

1163-M1-1285 **Emilie Hancock*** (emilie.hancock@cwu.edu), emilie.hancock@cwu.edu, and **Reilly Hennessey**. *Pulling Ladders from Walls: Bringing Modeling to Life in Introductory Calculus*.

Modeling applications in introductory calculus textbooks can feel static and formulaic. The problems and variables are already defined and assumptions have been made. A falling ladder is briefly introduced before students create an equation, take some derivatives, find the missing rate, and then move on to expanding balloons. In an attempt to provide Calculus I students with a more authentic mathematical modeling experience, we designed a short, inquiry-based project for students to explore calculus-based models involving related rates. Over three days, students pulled 2x4 boards away from walls to collect time and distance data, used the data to generate relevant equations, and assessed model assumptions and limitations as they compared the textbook model with the real-world data. In this talk, we describe how we combined lab materials from Project CLEAR Calculus with Buck Institute's essential elements of project-based instruction to highlight the mathematical modeling process in Calculus I. We also share student work and our reflections on implementation. (Received September 15, 2020)