

Worksheet on Learning Goals

Dr. Sarah's MAT 3610: Introduction to Geometry

Welcoming Environment: Keep it a safe place to express meaningful ideas and opinions. Actively listen to others and encourage everyone to participate. Part of the welcoming environment is to keep an open mind as you engage in our class activities, explore consensus and employ collective thinking across barriers. Maintain a professional tone, show respect and courtesy, and make your contributions matter.

1. **Building Community:** What are the preferred first names of those sitting near you? If you weren't able to be there write N/A or give reference to anyone you had help from.
2. **Review Interactive Video:** Discuss with each other as you review content from the first interactive video including, one at a time: 1) peanut butter and jelly robot, 2) Minesweeper, 3) incidence geometry, 4) quadrilateral midpoints, and 5) Euclid's *Elements*. Try to help each other solidify and review! What are significant takeaways of each? Also reflect on personal connections and/or any remaining questions you have. Each group member takes a turn for each. Review them all and then select one to summarize the significant takeaways.
3. After discussing, if you have any questions remaining write them down. Otherwise, write N/A.
4. Our catalog description requires concept development and connections among multiple perspectives, so we will examine the foundations of geometry through the lenses of historical perspectives, intuition, reasoning and proofs, manipulatives, visualization, Interactive Geometry Software, and modern applications. To make additional explicit connections we will use a standards-based model based on associated course learning goals (standards) and we'll make connections to these today and future course activities. One of the four goals is IGS Exploration: I can use Interactive Geometry Software (IGS) to discover relationships and demonstrate they seem to apply in a wide variety of examples. How did IGS Exploration arise in the video?
5. If you have a laptop, tablet or phone with you, open the GeoGebra Geometry App or GeoGebra Geometry
<https://www.geogebra.org/download>
<https://www.geogebra.org/geometry>
If not, have someone in your group open it. If none of you have a laptop, tablet, or phone with you, let me know. Next, construct a triangle in GeoGebra. Then construct the midpoints of each of the sides in GeoGebra and connect them. What happens when you drag the triangle around? Explain and sketch an example here.

6. Another goal is Proof Considerations: I can write rigorous proofs in geometry, identify underlying assumptions, and understand limitations and applications. How did Proof Considerations arise in the video?

7. Recall from the video that the axioms of incidence geometry are

- Axiom 1) For each two distinct points there exists a unique line on both of them.
- Axiom 2) For every line there exists at least two distinct points on it.
- Axiom 3) There exist at least three distinct points.
- Axiom 4) Not all points lie on the same line.

Prove that if l and m are two distinct lines that meet, then they meet at a unique point.

8. Another goal is Geometric Perspectives: I can compare and contrast multiple geometric perspectives. Discuss how these arose in both the prior worksheet and the video and compare and contrast the perspectives. Then write down one example.

9. The last goal is Career Connections: I can make connections between learning geometry in this class and teaching geometry in high school (for secondary education majors) or to geometry and focuses in my major(s) or intended career. All of our future intended careers are impacted in some way or another by our past experiences in high school. Did high school arise in your group discussions last class?

Circle one: yes no

10. Revisit #5. Using only each other (no web!), discuss how to approach proving something about it.

Circle one: discussed and proven discussed but not proven didn't have time to discuss

11. **PDF responses to ASULearn:** Collate your handwritten responses, preferably on this handout, into one full size multipage PDF for submission in the ASULearn assignment. I recommend you turn it in sometime today, but you have until just before the start of the next class. I provide feedback as I grade these for a good faith effort. If you have a phone or tablet, apps like Adobe Scan or CamScanner can work well. You can also use many printers or photo copiers to scan to PDFs—the school library lists that as an option and they can help:

<https://library.appstate.edu/services-search/print-zone-tech-help>