

Meeting: 1003, Atlanta, Georgia, MAA CP B1, MAA Session on My Favorite Demo: Innovative Strategies for Mathematics Instructors, I

1003-B1-395 **B. Lynn Bodner*** (bodner@monmouth.edu), Mathematics Department, Monmouth University, West Long Branch, NJ 07764. *The Use of Household Items as Calculus Concept Models.*

Like many college educators of mathematics in this age of computer technology, the author, more often than not, uses software programs to present and illustrate new mathematics concepts in class. She has also written labs that encourage students to discover mathematical ideas for themselves using these technologies. However, some mathematical concepts may also be effectively demonstrated using very "low tech" physical models made from materials found around the house. This paper will present two of these "low tech" demos and discuss how they may be used in a first-semester college calculus class to illustrate applications of the definite integral. More specifically, the demos introduce the concepts of finding the volume of a solid of revolution using the Shell method and defining the area of a surface of revolution. Each student (in tandem with the instructor) constructs the models using cylindrical canisters, foam rubber, paper cups, and rubber bands, which are then used to visualize the concepts and derive appropriate equations for further analysis. Lastly, this paper will briefly discuss the author's objectives for using these "physical-model" demos, general student reaction to them and their subsequent attitudes toward mathematics. (Received September 13, 2004)