1145-J1-2113   **Sylvia Gutowska*** (`sgutowska@ccbcmd.edu`), 7201 Rossville Blvd, Baltimore, MD 21237, and **Clarence Baney** (`cbaney@ccbcmd.edu`), 7201 Rossiville Blvd, Baltimore, MD 21237. *Hands on Calculus: Manipulatives Integral to Integration.*

Integration, in Calculus I, presents students with two non-trivial tasks: constructing the Riemann Sum and evaluating it. A very common misconception among students is that integration can be easily accomplished by finding an antiderivative. Difficulties arise as students encounter the Riemann Sum, and the idea that it connects to the integral obtained through antidifferentiation. Students' struggles are further compounded when they are required to calculate the sum, as the number of subintervals goes to infinity. Can they even imagine this? While several widely available computer simulations have made it easier for students to visualize the above process, they do not help students learn how to construct the sum. This becomes a stumbling block when students try to set up integrals for calculating area, volume, or distance traveled. This presentation will offer one way to bridge the gap between construction and evaluation of the sum, using manipulatives constructed from foam sheets. These easily made manipulatives can be used to teach setting up the Riemann Sum, finding the area under (between) the curve(s), the volume of solids using the disc or cross-section method, as well as determining the total distance traveled by an object. (Received September 24, 2018)