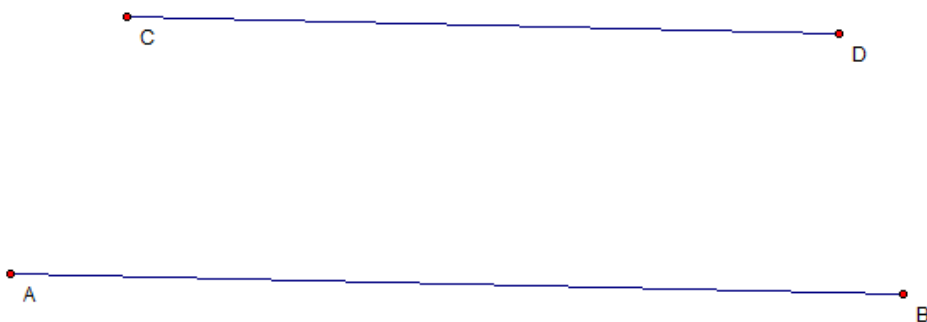


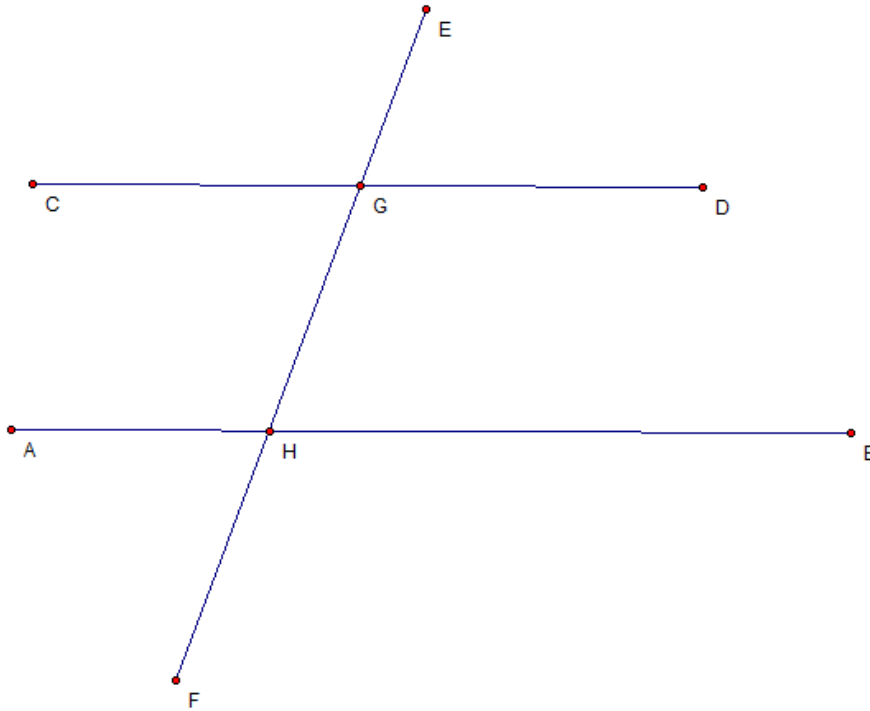
## Lab: Parallel Lines Cut by a Transversal

1. Using your straight-edge tool, create line segment AB
2. Using the point-tool, create point "C" a few inches above line segment AB.
3. Click on the arrow-tool and click on any white space on your screen
4. Now click on line segment AB and point "C" making sure points "A" and "B" are not highlighted.
5. Construct a line through point "C" that is parallel to line segment AB  
(`<construct><parallel line>`)
6. Using your point-tool, create a point "D" on the parallel line you just created right above point "B".
7. Using your straight-edge tool, create a line joining points "C" and "D".
8. Click on the arrow-tool to un-highlight everything. Now click to the left of point "C" on the parallel line so that only the parallel line is highlighted.
9. Click `<display><hide parallel line>`. Your diagram should look like this:



10. Click and hold point "A" and drag it around to make sure line segments AB and CD remain parallel.
11. Using the straight-edge tool create transversal EF diagonal to both AB and CD.

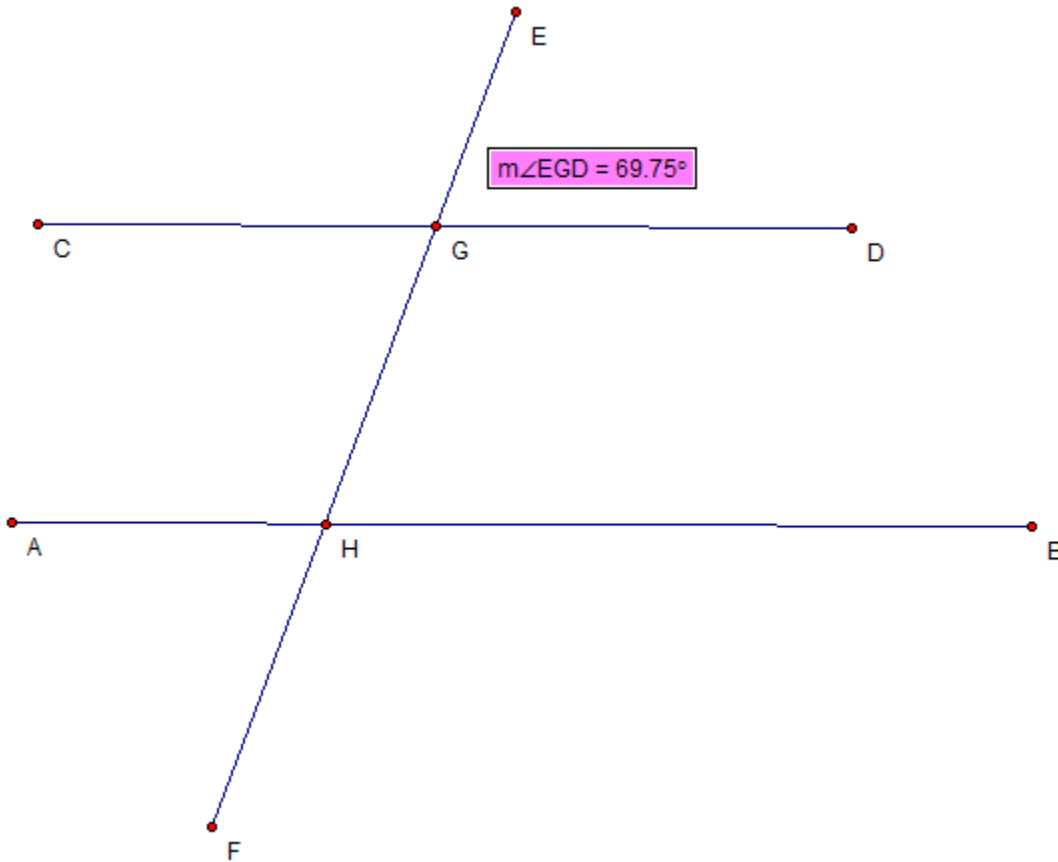
12. Using your point-tool create a point "G" at the intersection point of line segments CD and EF. Create a point "H" at the intersection point of line segments AB and EF. Your diagram should look like this:



13. You have now constructed two parallel lines cut by a transversal and are about to discover all the theorems related to

- Alternate-interior angles
- Corresponding angles
- Alternate-exterior angles
- Same-side interior angles
- Same-side exterior angles

14. To measure angles in Geometer Sketchpad (GSP), you must click on 3 point. For example, to measure  $\angle EGD$ , you must click on points E-G-D in that order so that only those points are highlighted. Then click on <measure><angle>. Drag the angle measure so that it rests in the angle itself like this:



**Measure** all 8 angles you learned and copy and fill in the following table:

$\angle EGD$	
$\angle GHB$	
$\angle EGC$	
$\angle GHA$	
$\angle HGC$	
$\angle FHA$	
$\angle FHB$	
$\angle HGD$	

**Copy** the diagram you created in GSP into your notebook together with the angle measures measurements.

**Examine** the measure of the angles above and copy the following 5 theorems in your notebook by filling in the blank:

***Theorem: If two parallel lines are cut by a transversal,***

***Alternate Interior angles are \_\_\_\_\_.***

***Corresponding angles are \_\_\_\_\_.***

***Alternate Interior angles are \_\_\_\_\_.***

***Same Side Interior angles are \_\_\_\_\_.***

***Same Side Exterior angles are \_\_\_\_\_.***

Move point "A" up or down. Do the angle relationships in the theorems above still apply?