transversal : a line that intersects 2 or more lines

transversal

ℓ_1

ℓ_2 not parallel
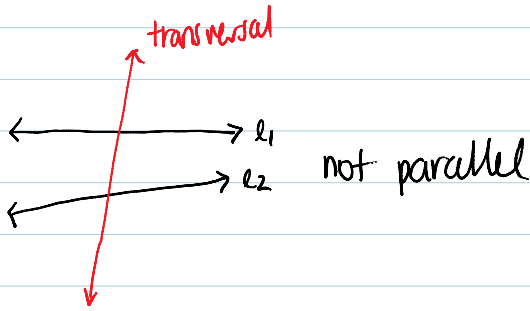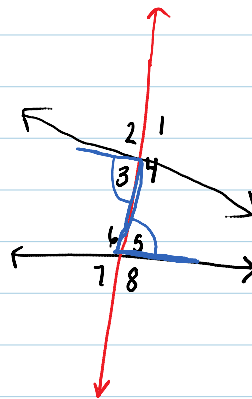
vertically opposite angles :

- angles created by intersecting lines that share only a vertex
- these angles are opposite each other

70°

1 2
4 3

$\angle 1 \overset{is}{=} \angle 3$
$\angle 2 \overset{is}{=} \angle 4$
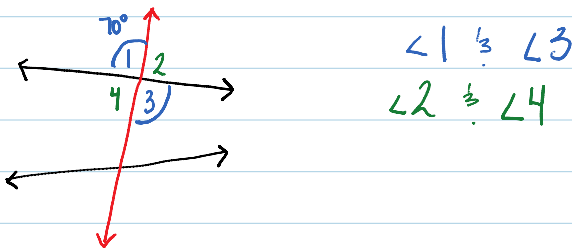
interior alternate angles

- angles in opposite positions between 2 lines intersected by a transveral
  ↳ Z pattern
  N, S or И

2 1
3 4

6 5
7 8

the following rules explain relationships!
doesn't mean they are equal!

$\angle 3 \overset{is}{=} \angle 5$
$\angle 4 \overset{is}{=} \angle 6$

corresponding angles

- 2 angles that occupy the same position at 2 different intersections
  ↳ F pattern, ⊔ , ⅃ , or ⊤⅂

2 1
3 4

6 5
7 8

$\angle 1 \overset{is}{=} \angle 5$, $\angle 2 \overset{is}{=} \angle 6$
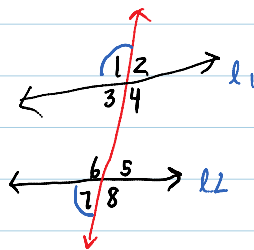$\angle 3 \overset{is}{=} \angle 7$, $\angle 4 \overset{is}{=} \angle 8$
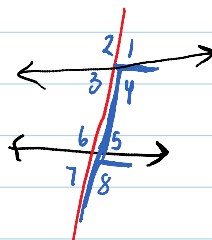
Exterior alternate angles
- ∠ in opposite positions outside 2 lines, intersected by a transversal and also on alternate sides of the same transversal

$$\angle 1 \overset{\cdot}{=} \angle 7$$

$$\angle 2 \overset{\cdot}{=} \angle 8$$

Interior ∠ on the same side of the transversal
↳ [pattern, ⊔, ⊐, ⊓]

$$\angle 3 \overset{\cdot}{=} \angle 6$$
$$\angle 4 \overset{\cdot}{=} \angle 5$$

Exterior ∠ on the same side of the transversal

$$\angle 1 \overset{\cdot}{=} \angle 7$$
$$\angle 2 \overset{\cdot}{=} \angle 8$$

G&M - 11 Angle relationships formed by two non-parallel lines, or parallel lines intersected by a transversal: When two non-parallel lines or two parallel lines are intersected by a transversal a number of angle relationships are formed.

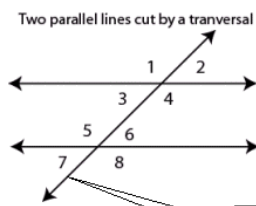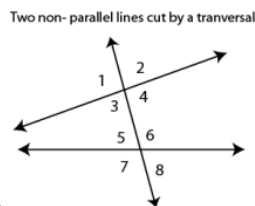**Example 11.1 – Parallel and non-parallel lines cut by a transversal:**

Figure A	Figure B

Two parallel lines cut by a tranversal

Two non- parallel lines cut by a tranversal

A **transversal** is a line that intersects two or more lines.

Example 11.2 – Some angle relationships formed by parallel and non-parallel lines being cut by a transversal:

		Applies to Figure	
	Examples	Figure A	Figure B
The measures of **vertical angles** are equal.	∠1 and ∠4 ∠2 and ∠3	yes	yes
The measures of **angles forming a linear pair** total 180°. If you know one angle in a linear pair, then you can determine the other angle.	∠1 and ∠2 ∠5 and ∠6	yes	yes
The measures of **alternate exterior angles** are equal.	∠1 and ∠8 ∠2 and ∠7	yes	no
The measures of **alternate interior angles** are equal.	∠3 and ∠6 ∠4 and ∠5	yes	no
The measures of the **same-side interior angles** are supplementary (sum to 180°).	∠3 and ∠5 ∠4 and ∠6	yes	no
The measures of **corresponding angles** are equal.	∠1 and ∠5 ∠2 and ∠6	yes	no