Name: _____

Read and take notes on Section 10.8, Euler's Criterion, focusing on the Corollary (Euler's Criterion), and Sections 12.1-12.3, Square Roots, Quadratic Symbols, and Multiplicative Property

Reading Questions

1. Make sure you know the statement of Euler's Criterion (as described in the Corollary in Section 10.8), the definitions of the quadratic (Legendre) symbol and the extended quadratic (Jacobi) symbol, and the multiplicative property of quadratic symbols.

2. Use Euler's Criterion to determine:

   (a) whether 2 is a square modulo 5.

   (b) whether 2 is a square modulo 101.

   (c) whether 14 is a square modulo 101.

3. Use the previous problem to evaluate the Legendre symbols:

   (a) $\left(\dfrac{2}{5} \right)_2$

   (b) $\left(\dfrac{2}{101} \right)_2$

(c) $\left(\dfrac{14}{101}\right)_2$

4. Use the previous problem and either the definition of the Jacobi symbol or the multiplicative property of the Legendre symbol to evaluate the following:

   (a) $\left(\dfrac{2}{505}\right)_2$.

   (b) $\left(\dfrac{28}{101}\right)_2$.

5. What struck you in this reading? What is still unclear? What remaining questions do you have?