



# Home Improvement = Math Improvement

**W**hen Phyllis Licht decided it was time to replace her lawn with a lush garden, she knew where to turn for expert advice: her 8-year-old grandson. “I love plants,” says Sam Licht who, with his father Mark, had already created a butterfly garden that is the envy of their neighborhood, “and I knew I could give Grandma a nice garden instead of her un-nice garden.”

Sam’s grandmother didn’t have a large space to work with – all the more reason that Sam had to plan carefully. First, he measured the area that was to be planted, including landscape features that could not be altered – walkways, fences and a concrete pillar. Scaling down the dimensions to notebook size, he sketched the area, then drew in the plants.

“I had to think about the spacing of each plant,” Sam recalls. “So if a border was 56 inches and I put in a butterfly ginger that needs 8 inches, then I was down to 48 inches.” If he then had four variegated *Scheffleras* that took 3 inches apiece, he had to subtract another foot, and so on. Sam marked the position of each plant on his sketch.

He didn’t know it but, as a third-grader, Sam was practicing not only basic computation, but also real-life mathematical thinking – exactly the kind of math that bedevils many American students. In a recent international study, American teens ranked 24th among those from 29 industrialized nations in practical math applications. Ironically, Sam does not enjoy math in school, but in the context of a garden, he says, “It’s not like math. It’s just like fun. I don’t mind that kind of math.”

**N**atalie Milnikoff enjoys math at school, at home, in the car – anywhere she

finds it. Her love of the subject is not surprising, since her parents have been working it into her everyday routines since Natalie was very young. Now, at 11, she’s eager to help with projects around the house, and they often involve math.

When Natalie’s father, Vladimir, decided to make a patio of terra-cotta tiles, Natalie knew that a math problem was on its way. Each tile is a 16-inch square (16” x 16”) and the finished patio will be an 18-foot square (18’ x 18’). Natalie figured out how many tiles to buy.



**Natalie Milnikoff uses her math skills to help her father make a new patio.**

PHOTO BY VLADIMIR MILNIKOFF

“First, I multiplied 18 feet by 12 to find out how many inches long each side is. Then, I divided by 16 to see how many tiles would fit on that side,” she explains. Natalie had to square that number to get the total number of tiles needed, allowing for space between the tiles.

With a long measuring tape, she helped her dad mark the boundaries of the patio, and with a builder’s square, she checked to be sure they were angled right, which is to say at right angles. The project took a few weeks to complete,

but the results were beautiful, useable and, for Natalie, educational.

**N**early every home-improvement project involves solving mathematical problems through measurement, estimation, computation, geometry, proportional thinking – or all of the above:

- *How many cans of paint will we need to cover the deck?* Figure the area of the deck and read the label to see the coverage of each can.

- *Where should we nail the hanger to center this picture on the wall?* Measure the width of the wall and divide it in half.

- *How many yards of soil should we order for the flower bed?* Multiply the bed’s length by width by height in feet and convert to cubic yards, with 27 cubic feet equaling one cubic yard (for “extra credit” your child can figure out why!).

Many children enjoy helping their parents around the house, and “doing the math” can be one of the enjoyable ways they can be helpful. As Sam Licht would say, “It’s not like math. It’s just like fun.”

**Math Moments™** creator David Schwartz spends much of his time finding unusual, whimsical ways to make math and science come alive for kids and teachers, both through writing and through speaking at schools and conferences. He has written nearly 50 books for kids, including *How Much Is a Million?* and the “Look Once, Look Again” series. For more information about David’s math and science adventures, check out his Web site, [www.davidschwartz.com](http://www.davidschwartz.com).

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