

Worksheet on Axiomatic Systems and Constructions 1

Dr. Sarah's MAT 3610: Introduction to Geometry

goals:

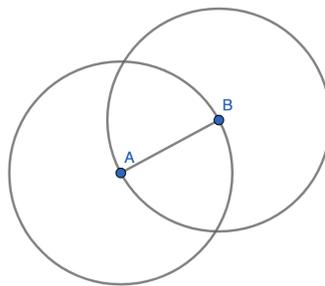
- IGS Exploration
I can use Interactive Geometry Software (IGS) to discover relationships and demonstrate they seem to apply in a wide variety of examples.
- Proof Considerations
I can write rigorous proofs in geometry, identify underlying assumptions, and understand limitations and applications.
- Geometric Perspectives
I can compare and contrast multiple geometric perspectives.

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.

Equilateral Triangle I-1

2. Open GeoGebra Geometry, an Interactive Geometry Software (IGS), and take out the handout of Book 1 of *Euclid's Elements*. Start with a segment. Construct an equilateral triangle with only straightedge, compass, and intersection point features. Then, using the measure tools, measure the interior angles and side lengths. Finally, using Move, drag the vertices to demonstrate the construction seems to apply in a wide variety of examples.



Beginnings of I-1. Add to this after #4 below.

Discuss with your group how the IGS and this exploration are going for you and help each other, if needed. Write down one related item or an update.

3. What was the key point in the proof of I-1—in terms of why the triangle we constructed was actually equilateral?

Bisect a Segment: I-10

4. Begin a new document with a segment \overline{AB} . Using only straightedge, compass, and intersection point features, construct the midpoint: use both intersection points from the I-1 construction—NOT the midpoint feature in GeoGebra—and add to the sketch above to show the construction.

