

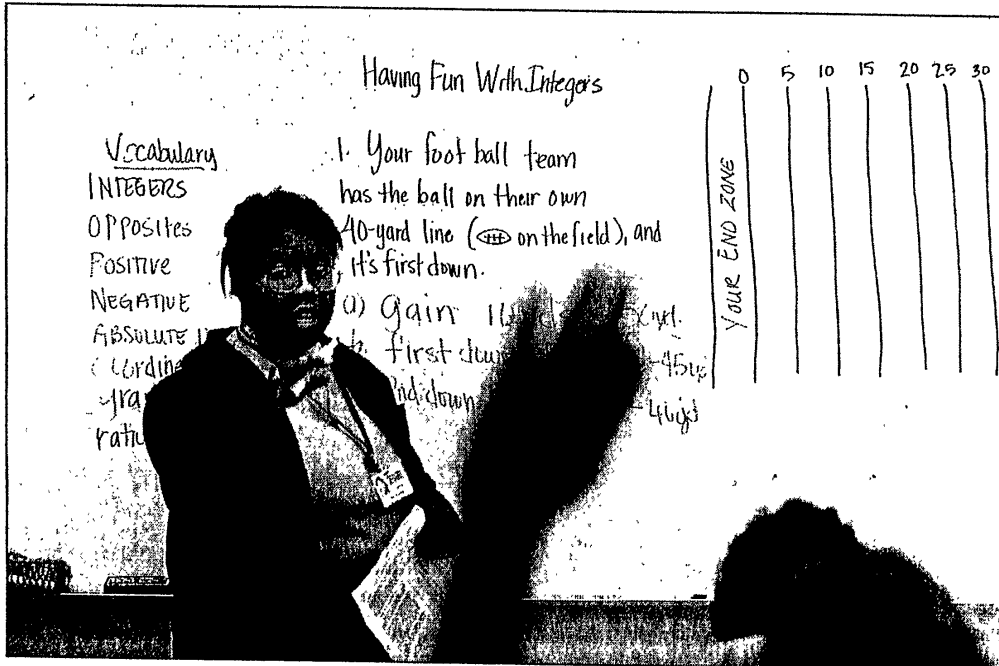
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"There are some kids headed for a vocational career. Why not teach them a vocational math? I don't know what's going to happen, but I'm not optimistic."

LYNN HOGGATT, math teacher at Pittsburg's Central Junior High



MICHAEL MALONEY/The Chronicle

Hillview Junior High teacher Donna Bussey uses a football field to help eighth-graders understand absolute value concepts.

# X + Y = crisis

## Many kids flailing in mandatory algebra classes

By Elizabeth Bell  
CHRONICLE STAFF WRITER

**K**eyari Cooper started ninth-grade algebra with a decent attitude. Math wasn't her best subject, but the Pittsburg High School student thought she had a fighting chance to pass the course.

Factoring, distributing, functions — the mechanics of algebra wore her can-do attitude into apprehension, then indifference. Keyari, 14, knows she has to learn the math in order to graduate from high school, but the exit exam seems far away.

"I think it's going to be hard," said Keyari. But she doesn't worry, she said, "because there's nothing I can do about it."

Algebra used to be a college prep class, but last year California made it a requirement of earning a high school diploma beginning with the class of 2004. So Keyari and other students throughout the state are being pushed into Algebra I in the eighth or ninth grade regardless of their math skills.

While some hope that holding students and teachers to a higher standard will motivate them, others believe that students and teachers haven't had time to prepare.

And California could wind up denying diplomas to students aiming for vocational careers rather than college.

Keyari's algebra teacher, Willie Dunford, said about a third of his students are lost. Many don't complete the homework because they get stuck after a few problems.

"There's really nothing that can be done for them. The best we can do is give them extra worksheets for help," he said, "but all of that is on top of what they're getting for Algebra I."

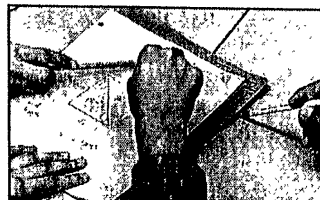
"They just fall further and further behind."

Texas headed down this road in the



LANCE IVERSEN/The Chronicle

Pittsburg High freshmen (from left) Angela Tiscareno, Catherine Jackson and Shaneika Barrett listened intently to their algebra teacher, Willie Dunford.



MICHAEL MALONEY/The Chronicle

Students at San Lorenzo High worked in groups to help each other solve algebraic equations.

mid-1990s, adding algebra as a graduation requirement and instituting a high school exit exam with algebra questions. Pass rates on the math section of the exit exam went from 57 percent in 1994 to 89 percent last year.

Yet critics say Texas' pass rates do not reflect the students who have dropped

out because they failed the exit exam. Researchers argue that the drop-out rate has dramatically risen in Texas, yet reliable data is hard to find. Texas' official drop-out statistics don't include those who leave school because they can't pass the exit exam.

In California, today's sophomores will make up the first class to have to pass Algebra I and the high school exit exam — with 24 of 60 math questions based on algebra — to graduate.

However, the first round of testing last spring showed that most, like Keyari, have a way to go. Among ninth-graders, 56 percent failed the math portion of the test.

Math educators believe that pushing students into higher math without improving teaching techniques won't work. Quality math instruction begins with

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# Students struggle to master math

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quality math teachers, they say, but most districts report there aren't enough to go around.

Because of the shortage, more than 2,000 middle and high school teachers are given emergency math credentials each year because they haven't the background required to teach math.

The state has begun a variety of recruitment efforts for qualified math teachers in recent years, including offering to pay as much as \$11,000 on student loans. California has begun a training push for current math teachers, setting up institutes through public and private colleges. The institutes have served 4,773 teachers so far.

"I think unless some creative works happen with items around the high school exit exam, there'll be massive lawsuits because right now the system is not geared to really help students who are having trouble mastering those things," said Ruth Cossey, president of the California Mathematics Council and director of math credentialing at Mills College.

Individual districts are experimenting with different approaches to raising math achievement.

If Keyari or any of her classmates at Pittsburg High fail the first semester of Algebra I, they will start over with the course second semester. They'll keep at it until they pass or give up.

Pittsburg recognizes that many students don't enter the ninth grade prepared for algebra. Last summer, the district held a six-week summer math academy for 155 middle-schoolers. By summer's end, close to 90 percent of the students improved at least one math level.

Pittsburg's middle school math teachers benefit from the help of math coach Naseem Jaffer, who

works with 44 teachers at four schools in Pittsburg, Antioch and Concord.

Jaffer encourages teachers to do less lecturing, find concrete ways of explaining concepts and insist that their students explain their reasoning.

On a recent morning, Jaffer observed eighth-grade math teacher Donna Bussey at Hillview Junior High in Pittsburg. Bussey had written vocabulary for the California math standards she was teaching on the board: "integers; opposites; positive; negative; absolute value; rational numbers."

She wanted to explain number lines, so she drew a football field on the board and used football analogies to lead her students along the yard lines.

Even with her new teaching techniques, Bussey finds many students lack basic skills to keep up. Many won't or can't do their homework. She tutors students on her own time and has about 25 kids come after school every day.

Schools around the Bay Area are adopting similar strategies. California's Department of Education also has begun financing summer Algebra Academies for middle school students, but only four districts took advantage of the grants last summer.

West Contra Costa and San Francisco are also offering two periods of math a day to some eighth-graders.

Mount Diablo started offering only college prep math, including Algebra I, to ninth-graders this year; San Francisco and Oakland schools made a similar switch in recent years.

School districts have so far had limited success. In Oakland last year, 34 percent of ninth-grade algebra students passed with a C or better, while the average student earned a D.

The East Side Union High



LANCE IVERSEN / The Chronicle

Alicia Mason, 16, paid close attention to teacher Willie Dunford during Algebra class at Pittsburg High School.

*In California, today's sophomores will make up the first class to have to pass Algebra I and the high school exit exam — with 24 of 60 math questions based on algebra — to graduate.*

School District in San Jose is several years ahead of the others. It began requiring mandatory ninth-grade algebra in the mid-1990s, and finds failure rates for algebra are about the same as for the remedial math courses they used to teach, despite extensive after-school tutoring.

"At least I can say if they're failing algebra at least it's a higher standard they're failing," said Assistant Superintendent Dan Ordaz.

Teachers worry that putting kids in multiple math classes each day, plus summer school and after school, may be too discouraging for students who hate math.

Otherwise promising students interested in vocational careers could be denied diplomas or drop out for lack of math skills.

Baking teacher Judy Moon at the hospitality academy at Mount Diablo High in Concord acknowledges that even bakers use some

algebra to adjust recipes or decide how much food to make for a certain number of guests. But she doesn't think the abstract college-prep Algebra I taught in most schools is necessary for all students to be successful in future careers.

Pittsburg math teacher Lynn Hoggatt of Central Junior High agrees.

"There are some kids headed for a vocational career. Why not teach them a vocational math?" she asked. "I don't know what's going to happen, but I'm not optimistic."

Keyari's mom, Leticia Richardson, is worried that her daughter's high school diploma might be at risk.

"What is the killer part is: If the kids are not able to learn algebra then what are they going to do?"

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