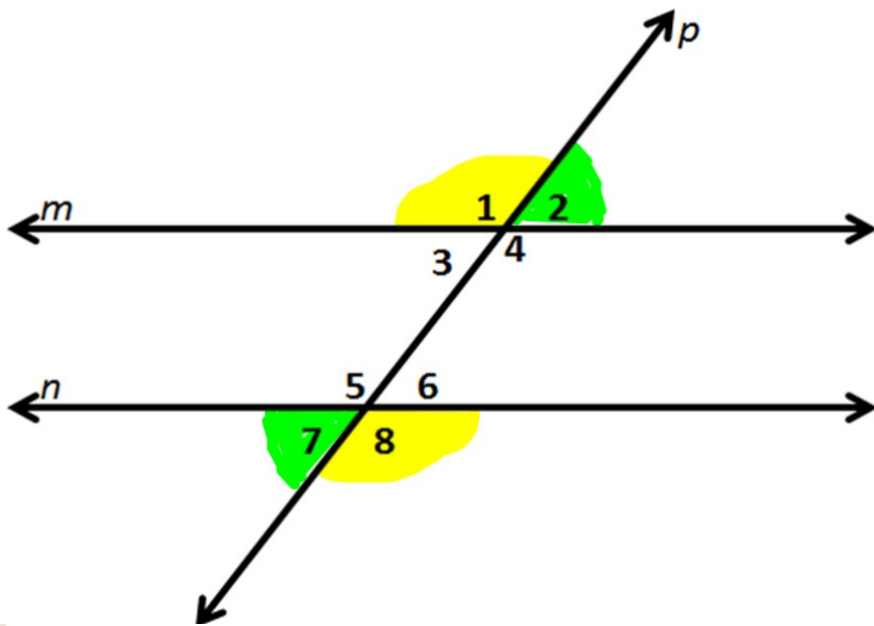
■ <u>Alternate Interior angles are congruent</u>
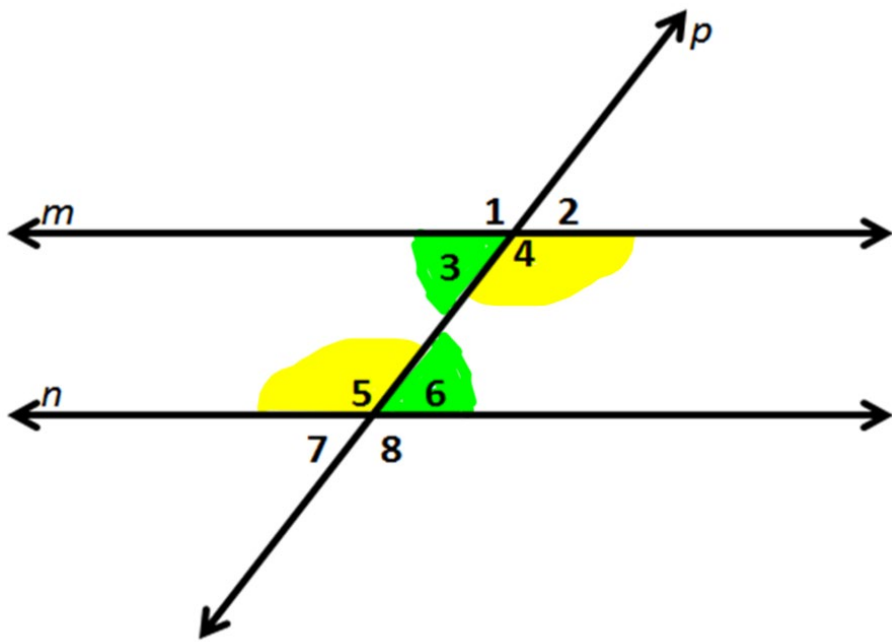


$\angle 3$ and $\angle 6$

$\angle 4$ and $\angle 5$

*TIP* think *alternate* means on *opposite* sides of the transversal, and
*Interior* means *in*side of the 'track' (parallel lines)

# 6. Name and highlight the <span style="color:red">alternate exterior</span> angles.
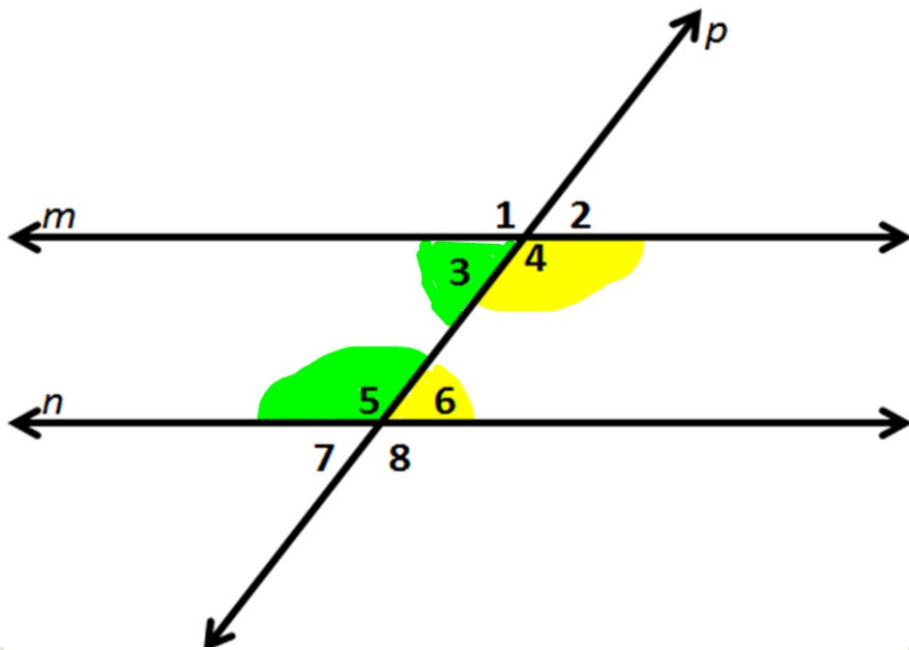
- Alternate exterior angles are congruent



$\angle 1$ and $\angle 8$

$\angle 2$ and $\angle 7$

*TIP* think *alternate* means on *opposite* sides of the transversal, and
*exterior* means *outside* of the 'track' (parallel lines)

# 7. Name and highlight the <u>same side interior</u> angles.

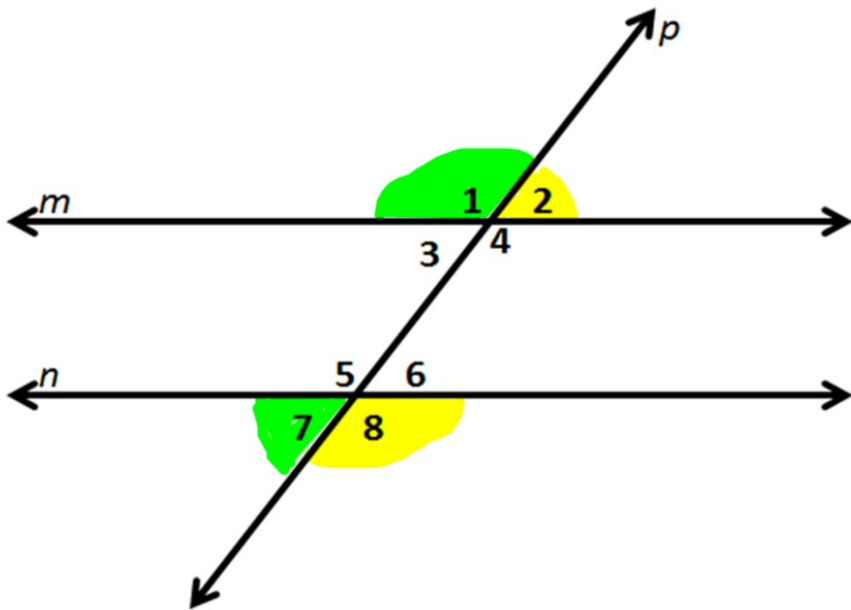■ <u>Same side interior angles are supplementary</u>



$\angle 3$ and $\angle 5$

$\angle 4$ and $\angle 6$

*TIP* think *same-side* means on the *same sides* of the transversal, and
*Interior* means *in*side of the 'track' (parallel lines)

# 8. Name and highlight the <span style="color:red">**same side exterior**</span> angles.

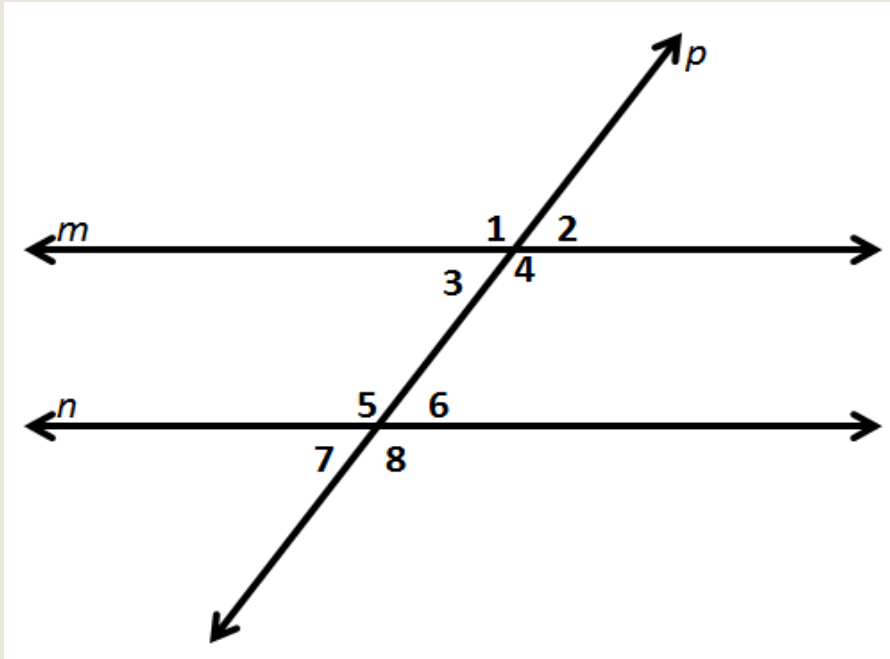- **<u>Same side exterior angles are supplementary</u>**



$\angle 1$ and $\angle 7$

$\angle 2$ and $\angle 8$

*TIP* think *same-side* means on the *same sides* of the transversal, and
*Exterior* means *outside* of the 'track' (parallel lines)

If you know the measure of one of the 8 angles, you can find the measure of all of the others.

Try it.   The measure of $\angle 1 = 120°$.
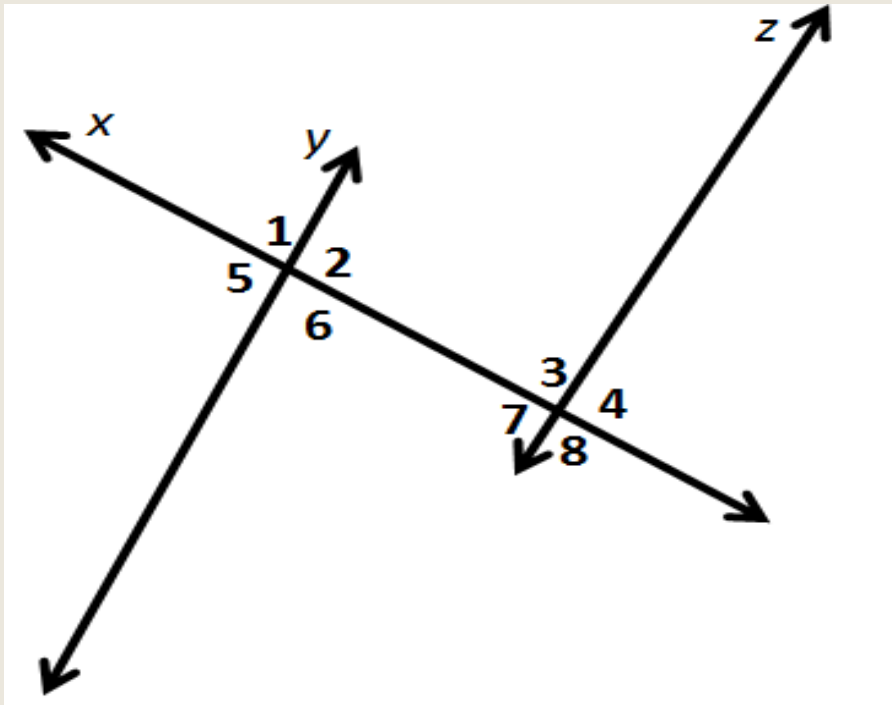


$\angle 1 = $ 120°

$\angle 2 = 60°$

$\angle 3 = 60°$

$\angle 4 = 120°$

$\angle 5 = 120°$

$\angle 6 = 60°$

*notice all the acute angles in the problem will be 60° and all the obtuse angles in the problem will be 120°

$\angle 7 = 60°$

$\angle 8 = 120°$

If you know the measure of one of the 8 angles, you can find the measure of all of the others.

Try it again. The measure of $\angle 1 = 72°$.

$\angle 1 = 72°$

$\angle 2 = 108°$

$\angle 3 = 72°$

$\angle 4 = 108°$

$\angle 5 = 108°$

$\angle 6 = 72°$

$\angle 7 = 108°$

$\angle 8 = 72°$