

1056-K1-1741 **Karl-Dieter Crisman*** (karl.crisman@gordon.edu). *Mathlets for Visualizing the Geometry of Numbers*.

Many topics in undergraduate number theory, such as multiplication tables in modular arithmetic, can be explored well with geometric visualization. The proofs of many non-geometric theorems can also gain clarity from such presentations, but usually one is presented with a single picture or must laboriously create one's own variants.

These include Gauss' Lemma in the proof of quadratic reciprocity, the asymptotic behavior of the τ and σ divisor functions, and generation of solutions to Pell's equation. Consistently presenting these topics in the style of Minkowski's geometry of numbers brings continuity and added insight for students through an entire semester of upper-level number theory.

In this talk, we present interactive mathlets, which require only a web browser for both students and teachers, demonstrating well-known geometric proofs of these non-geometric theorems. The computer system used is Sage; they should all be easily portable to Mathematica or Maple as well. (Received September 22, 2009)