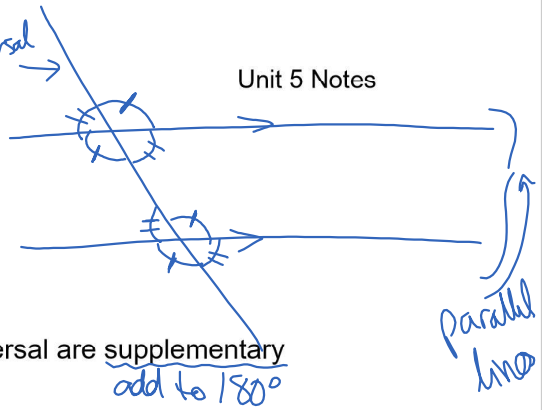


5.4 – Parallel Lines and Transversals

IF two parallel lines are intersected by a transversal:

- The alternate interior angles are equal
- The corresponding angles are equal
- The interior angles on the same side of the transversal are supplementary

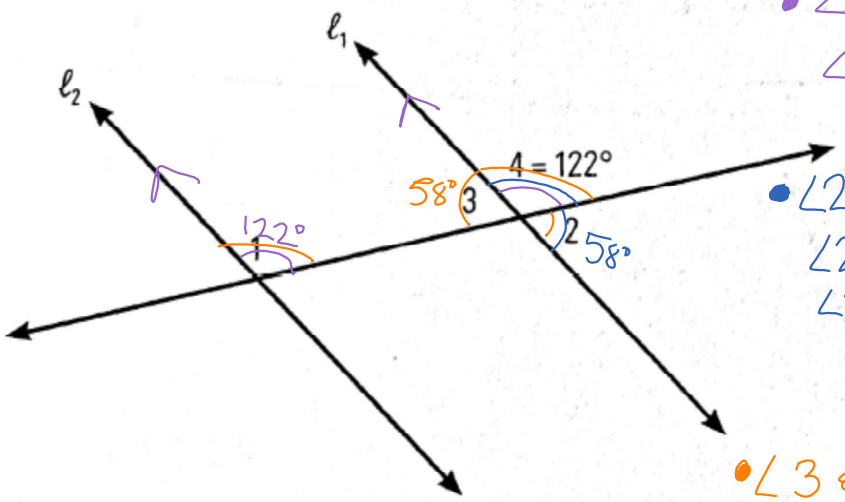
IF you know that, given two lines cut by a transversal:

- Alternate interior angles are equal
- Corresponding angles are equal
- Interior angles on the same side of the transversal are supplementary

THEN you can conclude that the lines are parallel.

Example 1:

Consider the diagram below, in which l_1 is parallel to l_2. What are the measures of the three indicated angles? Explain how you reached your answers.

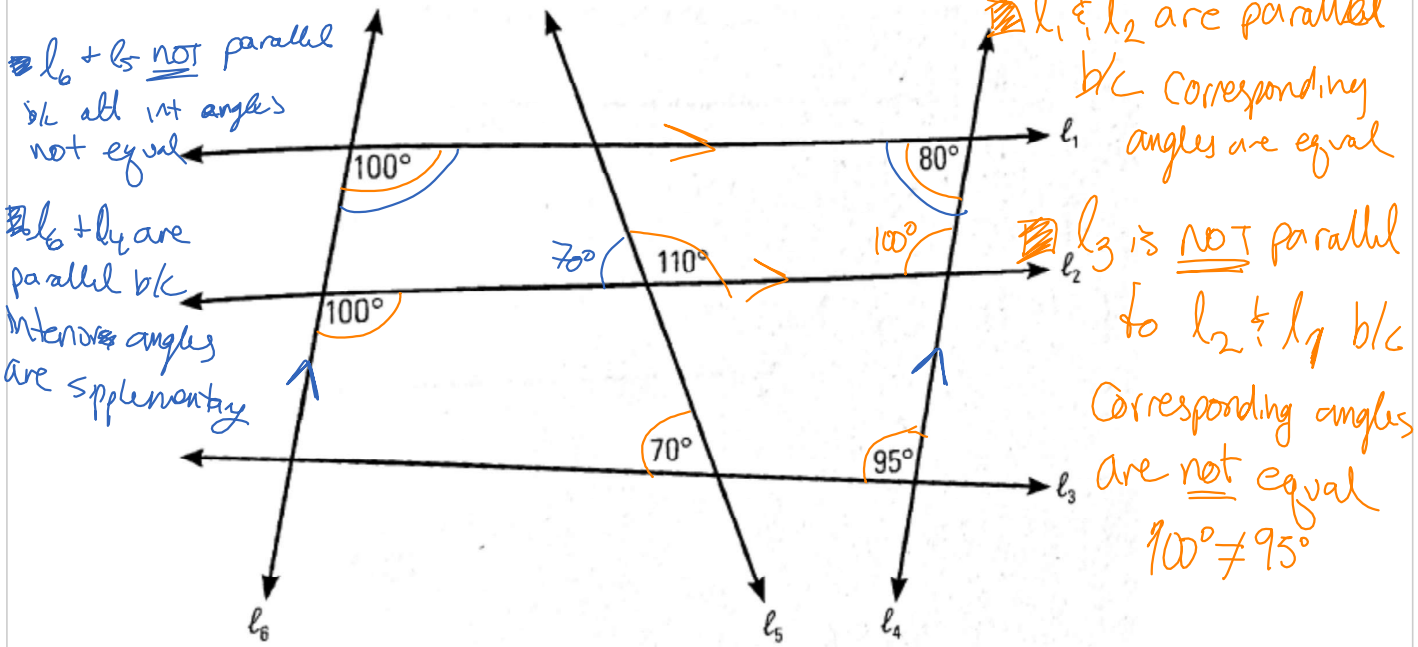


- ∠1 & ∠4 are corresponding
  ∠1 = ∠4
  = 122°
- ∠2 & ∠4 are supplementary
  ∠2 + ∠4 = 180°
  ∠2 + 122° = 180°
  ∠2 = 180° − 122°
  = 58°
- ∠3 & ∠4 are supplementar
- ∠3 & ∠2 are vertically opposite
- ∠3 & ∠1 are inter o = supplemen.
  ∠3 = 58°

***Complete Build Your Skills #1-3 on pages 240- 241.*

Example 2:

Given the diagram below, identify all the pairs of parallel lines and explain your selection.



ℓ_6 + ℓ_5 NOT parallel b/c alt int angles not equal

ℓ_6 + ℓ_4 are parallel b/c interior angles are supplementary

ℓ_1 & ℓ_2 are parallel b/c corresponding angles are equal

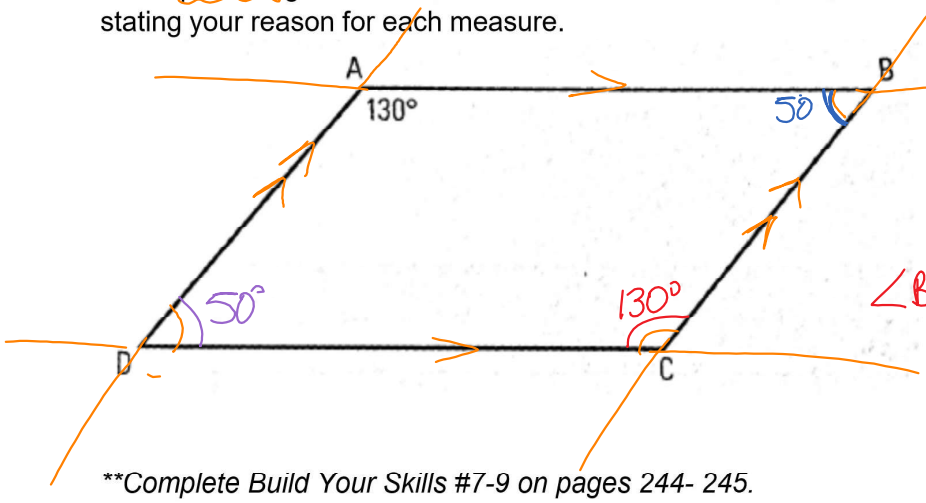
ℓ_3 is NOT parallel to ℓ_2 & ℓ_1 b/c Corresponding angles are not equal $100° \neq 95°$

***Complete Build Your Skills #4-6 on pages 242- 243.*

Example 3:

#1 #2 #3

Given parallelogram ABCD, determine the values of <B, <C, and <D in that order, stating your reason for each measure.



$\angle A + \angle B = 180°$
* interior angles on same side of transversal $\overline{AB}$

$\angle B = 50°$

$\angle B + \angle C = 180°$
* interior angles on same side of transversal $\overline{BC}$

***Complete Build Your Skills #7-9 on pages 244- 245.*

***Complete Practise Your New Skills #1-4 on pages 246-247.*