1. Return quizzes (33 total, 85.3% ave., 10 perfects; 20 A’s, 4 B’s, 4 C’s, 3 D’s, 2 F’s)

2. Go over homework questions.

3. Homework: pages 109–110, numbers 2, 3, 7, 8, 9, 10, 19(a&b), 21, 23 ← validity not terminology page 124, numbers 1, 3, 6, 7, 9

Quiz: Thursday (09/13)

4. Different Types of Valid Arguments:

Universal Instantiation
∀x ∈ D, P(x)

Universal Modus Ponens
∀x ∈ D, P(x) → Q(x)

Universal Modus Tollens
∀x ∈ D, P(x) → Q(x)

5. Different Types of Invalid Arguments:

Converse Error
∀x ∈ D, P(x) → Q(x)

Inverse Error
∀x ∈ D, P(x) → Q(x)

6. Examples: pages 109–110, numbers 11, 12, 13, 15, 19(c)

7. Diagram Examples: page 110, numbers 24, 26

8. Definitions: n ∈ Z is even ⇐⇒ ∃k ∈ Z such that n = 2k
n ∈ Z is odd ⇐⇒ ∃k ∈ Z such that n = 2k + 1

9. Definitions:

n ∈ Z with n > 1 is prime ⇐⇒ (∀ positive integers r and s, n = rs → either r = 1 or s = 1)
n ∈ Z with n > 1 is composite ⇐⇒ ∃ integers r > 1 and s > 1 such that n = rs

10. Constructive and Nonconstructive Proofs of Existence (for existential statements)

Examples: (1) There exist integers x and y such that 5x + 8y = 1.
(2) There exist numbers that are not rational. (Use √2 and 0.1010010001 . . . .)
(3) There exist irrational numbers a and b such that a^b is rational.

11. The Method of Exhaustion (for universal statements)

Examples: (1) The number 6174.
(2) Every even number n with 4 ≤ n ≤ 30 can be written as a sum of two primes.