The meaning of math

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THE JOURNAL NEWS
(Original Publication: April 25, 2006)

You can bombard 14-year-old Corey Brown with logic. You can employ statistical probabilities and add up all the reasons you need X (math) to understand Y (money).

But you'll have an easier time factoring pi to 1,000 decimal places than convincing this eighth-grader that algebra is important — or useful.

"I don't think this is really going to matter to me. When am I going to ever use it?" Brown, who attends Rye Middle School and wants to be an architect, asked after a recent math class. "Some of the stuff we do, doesn't have anything to do with buildings and design."

Brown is one of millions of students — and adults — who aren't convinced that most math is all that important in their everyday lives. Using the math technique of deductive reasoning, that probably also means that many people aren't concerned that April is Math Awareness Month, a time set aside to increase understanding and appreciation for the subject.

Started as Math Awareness Week in 1986 by President Reagan, the concept didn't exactly catch fire with the public but was expanded anyway as the U.S. aimed to encourage more students to study mathematics. But despite two decades of trying to revive math's public image, few subjects continue to evoke as much terror as algebra, trigonometry, statistics and, perhaps the most feared of all, calculus.

Researchers estimate that between 50 percent and 80 percent of U.S. adults, and probably a similar share of children, suffer from some form of math anxiety. That fear translates into subpar performance of children, experts say. Researchers ranked American students 24th out of 29 industrialized countries in math literacy.

"Math anxiety is very common," said Peter Arvanites, a math professor at Rockland Community College who has held workshops on overcoming a fear of math. "If you think about it, math is one of the few subjects where you can publicly declare that you're not good at and not be embarrassed. Our culture is perpetuating this fear and phobia of math. It's saying that it's all right to have and not do anything about it."

So if adults are so scared of math, and appear to get along fine without knowing too much about it, why do kids have to learn it?

You need it to count change at a store and balance a checkbook, but

How I use math every day

"For me, math is very important. It's huge. Architecture is art and science. And what's the backbone of science? Math. It's not just pretty pictures. I use math to figure out the geometry of a roof system and figuring out the square footages of the sizes of rooms and materials to be purchased. You use formulas to figure that out."

Michael Piccirillo, architect, Mohegan Lake

"The use of math is essential to analysis of statistics and how we track crime patterns. We look at (the data) daily, but we actually sit down and drill on it every 28 days. It gives you an idea to identify emerging trends and patterns and reallocate or redeploy resources if needed."

Monty Long, Westchester County police, deputy commissioner for public information, Hawthorne

"Mostly I use math in measuring, but there's some multiplication we use to get the size of the pipe you need to fit between two parallel pipes running vertically or horizontally. If you have to connect between the upper one to a lower one on a 45-degree angle, you measure the distance between the two pipes, multiply by 1.41, deduct the length of the fittings you're using, and that's the size of pipe you need."

Bob Romano, plumber, Bob Romano & Son Plumbing & Heating, Orangeburg
On the Web

John Aguilar, a math teacher at Rye Middle School, tries to convince his students that math is not as much about numbers as about ideas. He said the way math is taught, usually through memorization of formulas and sets of complex rules that can intimidate some students, doesn't show how you can use it to find patterns in life or work your way step-by-step through complex problems.

Aguilar points to television shows like "Deal or No Deal" on NBC, a game show governed by the laws of probability, and the CBS drama "Numbers," in which a genius uses math to help the FBI solve crimes, as examples of how learning math can be fun and applied beyond the blackboard.

Some Web sites where you can learn more about math

www.math .com

http://www.mathaware.org/

http://www.mathgoodies.com/

http://www.figurethis.org/

www.learner.org/exhibits/dailymath/

"The most frequent question we hear is 'When are we going to use this in real life?' " Aguilar said. "But even if students don't use the math or arithmetic, they'll definitely use the logical reasoning and deductive reasoning thinking skills that they learn in a math class."

In short, the mathematical process of analyzing problems and double-checking your work teaches you to think — about almost everything.

But try telling that to a room full of eighth-graders praying for the bell to ring as a teacher draws lines and curves on the board and explains equations for finding slopes and y-intercepts, said Gisele Glosser of Cortlandt, a former math teacher who runs a company that sells mathematics software.

"Students always say they hate math," she said. "But by connecting the math to the real world, they were much more motivated to learn what I had to show them."

Still, even in schools like Rye Middle and South Orangetown Middle, which had high percentages of students scoring at Level 4 on state math tests last year — considered mastery of the subject — students aren't always sure why all this "numbers stuff" is important. For them, there's arithmetic, which they acknowledge they need, and then there's ... algebra.

"You know you have to do it, but sometimes you wonder what it's all for," Keira McCoy, a senior at South Orangetown Middle School, said recently after her algebra class.

"We're never going to need algebra," said Christian Dedalmas, as he settled into his seat in math class at Rye Middle. He was joined by several of his classmates who added their thoughts about the uselessness of algebra.

Well, another way to look at algebra, is using what you know to discover what you don't. And children do that every time they try to figure out how to buy as much stuff as possible with their allowance, said Arvanites of RCC.

"When you think of how many items you can buy without exceeding a certain amount, including sales tax, that's not purely arithmetic. It involves sequential reasoning, variables and different cases," he said. "Many students don't realize that that's algebra."

As for Brown, the budding architect, if he wants to design buildings that don't fall down, he'll need those lines and slopes in algebra, Aguilar said. That's because algebra helps determine what size house can fit on a given lot, while physics will help him determine how much weight different materials can hold. And he'll need trigonometry to properly design a roof to fit the structure, he said.

"It's all right," Brown said with a smile after listening to an explanation of how architects use advanced math. "I'll get motivated in college."
