Lesson 7: Proposition 1.3

The Axiomatic System
A1: There are exactly three students.
A2: For every pair of students, there is exactly one class in which they are enrolled.
A3: Not all of the students belong to the same class.
A4: Two separate classes share at least one student in common.

Theorem 1.1: Two separate classes share one and only one student in common.
Theorem 1.2: There are exactly three classes in our system.
Theorem 1.3: Each class has exactly two students.

Practice
A1: There are exactly five flavors of ice cream: vanilla, chocolate, strawberry, cookie dough, and bubble gum.
A: Given any two different flavors, there is exactly one child who likes these two flavors.
A3: Every child likes exactly two different flavors among the five.

How many children are there in this classroom?
Show that any pair of children likes at most one common flavor.
In the ice cream system, show that for each flavor there are exactly four children who like that flavor.

Propositions

Proposition 1.1: We can make an equilateral triangle on a given finite straight line.
Proposition 1.2: We can make a finite line equal to a given finite line on a given point.

Proposition 1.3 (Problem): Given two unequal straight lines, cut off from the greater, a straight line equal to the less.

Given: Two unequal straight lines.
Construct: Cut the line which is greater.
Prove: The length of the cut is equal to the smaller line.