

Parallel Lines Conjectures with GeoGebra

Geometry 1, Balboa High School

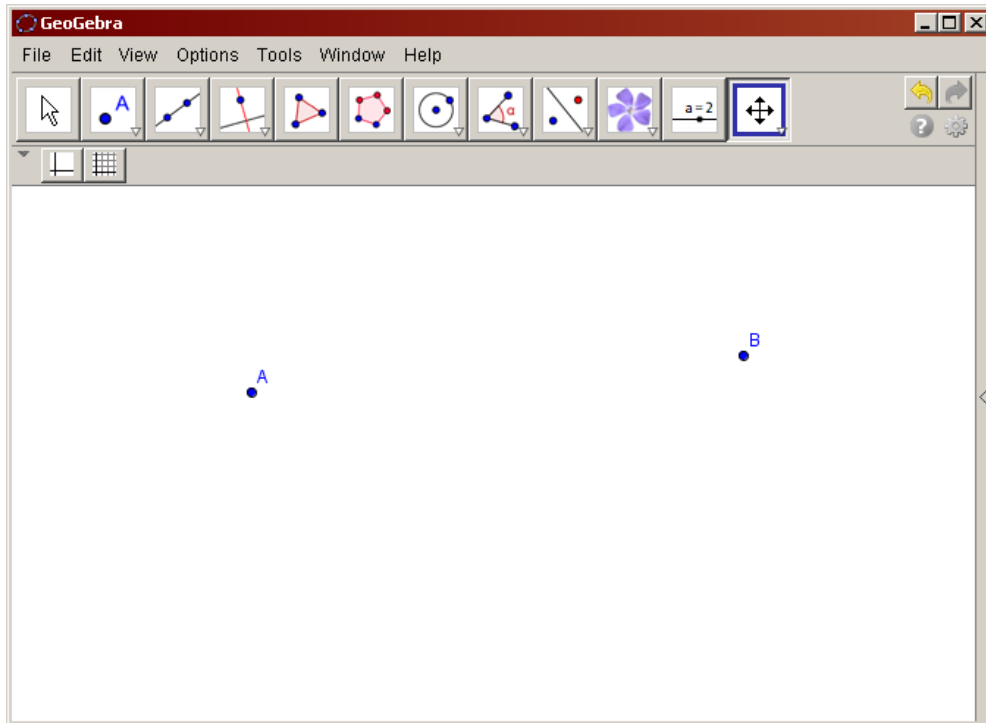
This is the first time you'll be using GeoGebra in class, so be patient and make sure you ask your peers for help when you get stuck. Enjoy!

Computer Lab Rules:

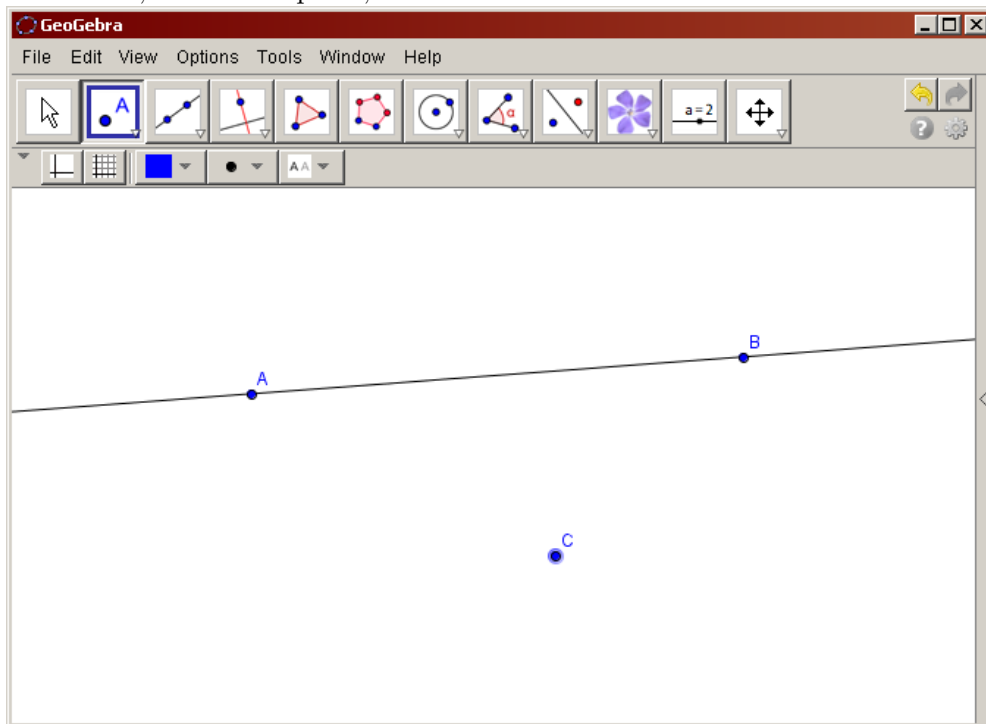
- If you need help, carefully reread the directions first. Next, ask your partner. If that doesn't help, ask your neighboring peers. If you're still stuck, wait for your teacher to make it to your area. **Do not yell across the lab to the teacher or other students!**
- Make sure you log out of Windows at the end of the period and clean up your work area — don't leave any papers/waste behind and push in your chair.
- Treat the equipment with respect and care. Our labs are limited resources and need to last a long time!

1 Directions

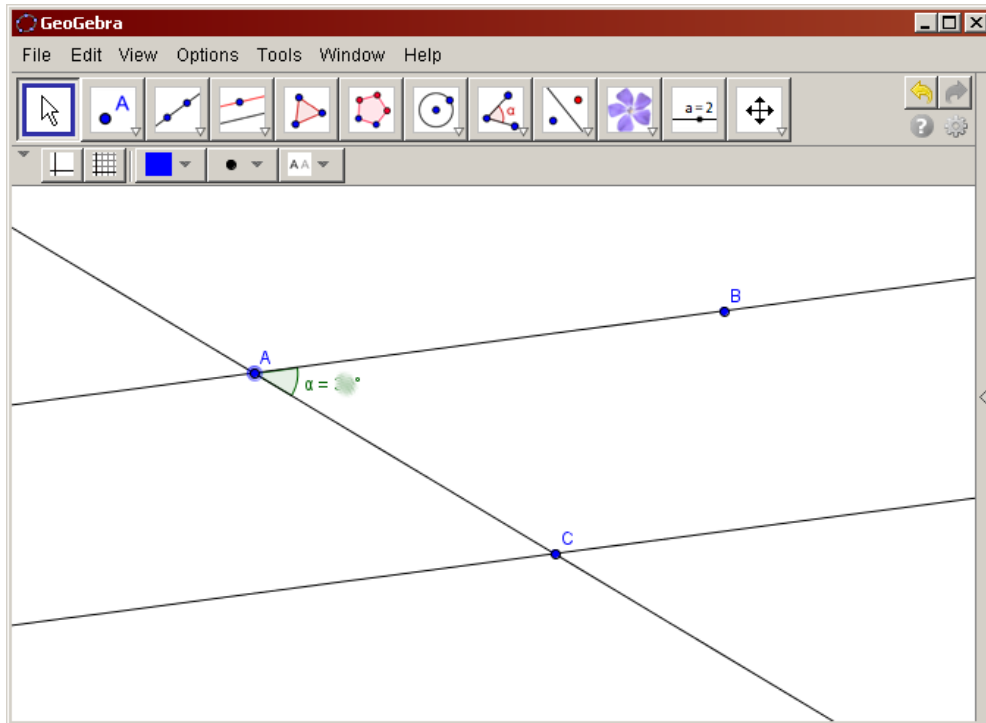
1. Read the rules above...carefully! Failure to follow the rules may result in a lowered grade.
2. Find a partner with whom to share a computer. You two will need to keep each other on task for the whole period!
3. Each partner needs to take out a sheet of paper and put a heading on it. Title the paper “|| lines in GeoGebra.” **This will be turned in at the end of class.**
4. Anytime you encounter a question in a box, write down the step number on your paper and answer the question.
5. Start GeoGebra by clicking this link: <http://web.geogebra.org/chromeapp/>
6. When we ask GeoGebra to show us \angle measures, we won't want to see measures like 43.28° . Have GeoGebra round values to the nearest whole number:
Options \rightarrow Rounding \rightarrow 0 Decimal Places.
7. Note: Whenever a new tool is mentioned, see the section (§) number that follows it. That's a link! Click on the section number to see help, and then click the *back* button to return to where you were.
8. Put two points on the plane using the **New Point** tool (§2.1) so that they're located similar to how they are in the image below.



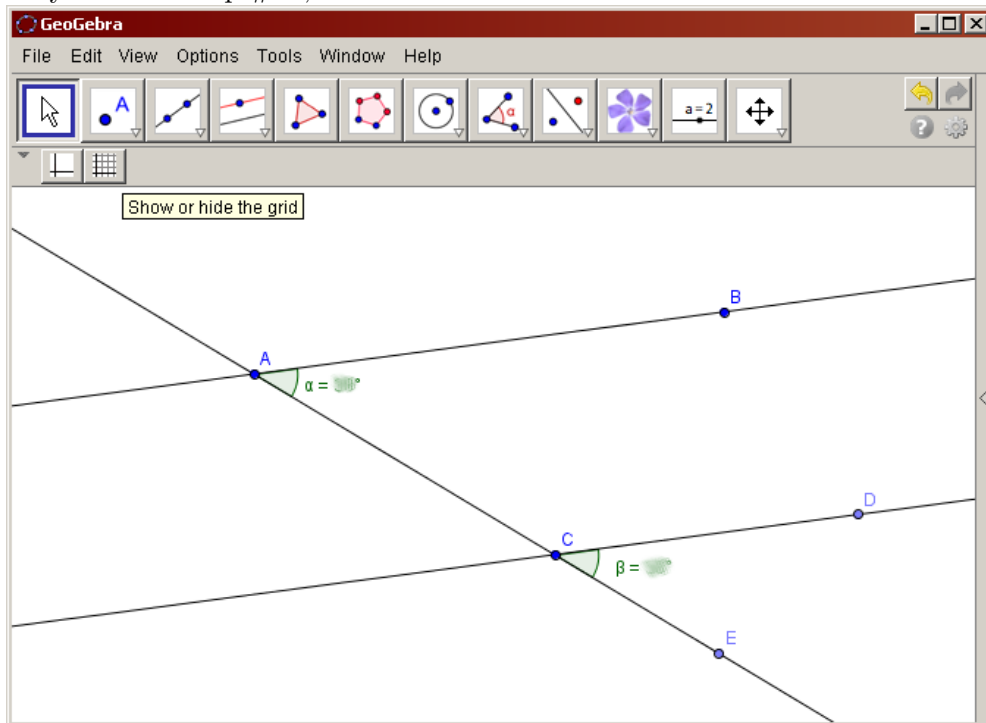
9. If your points aren't showing their names (labels) — e.g., A and B — then right-click on each, and click Show Label.
10. Draw a line that goes through points A and B using the Line through Two Points tool (§2.2).
11. Below \overline{AB} , add a new point, C .



12. Make a line that is \parallel to \overline{AB} that passes through C : Using the Parallel Line tool (§2.3), click first on \overline{AB} and then click on C .



17. On the line passing through C , add a new point (§2.1) to the right of C ; it should be named D .
18. On \overline{AC} , below C , add a new point; it should be named E .
19. As you did in step #15, show $m\angle DCE$.



20. On your paper:

What is the name for a pair of \angle s like $\angle CAB$ and $\angle ECD$?

21. On your paper:

What's true about $m\angle CAB$ and $m\angle ECD$?

22. Experiment with moving points A , B , and C (§2.4).

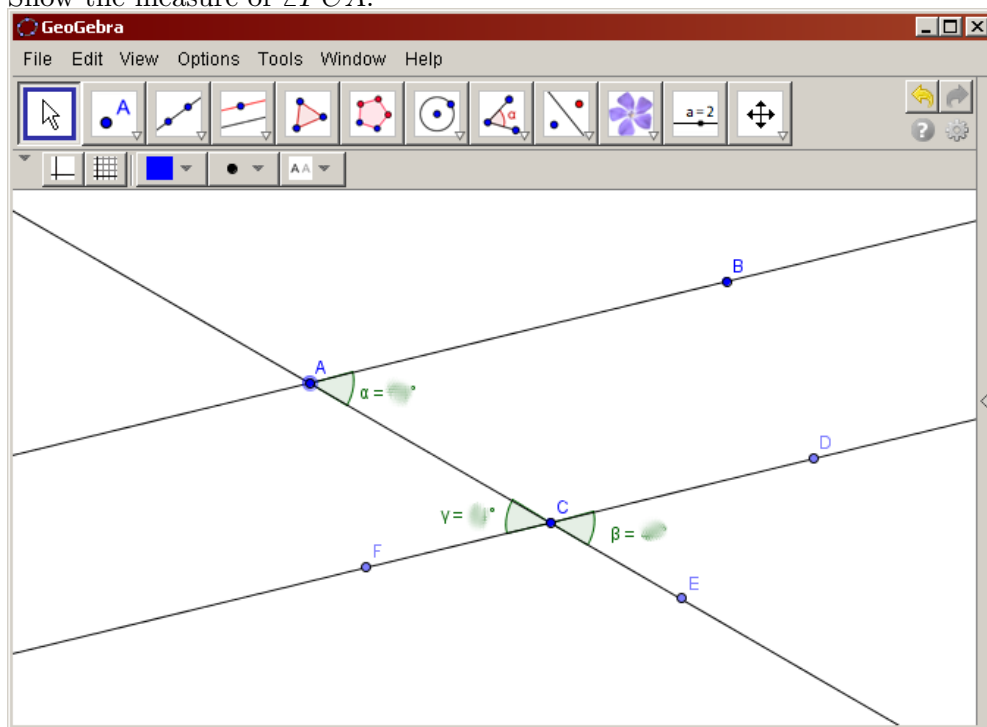
What can you say about the measures of those \angle s as you change the figure?

23. On paper:

Write the entire statement, filling in the blanks:
If two \parallel lines are cut by a transversal, then _____ \angle s are _____.

24. On \overline{CD} , to the left of C , put a new point, F .

25. Show the measure of $\angle FCA$.



26. On paper:

What is the name for an \angle pair like $\angle FCA$ and $\angle BAC$?

27. Experiment with moving points A , B , and C .

What can you say about the measures of those \angle s as you change the figure?

28. On paper:

Write the entire statement, filling in the blanks:
If two \parallel lines are cut by a transversal, then _____ \angle s are _____.

29. On paper:

What is the name for an \angle pair like $\angle FCA$ and $\angle DCE$?

30. On paper:

As you move A , B , and C , what do you notice about $m\angle FCA$ and $m\angle DCE$?

31. On paper:

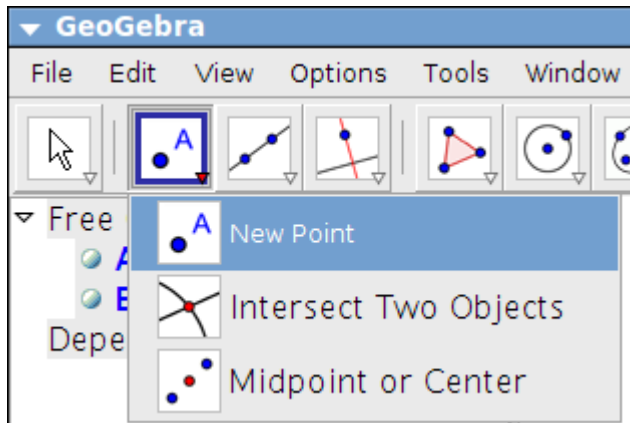
Write the entire statement, filling in the blanks:
If two \angle s are _____ \angle s, then the \angle s are _____.

32. Now that you've got the hang of GeoGebra, show that a pair of *alternate exterior* \angle s have the same measure (i.e., are \cong). To make the \angle measures look different than the others you've added, right-click an \angle measure, click *Object Properties...*, click the *Color* tab, and select a different color.

33. **Optional:** To save your work, go to **File** \rightarrow **Save As...**, choose a name for the file, click **Download as .ggb file**, and save to your *Desktop* or *My Documents* folder. Then, email the file to yourself. (If you're not sure how to do this, ask your peers!)

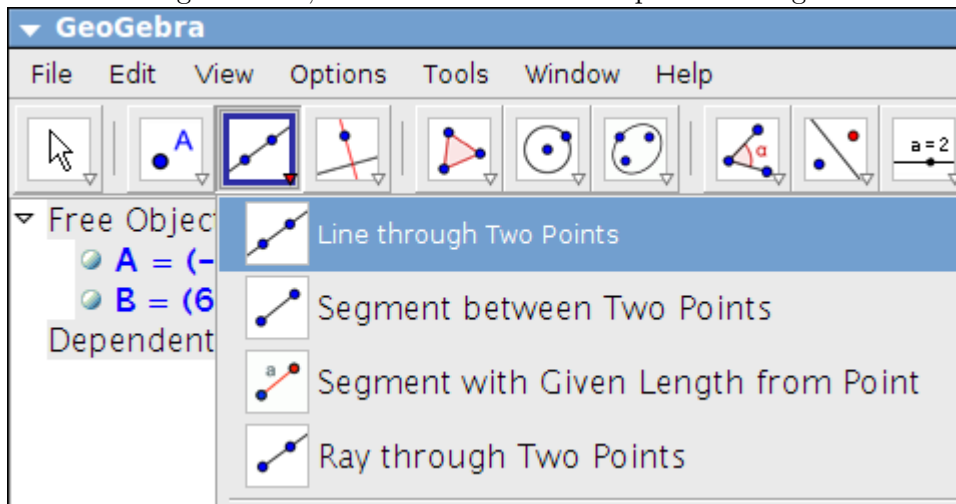
2 GeoGebra Tools

2.1 New Point



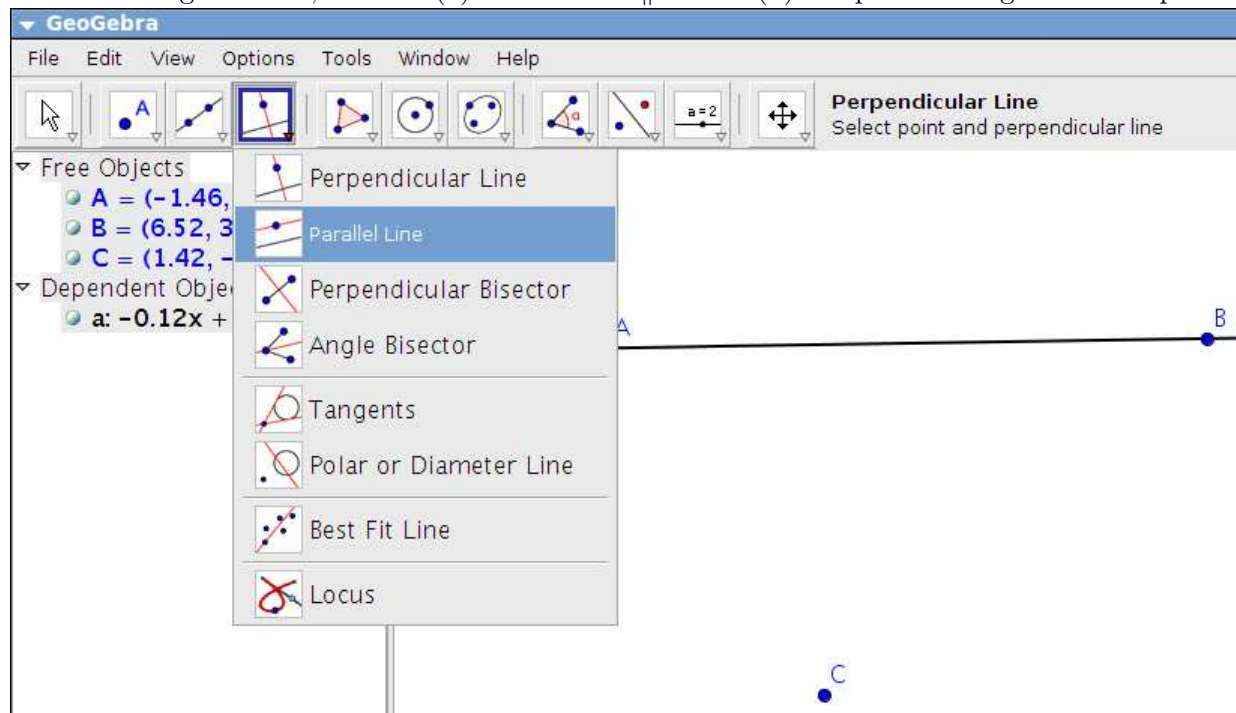
2.2 Line through Two Points

After selecting this tool, click on each of the two points through which the line should pass.

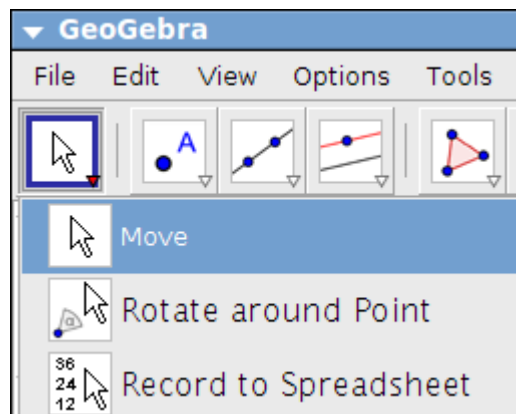


2.3 Parallel Line

After selecting this tool, click on (a) the line run \parallel to and (b) the point through which to pass.



2.4 Move



2.5 Angle

After selecting this tool, click on the letters that name the angle, in order.

