1023-G5-958 **J A Hall*** (hallja@longwood.edu), Longwood University, Department of Math & CS, Ruffner 334, 201 High Street, Farmville, VA 23909. *I Can Prove It!*

In Mathematical Thinking, a course targeted at the "I Can't Do Math" student, we tackle (and even prove) impressive mathematical concepts. We introduce the students to fun, accessible mathematical ideas while encouraging them to make guesses, challenging their intuition, and helping them to be comfortable in, even to enjoy, the astonishment and confusion of challenging their assumptions. In this class, conjectures and guesses, whether or not correct, are the "right" answers, refusing to risk participation the "wrong". Theorems and proofs are fundamental to mathematical thinking, the proof by contradiction (PBC) a cornerstone. We use the PBC as we study characteristics of our basic number sets. The PBC is introduced with a partially worked Sudoku puzzle. Then while exploring the natural numbers we use it to prove the infinitude of primes and to prove the existence of irrationals like sqrt(3) in the reals. After confounding our expectations with Hilbert's hotel and the countable infinity of the naturals, integers, and rationals, we use the PBC to see that the reals are a larger infinity. These math-anxious students engage non-trivial mathematical ideas. As one student reported to her father, "We are doing the math we did in elementary school, but turning it all upside-down." (Received September 23, 2006)