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**Douglas E. Ensley\*** (deens1@ship.edu), Department of Mathematics, Shippensburg University, Shippensburg, PA 17257. *Counterexamples in Good Teaching*.

Long before a student first sees a formal mathematics proof, the foundation for understanding the logical structure of precise arguments can begin to be laid. This practice has not traditionally been a part of the curriculum, rather proofs have been typically introduced *en masse* to students who have attained the ill-defined trait known as "mathematical maturity". Just as the construction of examples is generally accepted as a key step in understanding mathematical definitions, the construction of counterexamples can be used to build a concept of proof. Specifically the way we write mathematical proofs really results from the way that we search for counterexamples. This paper presents proof from this point of view and gives examples of problems that have been used leading up to the traditional transition course. The specific examples given in this paper have been used in courses in the first two years of college mathematics, but the ideas are well-suited for the secondary level as well. (Received September 15, 2000)