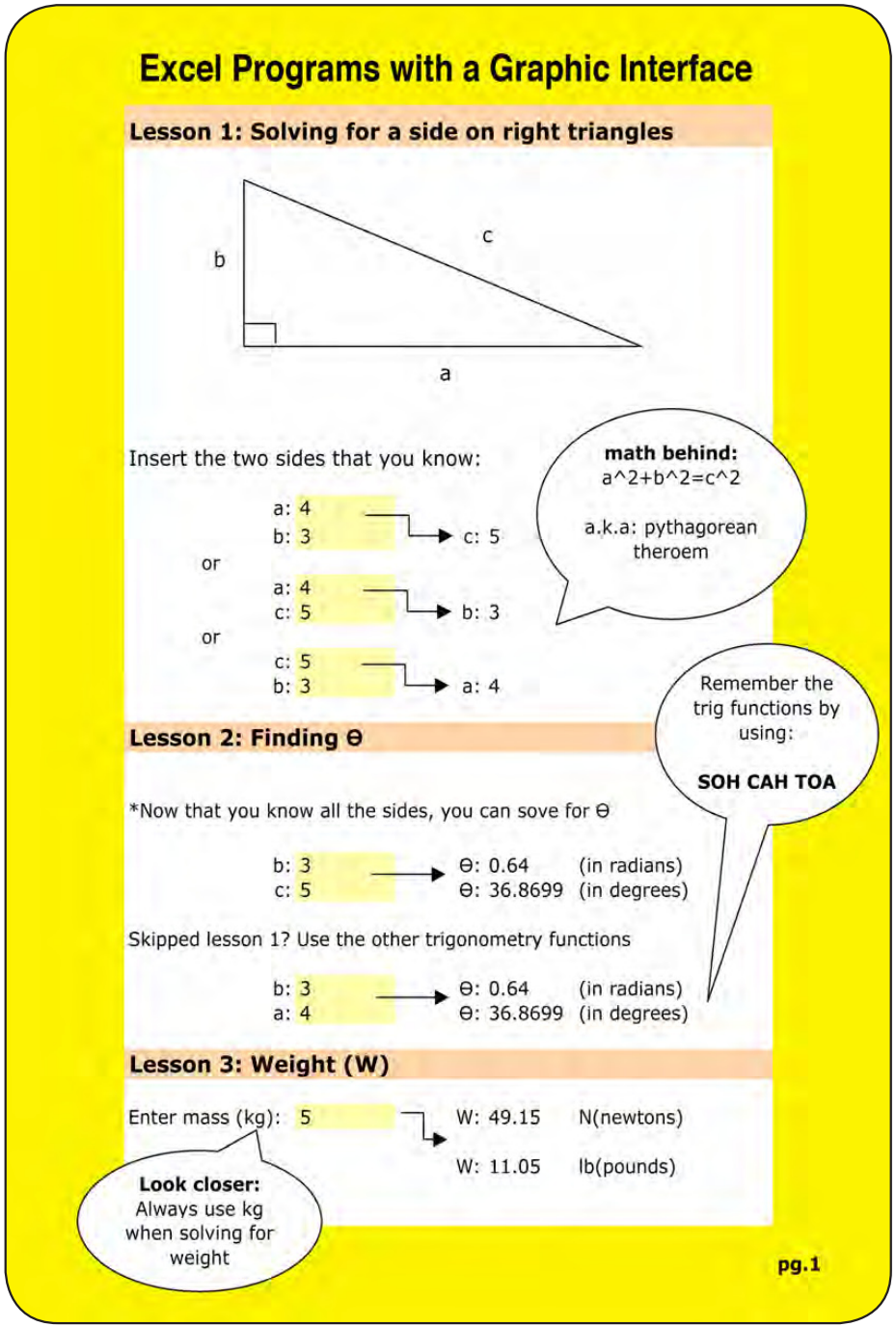


# Science Friction

Alfred Solis, Math/Science, High Tech High

The goal of Science Friction was to help students understand that physics is all around us, even on the very ground we walk on. Movie theaters, which are notorious for having sticky floors, were the "sole" inspiration for this project.

Students began their exploration of friction by creating the stickiest surface possible—thereby maximizing the coefficient of friction—and performing a series of experiments. The project culminated with students creating software programs that calculated the coefficient of friction for a range of surfaces marketable to the theater industry.

## Teacher Reflection

People often think of Excel software as simply a way to display data, but it also provides students with opportunities to quickly become software developers and graphic user interface (GUI) designers. After a one-hour training session, students were not only able to enter in functioning equations and data they derived from assignments and labs. They could also personalize the look and feel of the "software" they had developed.

Excel offers a good way to assess students' math understanding in the context of project work. For example, when students enter formulas into Excel, they need to be careful about how they use parantheses or their formulas won't work correctly. This compels students to check their work and revisit or rethink concepts like the order of operations. In addition, having students create software around a math topic—for example, unit conversions—motivates them to learn the content and provides them with a handy program they can use throughout the year.

—Al Solis

## Student Reflection

In this project, I created a program used to calculate the coefficient of friction, angles, weight, and percentage increase of friction between two objects. You can insert different numbers such as angles or mass and see how the results changed. This is a useful program for those who don't understand their homework or don't have a calculator. You can even use this program if you don't understand the terminology because it includes a glossary for those tricky words. Even though it may not look like it, I created this program by using Microsoft Excel.

—Molly Uyeda, 9th grade, High Tech High

To learn more about this project and others visit the HTH Digital Commons and Alfred Solis' digital portfolio
http://www.hightechhigh.org/ and http://staff.hightechhigh.org/~asolis/

Graduate School of EDUCATION