



## The Great American Math Disaster

One of the reasons why so many Americans are confused about the large numbers being tossed around by our leaders in Washington these days is because of how poorly they were taught mathematics in the public schools. They find figures in the millions, billions, and trillions almost impossible to visualize as anything more than just strings of numbers. Most Americans can barely deal with thousands, let alone trillions.



The basic problem is that American children are no longer being taught arithmetic in public schools. They are taught math, which includes more than our simple counting system. Arithmetic deals with quantity. Math deals with relationships and uses complex symbols. When you submerge arithmetic in mathematics, without making sure that the children have mastered their counting skills, you get math failure. And this is nothing new. Back on June 17, 1991, *Newsweek* magazine reported:

How bad are eighth graders' math skills? So bad that half are scoring just above the proficiency level expected of fifth-grade students. Even the best students did miserably; at the top-scoring schools, the average was well below grade level. Hardly any students have the background to go beyond simple computation, most of those kids can add but they have serious trouble thinking through simple problems....

What's really frightening about these results is that the alarm has been ringing since the 1983 publication of "A Nation at Risk," the federally-sponsored study that highlighted vast problems in the public schools. Yet despite years of talk about reform — and genuine efforts of change in a few places — American students are still not making the grade and remain behind their counterparts in other industrialized nations.

All those kids who did miserably in math in 1983 and 1991 are today's voting adults in their thirties and forties. And let us not forget the disaster called "New Math" which swept through America's elementary schools like a hurricane during the 1960s and '70s, creating today's math illiterates among Boomers in their fifties and sixties.

The educators blame the problem on traditional arithmetic, which hasn't been taught in years, but is a perfect scapegoat. They complain that too much time is wasted practicing adding, subtracting, multiplying, and dividing. The solution? More calculators and computers.

The real problem is that our educators really don't know the difference between arithmetic and mathematics, and if you don't know the difference, you will not know how to teach either.



Written by [Sam Blumenfeld](#) on February 21, 2011

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Our arithmetic system is an ingenious method of counting, keeping track of quantity. It uses 10 symbols and place value for all of its notations and operations. As such it is one of the greatest achievements of the human intellect, an invention that permits human beings to perform any counting feat with mere pencil and paper.

But the key to its proficient use is memorization of the basic arithmetic facts. If you don't memorize the facts, then you are stuck with unit counting and you might as well learn to use an abacus. Memorization requires rote drill, which is forbidden in today's schools, even though it is the easiest way for a child to learn anything. When educators think that children can learn to compute without memorizing the arithmetic facts, they are deluding themselves and cheating the children.

Why is it important for children to memorize the arithmetic facts? Because memorization will give them mastery of the system. And once the arithmetic facts are memorized through drill and practice with pencil and paper, they will later be able to use calculators and computers with accuracy, spotting errors when they make them, always able to do the calculations on paper if necessary.

Why did eighth graders do so poorly even in wealthy suburban schools? Because of bad teaching. Obviously, when even the richest and brightest fail, one cannot blame it on rote memorization when we are told that memorization is what makes the Japanese student so much better than the American. If teachers do not even know how to teach simple arithmetic effectively, how can we assume that they know how to teach algebra, geometry, trigonometry, or calculus effectively?

Besides, very few of us will need to use algebra, geometry, trigonometry, or calculus, but all of us will need to use arithmetic — in doing tax returns, figuring out mortgages, balancing our checking accounts, using credit cards, making change, planning our retirement. So if everyone must use arithmetic in order to survive economically, why don't the educators emphasize the need to develop good arithmetic skills?

Back in 1983, John Saxon, the celebrated author of superb mathematics textbooks used by home-schoolers and private schools, observed in the August 19 *National Review*:

For the last twenty years, these [mathematics] experts have worked unwittingly to bring matters to a point where only the brilliant can learn mathematics. They have tried to teach advanced concepts and a general overview before the student has learned the basics....In an important sense, these authors are experts neither in mathematics nor in education. They do not know which mathematics topics must be mastered at which level and have no understanding of the capabilities of the average student. Their books are visible proof that they do not know how children learn and assimilate abstractions.

Until rote learning is restored in our primary schools in the teaching of arithmetic, we can expect math failure to plague American public education for the foreseeable future.



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