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**STATEMENT ON RESULTS FROM
*THE NATION'S REPORT CARD: MATHEMATICS 2007™***

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The Nation's Report Card™ in mathematics released today has news that is important for all of us. The fact that achievement is up in 2007 compared to 2005—the last time NAEP gave this assessment—gives us cause to be optimistic. But it is hard not to get excited about the fact that math scores have risen almost every time NAEP has given this assessment since it was first administered in 1990 in both grades 4 and 8.

Over the 17 years since then, growth in mathematics achievement in the nation's elementary and middle schools has been sustained and pervasive. NAEP scores have gone up substantially over all parts of the achievement distribution and among almost all racial and ethnic groups. In many cases, the cumulative gains have been extraordinary.

Of course, we are nowhere near where we want to be. Even with major gains, too many students—particularly minority students—score below the *Basic* achievement level. Far more are still below *Proficient*.

It is undeniable that improvements in both 4th- and 8th-grade math, as measured by NAEP, have been substantial. For example, in the 4th-grade, the proportion of students reaching *Proficient* or higher in math was just 13 percent in 1990, and the Governing Board was criticized for setting too high a standard. To date, that proportion has tripled to 39 percent at or above *Proficient* nationwide, and in five states it has climbed to over 50 percent.

Meanwhile, the proportion performing at or above *Basic* in 4th-grade has grown from just 50 percent nationwide in 1990 to 82 percent nationwide this year. Contrary to rumblings that focus has turned away from our best and brightest students, the proportion reaching *Advanced* has gone up as well—from 1 to 6 percent. At 8th-grade, the gains are also strong. The proportion reaching *Proficient* or higher has more than doubled from 15 percent in 1990 to 32 percent in 2007.

There are two other ways of looking at these striking changes. When the NAEP mathematics assessment was first given in 1990, it was placed on a common cross-grade scale. The scale runs from 0 to 500 points across all three grades assessed—4, 8, and 12. In 1990, there was a 50-point gap between the average scores for grades 4 and 8. Since then, the average at grade 4 has risen by 27 points, which represents a gain of more than one-half of the 1990 gap. In addition, the score reached by one-half of the 4th-graders this year (242) is higher than the score that only the top one-quarter of 4th-graders reached in 1990.

There is a similar pattern at 8th-grade. In 1990, there was a 32-point gap in average scores between grades 8 and 12. Over the past 17 years, the average for grade 8 has risen by 19 points in math, which means that this score is also up by more than one-half of the 1990 gap. Finally, the median or 50th percentile for 8th-graders in 2007 is close to where the score at the 75th percentile for 8th-graders was in 1990.

These gains have not been limited to a brief or singular stretch of time over what is now almost two decades. They have not been limited to just a few states—though there are some interesting state-to-state variations. Also, for better or worse, the gains in mathematics have not extended over all parts of the curriculum. There has been some progress in reading, but it is much more limited than in mathematics, even when the demographic changes caused by large-scale immigration are taken into account.

My own view is that the gains in mathematics reflect a broad change in culture and the effort to teach mathematics more rigorously in our schools. The gains reflect a commitment that has extended over many years—probably back to 1983, when *A Nation At Risk* was released by the National Commission on Excellence in Education.

NAEP excels at reporting these trends and patterns in achievement, but it is not set up to tell us clearly why. The background questions NAEP asks of students, schools, and teachers, however, do give some indication of changes happening in the schools. One of the most striking for me is the proportion of students who take algebra in the 8th-grade or earlier. In 1990, only 16 percent were taking algebra in 8th-grade. And I believe that many teachers and school districts thought that students were not ready for algebra. Today, nearly 40 percent of 8th-graders are completing algebra I, and there is a significant amount of evidence to support that teaching more advanced material leads to higher achievement.

In addition to the overall patterns, which are important, NAEP gives us interesting information on some of the specific things that students can and cannot do in math.

The NAEP mathematics assessment covers a broad range of skills and types of questions—including computation, word problems, algebraic reasoning, and data analysis—among others.

For example, a 4th-grade question presented three equivalent fractions:

$$\frac{4}{8} \quad \frac{25}{50} \quad \frac{5}{10}$$

Students were asked to write two more fractions equivalent to the three shown in the question. About 60 percent of 4th-graders answered this question correctly.

Another 4th-grade question presented a story problem that required students to use several steps to find the solution:

*Five classes are going on a bus trip and each class has 21 students.
If each bus holds only 40 students, how many buses are needed for the trip?*

Only 36 percent of the nation's fourth graders received full credit on this question.

Next consider a similar 8th-grade multiple-choice item, on which students were allowed to use a calculator.

Peter bought 45 sheets of plywood at a total cost of \$400. He plans to sell each sheet of plywood for \$15. If Peter has no other expenses, what is the fewest number of sheets he must sell to make a profit?

More than half (53 percent) of 8th-graders answered this question correctly.

One final example asked 8th-graders to identify the graph of the following linear equation:

$$y = 2x + 1$$

Only 25 percent of 8th-grade students chose the correct graph for this equation.

As you can see from the examples I've cited, we still have gaps, and we still have problems. But the fact remains that over the past decade and a half the nation has made strong progress in 4th- and 8th-grade math. It is important for us to understand where our schools have been successful as well as where they have challenges. So as we celebrate the results of our hard work and increased efforts, we must be cognizant of the fact that there is still so much more to do.