

The in class portion of the exam will cover sections 8, 9, 10, 11, 13, 14, 15, 18, 19. You should be comfortable with all of the terminology from these sections. In particular, these sections discuss symmetric and alternating groups, group homomorphisms, kernel of a homomorphism, normal subgroups, factor groups, simple groups, the center and commutator subgroups of a group, direct products of groups, rings, unity, units, zero divisors, characteristic of a ring, and integral domains.

Theorems you should be able to prove:

- Lemma: Properties of Cosets
- Theorem 10.1 (\sim_L, \sim_R define equivalence relations)
- State and prove Lagrange's Theorem
- State the Fundamental Theorem of Finitely Generated Abelian Groups
- Theorem (Properties of Homomorphisms)
- Theorem 14.13 (three equivalent conditions for a normal subgroup)
- Theorem 18.8 (basic ring properties)