

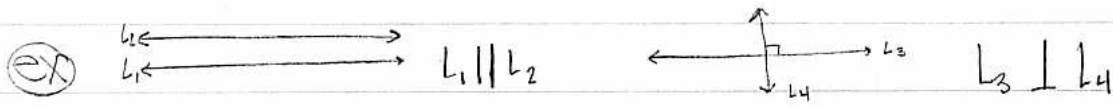
# Geo 3

## Parallel and Perpendicular Lines

Coplanar - two lines that are on the same plane.

parallel lines - coplanar lines that do not intersect, denoted  $\parallel$

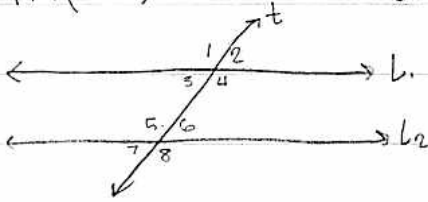
perpendicular lines - lines that intersect and form right angles, denoted  $\perp$



## Properties of Parallel Lines

1. If two  $\parallel$  lines are cut by a transversal then  
corresponding angles are congruent  
alternate interior angles are congruent  
interior angles on the same side of transversal  
are supplementary <sup>then</sup>
2. If a transversal is  $\perp$  to one  $\parallel$  line, <sup>then</sup> it is also  $\perp$  to  
the other <sup>then</sup>
3. If two  $\parallel$  lines are  $\parallel$  to a third, <sup>then</sup> they are all  $\parallel$ .

ex)  $l_1 \parallel l_2$ ,  $m(\angle 1) = 150^\circ$  find others.



$$m(\angle 1) = m(\angle 5) = m(\angle 4) = m(\angle 8) = 150^\circ$$

$$m(\angle 2) = 180^\circ - m(\angle 1) = 30^\circ$$

$$m(\angle 2) = m(\angle 3) = m(\angle 7) = m(\angle 6) = 30^\circ$$

$$m(\angle 1) = 150^\circ$$

$$m(\angle 2) = 30^\circ$$

$$m(\angle 3) = 30^\circ$$

$$m(\angle 4) = 150^\circ$$

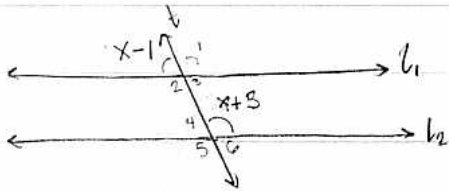
$$m(\angle 5) = 150^\circ$$

$$m(\angle 6) = 30^\circ$$

$$m(\angle 7) = 30^\circ$$

$$m(\angle 8) = 150^\circ$$

ex)



$$(x-1) + (x+3) = 180^\circ$$

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

$$2x = 178^\circ$$

$$x = 89$$

$$m(\angle 1) - 1 = 88^\circ$$

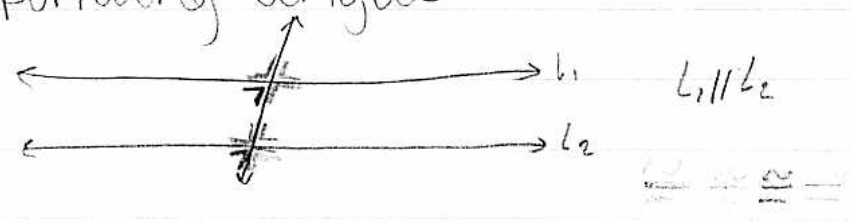
$$2(1) + 3 = 89^\circ$$

$$m(\angle 1) = m(\angle 2) = m(\angle 5) = m(\angle 8) = 88^\circ$$

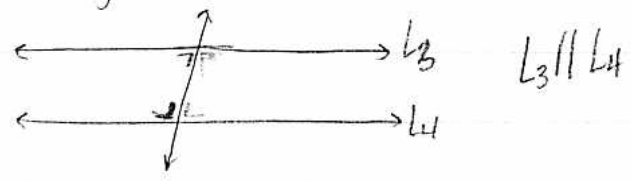
$$m(\angle 3) = m(\angle 6) = m(\angle 4) = m(\angle 7) = 89^\circ$$

In Color

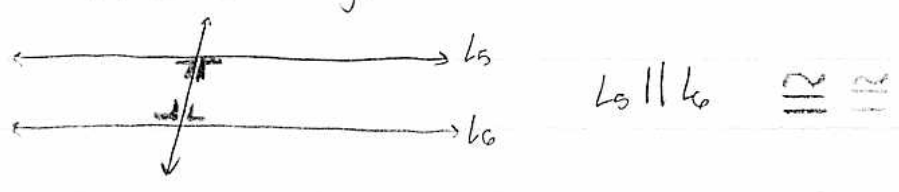
Corresponding angles



Interior angles



Alternate Interior Angles



Interior Angles on Same side of transversal

