

**ZMATH 2015e.00849**

**Sinex, Scott A.; Gage, Barbara A.; Beck, Peggy J.**

**Exploring measurement error with cookies: a real and virtual approach via interactive Excel.**  
AMATYC Rev. 29, No. 1, 46-53 (2007).

Summary: A simple, guided-inquiry investigation using stacked sandwich cookies is employed to develop a simple linear mathematical model and to explore measurement error by incorporating errors as part of the investigation. Both random and systematic errors are presented. The model and errors are then investigated further by engaging with an interactive Excel simulation and a variety of what if scenarios. A conceptual understanding is developed by hands-on manipulation combined with further virtual experimentation. Numerous higher-order thinking and science process skills are used throughout the investigation.

*Classification:* K95 I25 U75 K45

*Keywords:* college teaching; university teaching; experimental measurement; data analysis; measurement errors; mathematical model building; linear model; linear functions; regression; student activities; random error; proportional error; constant error; simulation