For April 8:

1. Read Chapter 12 and Chapter 13 **(Dissection Theory** and **Square Roots, Pythagoras, and Similar Triangles)**

Definitions:

Two figures (*F* and *G*) are **equivalent by dissection** (a.k.a. equidecomposable) if one can be cut up into a finite number of pieces and the pieces rearranged to form the other. Notation: $F =_d G$

A weaker notion: two figures (*F* and *G*) are **equivalent by subtraction** (a.k.a. of equal content) if there are two other figures, *S* and *S'*, such that $S =_d S'$ *and* $F \cup S =_d G \cup S'$, where *F* and *S* and *G* and *S'* intersect at most in their boundaries. Notation: $F =_s G$

We will use dissection theory to help us understand the meaning of area. Most dissection proofs have two parts. First show where to make the necessary cuts. Second, prove that your construction works, that is, that all the pieces do in fact fit together as you say they do.

Problem 12.1 (p. 169)

a) Show that on the plane, every triangle is equivalent by dissection to a parallelogram with the same base, no matter which base of the triangle you pick.
b) Show that on a plane every parallelogram is equivalent by subtraction to a rectangle with the same base and height. Your proof must work for all parallelograms, no matter which side you choose as the base.

Quiz 2 today during the last half of class.