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David J. Pengelley* (davidp@nmsu.edu), Mathematics, 3MB, New Mexico State University, Las Cruces, NM 88003. *Number theory à la Sophie Germain: a course of guided discovery from her research manuscripts on Fermat's Last Theorem.*

I have taught a first number theory course primarily through guided discovery studying Sophie Germain's early nineteenth century research manuscripts on Fermat's Last Theorem. Students learned almost every topic of a standard course by fathoming these original sources. I will discuss the content, the student response, and how the original sources enhanced guided discovery and just-in-time pedagogy. The course became a detective story, with students learning mathematics as needed to follow Germain's mystery trail to prove Fermat's Last Theorem.

Germain's handwritten manuscripts have only recently revealed that she had an extensive program to prove all of Fermat's Last Theorem. Her manuscripts require knowing precisely the topics in a first number theory course, e.g., unique factorization, Pythagorean triples, modular arithmetic, Fermat's Little Theorem, Lagrange's Theorem and modular roots of unity, primitive roots modulo a prime, orders of powers, etc. The goal was to have students learn all these topics by wrestling with Germain's writings (in English translation), supplemented with ancillary sources by Euler, Gauss, and Eisenstein on the quadratic reciprocity law. The course assumed only that students were capable at writing proofs. (Received September 08, 2011)