

To: Mike Cohen

From: David Thomas, OPA, Dept. Of Education - 401-1579

SUBJECT: NAEP MATH SCORES

Per our conversation earlier w/ David Frank and Ed Fujimoto:

**The last time the NAEP Math assessment was administered was in 1992. Following is an excerpt from the 1992 press release (which I will also fax) on this:**

*The NAEP Trial State Assessment Program began in 1990 for grade 8 in math with 37 states and territories participating and expanded in 1992 to include both grades 4 and 8 in 44 states and territories ... The assessment included nearly 250,000 4th, 8th, and 12th grade students, attending approximately 10,000 schools across the nation and the states. Students were assessed in numbers and operations, measurement, geometry, data analysis, statistics, probability, algebra and functions.*

**From the executive summary for the 1996 assessment I've attached, see info under Student Achievement and Major findings for the Nation, Regions, and the States for national scores from 1990-1996. For 1996, about 151,000 4th, 8th and 12th graders, state and nationally combined, were tested.**

**DRAFT**

## **NAEP 1996 Mathematics Assessment Executive Summary**

### **3rd Draft**

For more than a quarter of a century, the National Assessment of Educational Progress (NAEP) has reported to policy-makers, educators, and the general public on the educational achievement of students in the United States. As the nation's only ongoing survey of students' educational progress, NAEP has become an important resource for obtaining information on what students know and can do.

The 1996 NAEP mathematics assessment continues the mandate to evaluate and report the educational progress of students at grades 4, 8, and 12. The national results provided herein describe students' mathematics achievement at each grade and within various subgroups of the general population. State-level results for grades 4 and 8 are presented for individual states and jurisdictions that chose to participate in the 1996 State Assessment. In addition, trends in performance since 1990 are reported for the nation and for states and jurisdictions that participated in the 1990, 1992, and 1996 assessments. NAEP national and state data assess the performance of students in both public and private schools.

#### **The NAEP 1996 Mathematics Framework**

The NAEP 1996 Mathematics Assessment, like previous mathematics assessments in 1992 and 1990, uses a framework influenced by *Curriculum and Evaluation Standards for School Mathematics*, a study published by the National Council of Teachers in Mathematics (NCTM) in 1989. The 1996 framework was updated to more adequately reflect recent curricular emphases and objectives.

The framework measures a mathematics domain containing five mathematics strands (number sense, properties, and operations; measurement; geometry and spatial sense; data analysis, statistics, and probability; and algebra and functions). Each of the five strands may be analyzed in terms of both mathematical abilities (conceptual understanding, procedural knowledge, and problem solving) and mathematical power (reasoning, connections, and communication). Since 1990, the NAEP mathematics assessments have placed increasing emphasis on mathematical power. The 1996 assessment deliberately focused on reasoning and communication by requiring students to connect their learning across mathematical strands.

#### **Student Achievement**

Students' mathematics proficiency is summarized on the NAEP mathematics proficiency scale, which ranges from 0 to 500. In addition, results for each grade are reported according to three achievement levels: *Basic*, *Proficient*, and *Advanced*. The National Assessment Governing Board (NAGB) developed and adopted the mathematics achievement levels, based on collective judgments about what students should know and be able to do in mathematics. The *Basic* level denotes partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade. The

## 1996 Math Report Card Executive Summary, 2nd Draft—1/29/97

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*Proficient* level represents solid academic performance, while the *Advanced* level signifies superior performance. These achievement levels are still developmental, and the process for setting them remains in transition.

### Major Findings for the Nation, Regions, and States<sup>1</sup>

*National* data from the NAEP 1996 Mathematics Assessment showed progress in academic proficiency by students on a broad front, compared with both the 1990 and 1992 assessments.

- Students' scores on the NAEP mathematics proficiency scale increased for all three grades. Scores were higher in 1996 than in 1992 for all three grades, and higher in 1992 than in 1990. The national average scale score for fourth graders in 1996 was 224, an increase of 11 points over the national average for 1990; the average for eighth graders in 1996 was 272, an increase of 9 points; and the average score for twelfth graders was ~~308, also~~ <sup>304</sup> an increase of ~~9 points~~ <sup>10 points</sup>.
- Student performance also increased as measured by the three mathematics achievement levels set by NAGB. The percentage of students at or above the *Basic* level increased from 1990 to 1992, and from 1992 to 1996, for all three grades. The percentage of fourth-grade students at or above the *Proficient* level increased from 1990 to 1992, and from 1992 to 1996, while the percentage of eighth- and twelfth-grade students at or above the *Proficient* level increased over the period 1990 to 1996. However, only eighth-grade students showed an increase in the percentage at the *Advanced* level, and this increase was for the period 1990 to 1996.
- For fourth-grade students, the percentage performing at or above the *Basic* level was 64 percent in 1996, as compared to only 50 percent in 1990; for eighth-grade students, 62 percent as compared to 52 percent; and for twelfth-grade students, 69 percent as compared to 58 percent.

*Regional* data showed positive trends similar to the national data for some but not all regions. NAEP divides the United States into four regions: the Northeast, Southeast, Central, and West.

- The Southeast and Central regions recorded increases in the NAEP mathematics proficiency scale scores over the period 1990–1996 for all three grades. The Northeast recorded an increase for fourth graders only.
- For all three grades, proficiency scale scores were higher in the Northeast and Central than the Southeast and West.
- All of the regions showed an increase in the percentage of students scoring at or above at least one of the mathematics achievement levels for at least one of the grades over the period 1990 to 1996.

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<sup>1</sup> In all discussions of differences in academic performance, either over time or between subgroups, only statistically significant differences are reported. Such differences are unlikely to be due to chance factors.

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State data for the NAEP 1996 Mathematics Assessment covered fourth graders in 47 states, territories, and other jurisdictions and eighth graders in 44 states and jurisdictions. State data in this report are for public-school students only, but later reports will cover performance by both public- and private-school students in 1996. Many but not all states and jurisdictions showed increases in academic performance for the 1996 assessment.

- Fourth graders in 15 of the 39 states and jurisdictions that participated in both the 1992 and 1996 assessments showed an increase in their average scale scores for 1996.
- Eighth graders in 14 of the 37 states and jurisdictions that participated in both the 1992 and 1996 assessments showed an increase in their average scale scores.
- Eighth graders in 31 of the 35 jurisdictions that participated in both the 1990 and 1996 assessments showed an increase in their average scale scores.
- Colorado, Connecticut, Indiana, North Carolina, Tennessee, Texas, and West Virginia reported increases in the percentages of fourth graders who scored at or above the *Basic* and *Proficient* achievement levels over the period 1992–1996.
- Maryland, Michigan, Minnesota, Nebraska, North Carolina, and Wisconsin reported increases in the percentages of eighth graders who scored at or above all three achievement levels over the period 1990–1996.

**Major Findings for Student Subgroups**

The NAEP 1996 Mathematics Assessment reports national data on the basis of demographic subgroups, type of school attended, and participation in selected government programs.

- Average scale scores for eighth- and twelfth-grade boys and girls showed no differences in 1996. Scores for fourth-grade boys were higher than scores for fourth-grade girls.
- White students recorded increases in their average mathematics scale scores for all three grades over the period 1990–1996.
- Black and Hispanic students recorded increases in their average mathematics scale scores for grades 4 and 12 over the period 1990–1996.
- Scores for Black, Hispanic, and American Indian students remained below scale scores for White and Asian/Pacific Islander students. The gaps between scores for these subgroups did not change in 1996.
- Both public and private schools showed increased scale scores for fourth- and eighth-grade students. Public schools showed increased scores for twelfth-grade students as well. Private-school students continued to outperform public-school students.
- Generally, students with higher scale scores reported higher levels of education on the part of their parents. The more education parents had, the higher the scores of their children.
- Fourth- and eighth-grade students receiving services supplied by Title I programs had lower scale scores than those who did not participate in Title I. The sample for twelfth

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graders who participated was not large enough to permit a comparison. Title I of the Elementary and Secondary Education Act provides funding to local educational agencies to meet the needs of children who are failing or most at risk of failing. For this reason, the difference between the scores cannot be taken as an indication that Title I programs fail to benefit students. The NAEP 1996 Mathematics Assessment was the first mathematics assessment to collect data on these students.

- Students eligible for the free/reduced-price lunch program administered by the U.S. Department of Agriculture (USDA) scored lower than those not eligible, for all three grades. Eligibility for free/reduced-price lunches is determined by the USDA's Income Eligibility Guidelines. Information on eligibility was lacking for 14 percent of fourth graders, 15 percent of eighth graders, and 25 percent of twelfth graders. The NAEP 1996 Mathematics Assessment was the first mathematics assessment to collect data on these students.

**Exploring a More Inclusive NAEP**

NAEP has always attempted to report results that reflect the achievement of *all* students at a given grade or age. Logistical difficulties prevent the sampling of certain students, for example, students who receive home schooling, who are in ungraded schools, who attend special schools for the deaf and blind, or who are incarcerated. Some students who are enrolled in regular schools are also difficult to sample—those with disabilities and those with limited English proficiency (LEP). NAEP 1994 results indicate that 13 percent of the nation's fourth graders, 10 percent of the eighth graders, and 8 percent of twelfth graders are classified as students with disabilities or as LEP students. Previous NAEP assessments sampled about 55 percent of these students.

The NAEP 1996 assessments implemented special measures to test the feasibility of increasing the participation of LEP students and those with disabilities. Improved directions for schools to use in selecting students for participation, in combination with accommodations to remove barriers to participation, contributed to an increased participation rate of students with disabilities and LEP students of about 70 percent. A sample of the questions administered showed little evidence that special accommodations or adaptations affected overall results.

The analysis of inclusion issues featured in this report is only a first step in an ongoing research and development effort. A comprehensive research report on inclusion issues will be published later in 1997.

**By Alan Vanneman**

UNITED STATES  
DEPARTMENT OF EDUCATION

## NEWS

FOR RELEASE  
April 8, 1993

Contact: Melinda Kitchell  
(202) 401-1008

**CHALLENGING STANDARDS CAN DRIVE PERFORMANCE, RILEY SAYS**

U.S. Secretary of Education Richard W. Riley said a report released today citing increases in mathematics achievement by U.S. students between 1990 and 1992, "provides early evidence that challenging curriculum, standards and assessments can work to improve student performance."

But Riley cautioned that the National Center for Education Statistics' NAEP 1992 Mathematics Report Card for the Nation and the States "does not reveal a magic potion to stir into the education mix and everything is okay. Only six students in 10 are meeting the new basic standards that have been set. Hard work, systemic change in all parts of education at the state and local levels, and an increased commitment to a learning ethic in America will all be necessary to move education forward."

According to the state-level assessment portion of the report which measured math achievement for eighth graders in 1990 and 1992, eighth graders in 18 of the 37 participating jurisdictions showed overall improvement and no state showed a significant decrease. Jurisdictions showing improvement were: Arizona, Colorado, Connecticut, the District of Columbia, Hawaii, Idaho, Iowa, Kentucky, Minnesota, New Hampshire, New Mexico, North Carolina, Oklahoma, Rhode Island, Texas, Wyoming, Guam, and

the Virgin Islands.

"If there is 'magic' in this report," said Riley, "it is the magic that comes from the hard work of teachers and students in response to challenging curricula geared to world-class standards."

Riley said efforts to achieve a nation-wide, voluntary system of standards and incentives for schools, school districts and states to redesign their education programs to help all students reach these standards, will be significant parts of federal education initiatives including the soon-to-be introduced reform legislation, the Goals 2000: Educate America Act.

"Schools need to change dramatically but so do community and family expectations and support for all students to learn more and to reach greater depths of understanding than they are presently," said Riley. "And we must concentrate on improvement in each classroom, in each school, each community and each state, moving to higher achievement."

For the first time, the National Center for Education Statistics is reporting state-level NAEP data by achievement levels: basic, proficient and advanced.\* Only one state, Minnesota, showed improvement at all three achievement levels. Six states improved at two of the three achievement levels. They are Colorado, Iowa, Minnesota, New Hampshire, North Carolina and Texas.

The National Assessment of Educational Progress' mathematics assessment continues the shift towards a standards-based

assessment program.

The NAEP assessment was designed to take into account challenging content standards that were developed by the National Council of Teachers of Mathematics (NCTM) and that are pegged to be internationally competitive.

The voluntary national standards are tied to curricula designed to teach more rigorous content and knowledge and are now in use or being considered for use in more than 40 states.

The NAEP report says the highest average math proficiency in both grades four and eight was found in Maine, Iowa, New Hampshire, Wisconsin, North Dakota and Minnesota. The lowest proficiency at both grades was found in the District of Columbia, Guam, Alabama, Louisiana and Mississippi.

The NAEP Trial State Assessment Program began in 1990 for grade eight in mathematics with 37 states and territories participating and expanded in 1992 to include both grades four and eight in 44 states and territories.

The report also contains previously released national data for public and private school 4th, 8th and 12th graders and state data for public school 4th and 8th graders.

The assessment included nearly 250,000 4th, 8th and 12th grade students, attending approximately 10,000 schools across the nation and the states. Students were assessed in numbers and operations, measurement, geometry, data analysis, statistics, probability, algebra and functions.

Among national findings for 4th, 8th and 12th graders, as

*sorry, Mike, left out this last page  
- Mike Cohen, from David Thomas  
401-1579*

released in a preliminary report in January:

- U.S. students overall made significant gains in mathematics achievement between 1990 and 1992.
- While students in all three grades showed improvement, only six in ten students had reached the "basic" level.
- Average student scores in algebra and functions improved -- consistent with NCTM recommendations to emphasize algebra.
- Only two percent of fourth and 12th graders and four percent of eighth graders reached the "advanced" level.

The report is available by writing New Orders,

Superintendent of Documents, P.O. Box 371954, Pittsburgh, Penn. 15250-7954. The price for the executive summary is \$2.25 (stock # 065-000-00558-1) and \$22.00 for full report (# 065-000-00559-0). Individual state reports are available through participating state education departments. For more information call 1-800-424-1616.

# # #

-NOTES-

\* The levels were established by the National Assessment Governing Board, NAEP's policy-making board. The achievement levels are:

- o basic, reflecting partial mastery of fundamental knowledge and skills;
- o proficient, indicating solid academic performance that represents competency over challenging subject matter;
- o advanced, meaning superior performance beyond proficient grade-level mastery.

NAEP is the only on-going, nationally representative assessment of student performance in various subjects.



UNITED STATES DEPARTMENT OF EDUCATION  
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Statement by Richard W. Riley  
U.S. Secretary of Education

Release of NAEP 1996 Mathematics Assessment  
February 27, 1997  
Washington, D.C.

Thank you Pat and good afternoon. As Pat indicated the national math results were released earlier this morning. Both the President and I are pleased that the national scores are up. The sustained progress we are seeing at every grade level tells me that our effort to raise standards is starting to get down into the classroom.

This is good news and another sign that we are turning the corner when it comes to improving American education. It is my observation -- both as a former member of the National Assessment Governing Board and now as Secretary of Education -- that this is the best news we have received from the NAEP tests in a very long time.

Four states -- North Dakota, Maine, Minnesota and Iowa -- are leading the nation in having high test scores in 8th grade math. Montana, Wisconsin and Nebraska are just about even with them so I suspect that it is just about a statistical tie. These seven states are showing the way.

I want to single out three states -- North Carolina, Michigan and Texas -- for making the most progress on the NAEP Test for 8th grade math scores. They get my most improved player award. North Carolina has raised its state scores 17 points since 1990 and Michigan and Texas have jumped 12 points. This is a big achievement.

Seven other states -- Hawaii, Connecticut, Kentucky, Maryland, Minnesota, New York, Rhode Island and West Virginia -- also show substantial gains and need to be recognized for being above the national average. A total of twenty-three states have shown progress in 8th grade math between 1990 and 1996.

All this is good news. But we cannot rest on our laurels. Our national scores may be going up but we are still far behind world class standards. The recent report of the Third International Mathematics and Science Study (TIMSS) told us that the United States is below the international average when it comes to 8th grade math.

That's just not good enough. The United States has no business being "below average" or thinking that being "average" is acceptable when it comes to giving all of our children a world class education. Our economy -- the most productive in the world -- is creating new jobs every day, and many of these high-tech jobs demand a higher level of math skills.

This is why the President has called for challenging, voluntary national tests for fourth grade reading and eight grade math. These tests will for the first time give parents and teachers the opportunity to measure the progress of individual children.

We want to make sure that every American child has mastered the basics once and for all. And all of our research tells us that the skills young people learn from taking algebra and geometry make a powerful difference when it comes to preparing them for college.

Right now only twenty percent of our young people are taking algebra by the end of the 8th grade. In the rest of the advanced world, the vast majority -- if not all -- students have studied algebra by the end of the 8th grade. I believe our children should do the same. This is a goal that every school district should aim to achieve.

We should eliminate dead-end math classes and re-examine what we teach and how we teach mathematics. This was one of the most important findings from the TIMSS study. Our children are smarter than we think. I can't say that enough.

My message to state leaders is this: if your state isn't on either of these lists -- if you're not leading the nation or improving -- see these results as an opportunity to re-examine what is happening in your classrooms. That's the whole purpose of releasing these reports -- to give educators some national measure of where they are in comparison to other states so they can make improvements.

If you look at the states that are on the way up -- states like North Carolina, Michigan, Texas, or Maryland and Kentucky -- these are the states that have gotten excited about education, that have done the hard work of raising standards. Action leads to results.

So here I want to make an offer. I offer the full power of my office to help states that are determined to improve and want to notch up their math standards. Our Goals 2000 program, our regional math and science education consortia, our many technology programs, and efforts to improve teacher preparation are making a difference. We stand ready to help.

I congratulate those states that are showing progress. Keep up the good work. I encourage other state leaders to get on with the job of giving every child in America a world class education.

Thank you.



FOR EMBARGOED RELEASE: 2 p.m. EST  
February 27, 1997

CONTACT: David Thomas  
(202) 401-1579

**RILEY ENCOURAGED BY STUDENT PROGRESS IN MATH ACHIEVEMENT;  
URGES STRONGER EFFORTS TO REACH INTERNATIONAL STANDARDS**

According to a new report released today by the Education Department's National Center for Education Statistics, American students have made significant progress in math achievement.

"This is good news. In all three grades tested, math scores improved between 1992-1996, building on gains made since 1990," said U.S. Secretary of Education Richard W. Riley. "But, we're in an era of global competition, where the world is made smaller and smarter every day, by the primary resource of any nation -- its people. So it's imperative that our students measure up to the international benchmarks of excellence in core subjects, especially math. We must expect more if our students are to match their international peers."

Overall, the math results for the nation's 4th-, 8th- and 12th-grade students showed continued improvement from 1990 to 1996. During the same period, average scores rose for white, black and Hispanic students in grades 4 and 12, and for white students in grade 8. The assessment analyzed math score changes over time for the nation as well as for individual states.

The assessment further showed that the percentage of students at or above the "basic" level increased for all three grades, from 1990 to 1992, and from 1992 to 1996.

The results, from the *1996 National Assessment of Educational Progress (NAEP) Mathematics Report Card*, highlight what students know and can do in math in the 4th, 8th, and 12th grades nationally. State-level results for 4th and 8th-graders are presented. In addition, performance trends since 1990 are reported for the nation and for states that participated in the 1990 and/or 1992 and 1996 assessments.

**-MORE-**



“This report shows we’ve made solid progress,” Riley said, “but we cannot be satisfied. “Our children are smarter than we think, and we’ve already shown that they can achieve to international standards of excellence. The First In the World Consortium proved that.”

The consortium is comprised of Chicago-area school districts whose eighth-grade students took an international test in math and science and came in second in math only to Singapore among 41 nations.

“About half of these consortium students take algebra and geometry by the end of the 8th grade, compared to 20 percent of 8th graders nationally who take algebra,” Riley said. “We need to notch our standards higher. If students in other countries are ready for algebra by the 8th grade, why not our students?”

The NAEP math assessment uses a sample of students to serve as a barometer of how the nation and participating states are performing over time. President Clinton has proposed that a similar, national type of test be made available in 1999 that individual eighth-graders could take so that parents and teachers would know how their students are mastering math, no matter where they lived. That eighth-grade test would also contain an international comparison.

The 1996 NAEP math assessment, like previous tests in 1990 and 1992, uses a framework influenced by *Curriculum and Evaluation Standards for School Mathematics*, a study published by the National Council of Teachers of Mathematics in 1989. The NAEP 1996 framework was updated to reflect more adequately recent curricular emphases and objectives. It deliberately focused on reasoning and communication by requiring students to connect their learning across math strands.

Students’ math proficiency is scored on a scale ranging from 0-500. In addition, results for each grade are reported according to three achievement levels: basic, proficient, and advanced. The achievement levels are set by the National Assessment Governing Board.

Results from the NAEP Math Report Card showed:

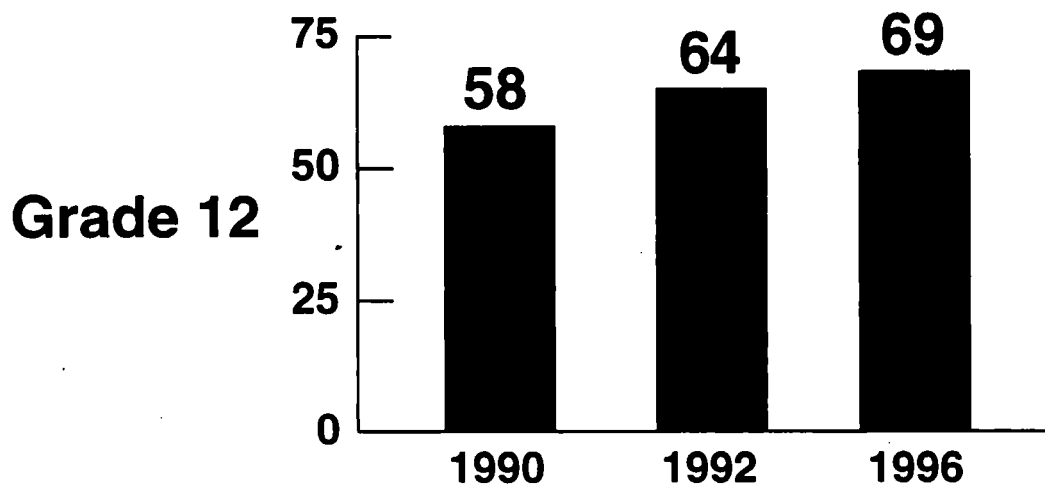
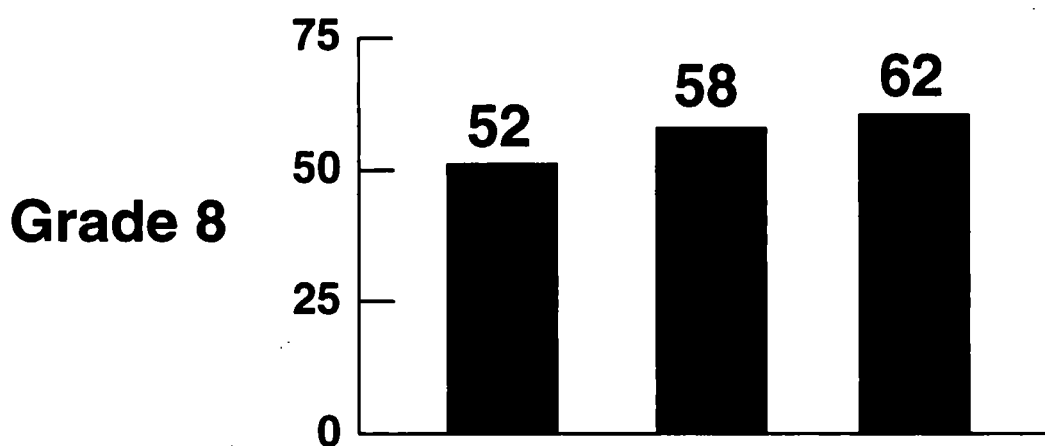
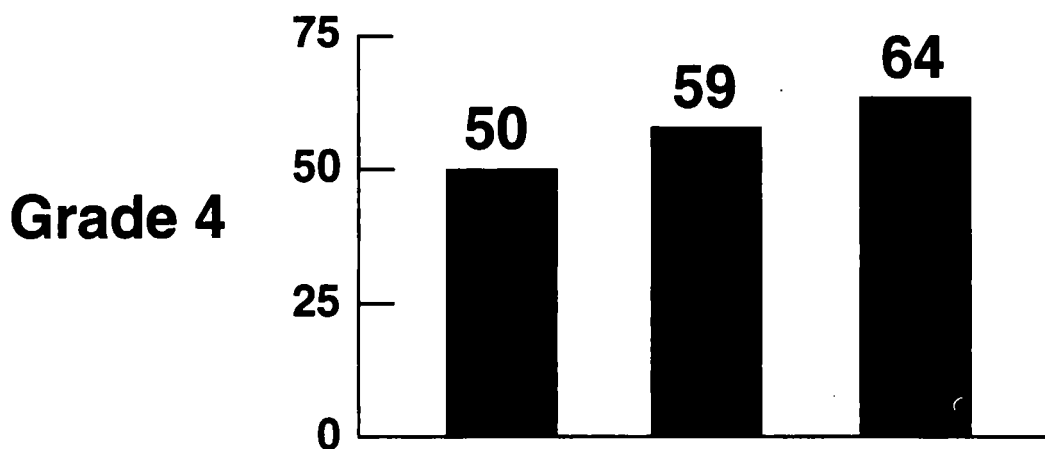
- o The national average score for fourth-graders in 1996 was 224, 11 points over the national average for 1990; for eighth-graders in 1996, the national average was 272, a nine point increase over 1990; and the average score for 12th-graders was 304, an increase of ten points;
- o For fourth-graders, the percentage performing at or above the “basic” level was 64 percent in 1996, as compared to only 50 percent in 1990; for eighth-graders, 62 percent as compared to 52 percent; and for 12th-graders, 69 percent compared to 58 percent;
- o For fourth-grade students, scores were higher in the northeast and central regions than the southeast and west; for eighth-grade students, scores in the central region were higher than in the west; and for 12th-grade students, scores in the southeast were lower than in the other three regions;
- o Colorado, Connecticut, Indiana, North Carolina, Tennessee, Texas, and West Virginia reported significant increases in percentages of fourth-graders who scored at or above the basic and proficient levels from 1992-1996; and
- o Maryland, Michigan, Minnesota, Nebraska, North Carolina, Wisconsin, Arizona, Arkansas, California, Colorado, Delaware, Florida, Hawaii, Indiana, Iowa, Kentucky, New Mexico, New York, Oregon, West Virginia, Rhode Island, Texas, and Wyoming reported significant increases in percentages of eighth-graders who scored at or above the basic and proficient levels from 1990-1996.

Known as the Nation’s Report Card, NAEP has monitored trends in academic achievement since the 1970s and is the only continuing, nationally representative assessment of academic performance. The math exam marks the third time the subject has been assessed with the updated math framework in the 1990s.

Single copies of the report are available while supplies last through the National Library of Education by calling 1-800-424-1616. The report also will be available on the Internet at <http://www.ed.gov/NCES/naep>.

###

# PERCENTAGE OF MATH STUDENTS AT OR ABOVE BASIC LEVEL



SOURCE: 1996 NAEP Mathematics Assessment.

# HIGHEST GRADE 8 MATH SCORES

|                      | 1996 Average<br>Scale Score |
|----------------------|-----------------------------|
| <b>North Dakota</b>  | <b>284</b>                  |
| <b>Maine</b>         | <b>284</b>                  |
| <b>Minnesota</b>     | <b>284</b>                  |
| <b>Iowa</b>          | <b>284</b>                  |
| <b>Montana</b>       | <b>283</b>                  |
| <b>Wisconsin</b>     | <b>283</b>                  |
| <b>Nebraska</b>      | <b>283</b>                  |
| <b>Connecticut</b>   | <b>280</b>                  |
| <b>Vermont</b>       | <b>279</b>                  |
| <b>Alaska</b>        | <b>278</b>                  |
| <b>Massachusetts</b> | <b>278</b>                  |

**Other states scoring significantly above the national average were: Michigan (277); Utah (277); Oregon (276); Washington (276); Colorado (276); Indiana (276); Department of Defense Dependents Schools (Overseas) (275); and Wyoming (275).**

# **MOST IMPROVED GRADE 8 MATH SCALE SCORES (1990 - 1996)**

|                       |            |
|-----------------------|------------|
| <b>North Carolina</b> | <b>+17</b> |
| <b>Michigan</b>       | <b>+12</b> |
| <b>Texas</b>          | <b>+12</b> |
| <b>Hawaii</b>         | <b>+11</b> |
| <b>Connecticut</b>    | <b>+10</b> |
| <b>Kentucky</b>       | <b>+ 9</b> |
| <b>Maryland</b>       | <b>+ 9</b> |
| <b>Minnesota</b>      | <b>+ 9</b> |
| <b>New York</b>       | <b>+ 9</b> |
| <b>Rhode Island</b>   | <b>+ 9</b> |
| <b>West Virginia</b>  | <b>+ 9</b> |
| <b>Arizona</b>        | <b>+ 8</b> |
| <b>Colorado</b>       | <b>+ 8</b> |
| <b>Florida</b>        | <b>+ 8</b> |
| <b>Indiana</b>        | <b>+ 8</b> |
| <b>Wisconsin</b>      | <b>+ 8</b> |

**Increase larger than or equal to the national average.**

**SOURCE: 1996 NAEP Mathematics Assessment.**



FEB 27 '97

02:10PM OFFICE OF SECRETARY

UNITED STATES DEPARTMENT OF EDUCATION

P.1/11

OFFICE OF THE SECRETARY

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**UNITED STATES  
DEPARTMENT OF EDUCATION****NEWS**

FOR EMBARGOED RELEASE: 2 p.m. EST  
February 27, 1997

CONTACT: David Thomas  
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"This is good news. In all three grades tested, math scores improved between 1992-1996, building on gains made since 1990," said U.S. Secretary of Education Richard W. Riley. "But, we're in an era of global competition, where the world is made smaller and smarter every day, by the primary resource of any nation -- its people. So it's imperative that our students measure up to the international benchmarks of excellence in core subjects, especially math. We must expect more if our students are to match their international peers."

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**-MORE-**



*Our mission is to ensure access to education and to promote educational excellence throughout the Nation.*

"This report shows we've made solid progress," Riley said, "but we cannot be satisfied.

"Our children are smarter than we think, and we've already shown that they can achieve to international standards of excellence. The First In the World Consortium proved that."

The consortium is comprised of Chicago-area school districts whose eighth-grade students took an international test in math and science and came in second in math only to Singapore among 41 nations.

"About half of these consortium students take algebra and geometry by the end of the 8th grade, compared to 20 percent of 8th graders nationally who take algebra," Riley said. "We need to notch our standards higher. If students in other countries are ready for algebra by the 8th grade, why not our students?"

The NAEP math assessment uses a sample of students to serve as a barometer of how the nation and participating states are performing over time. President Clinton has proposed that a similar, national type of test be made available in 1999 that individual eighth-graders could take so that parents and teachers would know how their students are mastering math, no matter where they lived. That eighth-grade test would also contain an international comparison.

The 1996 NAEP math assessment, like previous tests in 1990 and 1992, uses a framework influenced by *Curriculum and Evaluation Standards for School Mathematics*, a study published by the National Council of Teachers of Mathematics in 1989. The NAEP 1996 framework was updated to reflect more adequately recent curricular emphases and objectives. It deliberately focused on reasoning and communication by requiring students to connect their learning across math strands.

Students' math proficiency is scored on a scale ranging from 0-500. In addition, results for each grade are reported according to three achievement levels: basic, proficient, and advanced. The achievement levels are set by the National Assessment Governing Board.

-3-

Results from the NAEP Math Report Card showed:

- o The national average score for fourth-graders in 1996 was 224, 11 points over the national average for 1990; for eighth-graders in 1996, the national average was 272, a nine point increase over 1990; and the average score for 12th-graders was 304, an increase of ten points;
- o For fourth-graders, the percentage performing at or above the "basic" level was 64 percent in 1996, as compared to only 50 percent in 1990; for eighth-graders, 62 percent as compared to 52 percent; and for 12th-graders, 69 percent compared to 58 percent;
- o For fourth-grade students, scores were higher in the northeast and central regions than the southeast and west; for eighth-grade students, scores in the central region were higher than in the west; and for 12th-grade students, scores in the southeast were lower than in the other three regions;
- o Colorado, Connecticut, Indiana, North Carolina, Tennessee, Texas, and West Virginia reported significant increases in percentages of fourth-graders who scored at or above the basic and proficient levels from 1992-1996; and
- o Maryland, Michigan, Minnesota, Nebraska, North Carolina, Wisconsin, Arizona, Arkansas, California, Colorado, Delaware, Florida, Hawaii, Indiana, Iowa, Kentucky, New Mexico, New York, Oregon, West Virginia, Rhode Island, Texas, and Wyoming reported significant increases in percentages of eighth-graders who scored at or above the basic and proficient levels from 1990-1996.

Known as the Nation's Report Card, NAEP has monitored trends in academic achievement since the 1970s and is the only continuing, nationally representative assessment of academic performance. The math exam marks the third time the subject has been assessed with the updated math framework in the 1990s.

Single copies of the report are available while supplies last through the National Library of Education by calling 1-800-424-1616. The report also will be available on the Internet at <http://www.ed.gov/NCES/naep>.

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UNITED STATES DEPARTMENT OF EDUCATION  
PUBLIC AFFAIRS

Statement by Richard W. Riley  
U.S. Secretary of Education

Release of NAEP 1996 Mathematics Assessment  
February 27, 1997  
Washington, D.C.

Thank you Pat and good afternoon. As Pat indicated the national math results were released earlier this morning. Both the President and I are pleased that the national scores are up. The sustained progress we are seeing at every grade level tells me that our effort to raise standards is starting to get down into the classroom.

This is good news and another sign that we are turning the corner when it comes to improving American education. It is my observation -- both as a former member of the National Assessment Governing Board and now as Secretary of Education -- that this is the best news we have received from the NAEP tests in a very long time.

Four states -- North Dakota, Maine, Minnesota and Iowa -- are leading the nation in having high test scores in 8th grade math. Montana, Wisconsin and Nebraska are just about even with them so I suspect that it is just about a statistical tie. These seven states are showing the way.

I want to single out three states -- North Carolina, Michigan and Texas -- for making the most progress on the NAEP Test for 8th grade math scores. They get my most improved player award. North Carolina has raised its state scores 17 points since 1990 and Michigan and Texas have jumped 12 points. This is a big achievement.

Seven other states -- Hawaii, Connecticut, Kentucky, Maryland, Minnesota, New York, Rhode Island and West Virginia -- also show substantial gains and need to be recognized for being above the national average. A total of twenty-three states have shown progress in 8th grade math between 1990 and 1996.

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*Our mission is to ensure equal access to education and to promote educational excellence throughout the Nation.*

All this is good news. But we cannot rest on our laurels. Our national scores may be going up but we are still far behind world class standards. The recent report of the Third International Mathematics and Science Study (TIMSS) told us that the United States is below the international average when it comes to 8th grade math.

That's just not good enough. The United States has no business being "below average" or thinking that being "average" is acceptable when it comes to giving all of our children a world class education. Our economy -- the most productive in the world -- is creating new jobs every day, and many of these high-tech jobs demand a higher level of math skills.

This is why the President has called for challenging, voluntary national tests for fourth grade reading and eight grade math. These tests will for the first time give parents and teachers the opportunity to measure the progress of individual children.

We want to make sure that every American child has mastered the basics once and for all. And all of our research tells us that the skills young people learn from taking algebra and geometry make a powerful difference when it comes to preparing them for college.

Right now only twenty percent of our young people are taking algebra by the end of the 8th grade. In the rest of the advanced world, the vast majority -- if not all -- students have studied algebra by the end of the 8th grade. I believe our children should do the same. This is a goal that every school district should aim to achieve.

We should eliminate dead-end math classes and re-examine what we teach and how we teach mathematics. This was one of the most important findings from the TIMSS study. Our children are smarter than we think. I can't say that enough.

My message to state leaders is this: if your state isn't on either of these lists -- if you're not leading the nation or improving -- see these results as an opportunity to re-examine what is happening in your classrooms. That's the whole purpose of releasing these reports -- to give educators some national measure of where they are in comparison to other states so they can make improvements.

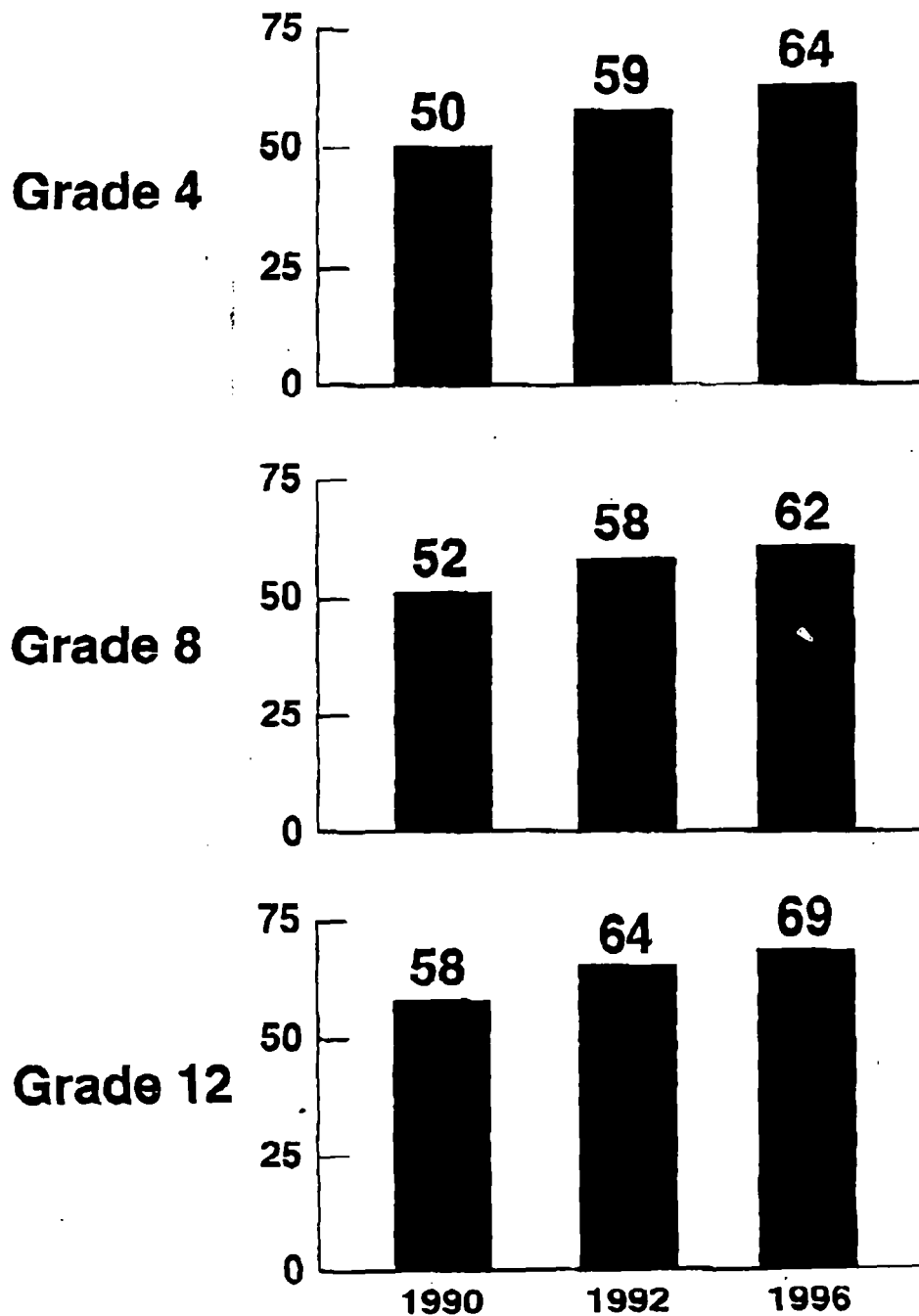
If you look at the states that are on the way up -- states like North Carolina, Michigan, Texas, or Maryland and Kentucky -- these are the states that have gotten excited about education, that have done the hard work of raising standards. Action leads to results.

So here I want to make an offer. I offer the full power of my office to help states that are determined to improve and want to notch up their math standards. Our Goals 2000 program, our regional math and science education consortia, our many technology programs, and efforts to improve teacher preparation are making a difference. We stand ready to help.

I congratulate those states that are showing progress. Keep up the good work. I encourage other state leaders to get on with the job of giving every child in America a world class education.

Thank you.

# PERCENTAGE OF MATH STUDENTS AT OR ABOVE BASIC LEVEL



SOURCE: 1996 NAEP Mathematics Assessment.

# HIGHEST GRADE 8 MATH SCORES

|                      | 1996 Average<br>Scale Score |
|----------------------|-----------------------------|
| <b>North Dakota</b>  | <b>284</b>                  |
| <b>Maine</b>         | <b>284</b>                  |
| <b>Minnesota</b>     | <b>284</b>                  |
| <b>Iowa</b>          | <b>284</b>                  |
| <b>Montana</b>       | <b>283</b>                  |
| <b>Wisconsin</b>     | <b>283</b>                  |
| <b>Nebraska</b>      | <b>283</b>                  |
| <b>Connecticut</b>   | <b>280</b>                  |
| <b>Vermont</b>       | <b>279</b>                  |
| <b>Alaska</b>        | <b>278</b>                  |
| <b>Massachusetts</b> | <b>278</b>                  |

**Other states scoring significantly above the national average were: Michigan (277); Utah (277); Oregon (276); Washington (276); Colorado (276); Indiana (276); Department of Defense Dependents Schools (Overseas) (275); and Wyoming (275).**

**SOURCE: 1996 NAEP Mathematics Assessment.**

# **MOST IMPROVED GRADE 8 MATH SCALE SCORES (1990 - 1996)**

|                       |            |
|-----------------------|------------|
| <b>North Carolina</b> | <b>+17</b> |
| <b>Michigan</b>       | <b>+12</b> |
| <b>Texas</b>          | <b>+12</b> |
| <b>Hawaii</b>         | <b>+11</b> |
| <b>Connecticut</b>    | <b>+10</b> |
| <b>Kentucky</b>       | <b>+ 9</b> |
| <b>Maryland</b>       | <b>+ 9</b> |
| <b>Minnesota</b>      | <b>+ 9</b> |
| <b>New York</b>       | <b>+ 9</b> |
| <b>Rhode Island</b>   | <b>+ 9</b> |
| <b>West Virginia</b>  | <b>+ 9</b> |
| <b>Arizona</b>        | <b>+ 8</b> |
| <b>Colorado</b>       | <b>+ 8</b> |
| <b>Florida</b>        | <b>+ 8</b> |
| <b>Indiana</b>        | <b>+ 8</b> |
| <b>Wisconsin</b>      | <b>+ 8</b> |

**Increase larger than or equal to the national average.**

**SOURCE: 1996 NAEP Mathematics Assessment.**

**UNITED STATES  
DEPARTMENT OF EDUCATION**



# NEWS

FOR EMBARGOED RELEASE: 2 p.m. EST  
February 27, 1997

CONTACT: David Thomas  
(202) 401-1579

**RILEY ENCOURAGED BY STUDENT PROGRESS IN MATH ACHIEVEMENT;  
URGES STRONGER EFFORTS TO REACH INTERNATIONAL STANDARDS**

According to a new report released today by the Education Department's National Center for Education Statistics, American students have made significant progress in math achievement.

"This is good news. In all three grades tested, math scores improved between 1992-1996, building on gains made since 1990," said U.S. Secretary of Education Richard W. Riley. "But, we're in an era of global competition, where the world is made smaller and smarter every day, by the primary resource of any nation -- its people. So it's imperative that our students measure up to the international benchmarks of excellence in core subjects, especially math. We must expect more if our students are to match their international peers."

Overall, the math results for the nation's 4th-, 8th- and 12th-grade students showed continued improvement from 1990 to 1996. During the same period, average scores rose for white, black and Hispanic students in grades 4 and 12, and for white students in grade 8. The assessment analyzed math score changes over time for the nation as well as for individual states.

The assessment further showed that the percentage of students at or above the "basic" level increased for all three grades, from 1990 to 1992, and from 1992 to 1996.

The results, from the *1996 National Assessment of Educational Progress (NAEP) Mathematics Report Card*, highlight what students know and can do in math in the 4th, 8th, and 12th grades nationally. State-level results for 4th and 8th-graders are presented. In addition, performance trends since 1990 are reported for the nation and for states that participated in the 1990 and/or 1992 and 1996 assessments.

**-MORE-**

TIMSS/NAEP-TIMSS link



U.S. DEPARTMENT OF EDUCATION  
OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT

NATIONAL CENTER FOR EDUCATION STATISTICS

DATE: 8/4

TIME: 8:57

TO: Bill Kincaid

FAX #: 456-7028

FROM: Marty Orland

MESSAGE:

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*Marty*

NUMBER OF PAGES, INCLUDING COVER SHEET: 2

If you did not receive the complete transmission,  
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RETURN FAX NUMBER: (202) 219-1736

August 1, 1997

Dear Chief:

I hope that you are having a productive summer with some opportunities for relaxation and enjoyment of the season. I wanted to take this opportunity to provide you with an update on our effort to provide a link between the State National Assessment of Educational Progress (NAEP) and the Third International Mathematics and Science Study (TIMSS). The goal of this effort was to provide states that participated in State NAEP in 1996 with predicted TIMSS scores. This would allow states to compare their performance in 8th grade mathematics and science with 41 countries and in 4th grade mathematics with 26 countries. As you may remember, I sent you an earlier letter advising you that we would not meet that July 1 target date for releasing the NAEP-TIMSS link.

In performing the work necessary to provide the link and verification of the link, NCES and its contractors found discrepancies between the predicted TIMSS score for 4th grade mathematics and the observed TIMSS scores in the two states that participated in the 1995 TIMSS testing at this grade level. These discrepancies between predicted and observed scores did not occur at eighth grade in either mathematics or science. However, because of these discrepancies at the 4th grade, we think it prudent to check our procedures and data thoroughly before publishing any results. We are working with our contractors and outside experts, and will seek the advice of a panel on how to resolve this situation.

Because these activities are open ended, we currently have no release scheduled for a report on the NAEP-TIMSS link. We will continue to keep you informed of our progress to uncover the cause for the discrepancies at 4th grade in the two States and will announce plans for reporting when we have formulated them at NCES.

On a related issue, because NCES is pursuing the replication of TIMSS in 1999 at Grade 8, we are canceling the proposed 1998 wave of State/District TIMSS. With this new 1999 study, we hope to give districts and states the opportunity to replicate TIMSS in the near future, with the most up-to-date international norms. \*

I want to thank you for your interest in our international benchmarking program at NCES. We will keep you informed as to our progress on the NAEP-TIMSS link, and the possible 1999 TIMSS replication study.

Sincerely,

Pascal D. Forgione, Jr., Ph.D  
Commissioner of Education Statistics