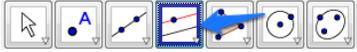


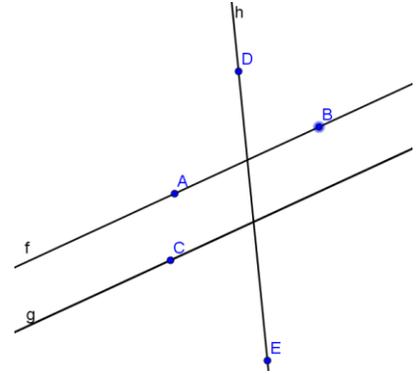
Exploring Parallel Lines and a Transversal

Name(s) _____ Period ____

Start the Geogebra App. If Geogebra is not installed on your iPad or computer, go to geogebra.org. If using the web version, choose **GeoGebra Math Apps** and select **Geometry**. Hide the axes if necessary. If using the iPad app, choose the **Menu** icon and choose **Options > Labeling** and select **All New Objects**.

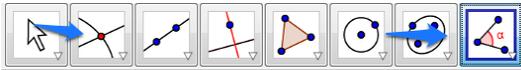
Construct two parallel lines and a transversal

1. Choose the **line** tool. Click in the graphics area to create a point, then click in another location to create a second point. \overleftrightarrow{AB} will be created.
2. Select the **parallel line** tool.  Select \overleftrightarrow{AB} and then click to create a point (and a line parallel to \overleftrightarrow{AB} through that point).
3. Select the **line** tool and create a third line that intersects the parallel lines f and g .

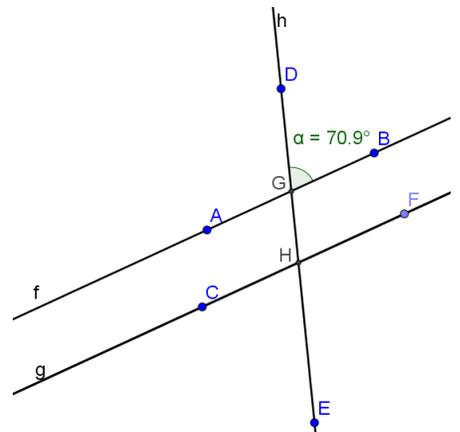


Create and measure corresponding angles

4. Choose the **Point** tool and create a point (F) on line g that's on the other side of the transversal from point C.
5. Use your **Move** tool select and drag point F to ensure the point is on line g .
6. Choose the **Intersect** tool from the **Point** tool group and click on the intersection of lines f and g with h .



7. Choose the **Angle** tool then select the points B, G, and D in a counter-clockwise order. The $m\angle BGD$ will be displayed.
8. What angle is corresponding to $\angle BGD$? _____
9. What is its measure? _____
10. How do the measures of the two corresponding angles compare?

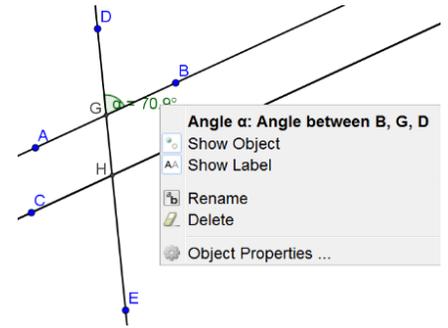


11. Use the **Move** tool to select point D and change its position. You can also change the position of point A. How do corresponding angles measures compare? _____
12. Use the **Angle** tool to find the measure of $\angle CHE$. (Remember to select the angles in a counter-clockwise order.)
13. Which angle is corresponding to $\angle CHE$? _____
14. What is its measure? _____
15. How does $m\angle CHE$ compare to its corresponding angle? _____
16. Once again, move points D and A to see how the measures of the corresponding angles compare.
17. Write a conjecture based on your observations:

If two parallel lines are cut by a transversal, then corresponding angles _____.

Create and measure alternate interior angles

18. Right click on each angle and uncheck the **Show Object** button. If you are using an iPad, press and hold the angle so you can uncheck the **Show Object** button. If you make a mistake and hide a line or point, press the **Undo** button.



19. Use the Angle tool to find the measure of $\angle AGH$.
20. $\angle AGH$ is alternate interior to which angle? _____
21. Measure that angle. How do they compare? _____
22. Name another pair of alternate interior angles. _____
23. How do their measures compare? _____
24. Conjecture: **If two parallel lines are cut by a transversal, then alternate interior angles** _____.

Create and measure alternate exterior angles

25. Right click on each angle and uncheck the **Show Object** button. If you are using an iPad, press and hold the angle so you can uncheck the **Show Object** button. If you make a mistake and hide a line or point, press the **Undo** button.
26. Use the Angle tool to find the measure of $\angle DGA$.
27. $\angle DGA$ is alternate exterior to which angle? _____
28. Measure that angle. How do they compare? _____
29. Name another pair of alternate exterior angles. _____
30. How do their measures compare? _____
31. Conjecture: **If two parallel lines are cut by a transversal, then alternate exterior angles** _____.

Create and measure consecutive (same side) interior angles

32. Hide each angle.
33. Use the Angle tool to find the measure of $\angle AGH$.
34. $\angle AGH$ is consecutive interior to which angle? _____
35. Measure that angle. How do they compare? _____
36. Name the other pair of consecutive interior angles. _____
37. How do their measures compare? _____
38. Write a conjecture:

If two parallel lines are cut by a transversal, then consecutive interior angles _____.

