Math 8 Summer 2012
Calendar

Week 1: Logic and Proof

We need to take a look at basic logic, with an emphasis on how we prove theorems—a mathematician's practicum.

Week 2: Introduction to Sets

The major underlying objects in math are sets. We'll learn about set operations and proofs.

Week 3: Functions

The hardest part of any math 8 course, functions are *the* most important objects in all mathematics.
If this week seems tough, stick it out; it gets better from here.

Week 4: Equivalence Relations and Midterm 1

Equivalence relations formalize "sameness" beyond literal equality.

Week 5: Proof in Discrete Math

We'll discuss mathematical induction and the pigeonhole principle.

Week 6: Cardinality

Cardinality is a way of assigning size to a set, infinite or not.

Week 7: Proof by Counting and Midterm 2

Counting in two ways can lead to proofs of various results.

Week 8: Inequalities

We'll look at basic inequalities, arithmetic and geometric means, Cauchy-Schwarz, and convexity.
Bring your creative problem–solving hat.

Week 9: Complex Numbers

A key step in thinking more abstractly is leaving behind familiar objects and studying foreign ones.
We'll look at the arithmetic, algebra, and geometry of complex numbers.

Week 10: Problem Solving and Final

Ultimately math requiers clever use of logic, backed up by the formal stuff.
This week we'll tackle some tough problems to review all we've done.