



Findings in Brief

Reading and Mathematics 2011

NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS AT GRADES 4 AND 8

 **NATIONAL CENTER FOR
EDUCATION STATISTICS**
Institute of Education Sciences

U.S. Department of Education
NCES 2012-459

Tough as Daisy
What are two other ways to describe the character?
Support with information from



The 2011 NAEP Assessments

Mathematics

The National Assessment of Educational Progress (NAEP) mathematics assessment measures students' knowledge and skills in mathematics and students' ability to apply their knowledge in problem-solving situations. At each grade, students responded to questions designed to measure what they know and can do across five mathematics content areas: number properties and operations; measurement; geometry; data analysis, statistics, and probability; and algebra.

Reading

The NAEP reading assessment measures students' reading comprehension by asking them to read selected grade-appropriate materials and answer questions based on what they have read. At each grade, students responded to questions designed to measure their reading comprehension across two types of texts: literary and informational.

Reporting NAEP Results

Results are based on nationally representative samples of fourth- and eighth-graders.

	Mathematics		Reading	
	Number of students	Number of schools	Number of students	Number of schools
Grade 4	209,000	8,500	213,100	8,500
Grade 8	175,200	7,610	168,200	7,590

NOTE: The number of students is rounded to the nearest ten. The number of schools is rounded to the nearest hundred.

Students' performance is reported as average scores on a 0–500 scale for each subject, and percentages of students at or above three achievement levels.

Basic denotes partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade.

Proficient represents solid academic performance. Students reaching this level have demonstrated competency over challenging subject matter.

Advanced represents superior performance.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2011 Mathematics and Reading Assessments.

The 2011 Mathematics Report Card
nationsreportcard.gov/math_2011

The 2011 Reading Report Card
nationsreportcard.gov/reading_2011

Subject area frameworks for Mathematics (www.nagb.org/publications/frameworks/math-2011-framework.pdf) and Reading (www.nagb.org/publications/frameworks/reading-2011-framework.pdf)

The NAEP Data Explorer (NDE) for customizable tables and graphics to display NAEP results
nces.ed.gov/nationsreportcard/naepdata/

The NAEP Questions Tool (NQT) with access to over 2000 released questions from NAEP assessments in all NAEP subject areas
nces.ed.gov/nationsreportcard/itmrlsx/default.aspx

State Comparisons providing tables and maps comparing results for states and jurisdictions
nces.ed.gov/nationsreportcard/statecomparisons/

State Profiles highlighting each state's performance in NAEP subjects
nces.ed.gov/nationsreportcard/states/

Key Findings

Student performance increases in math at both grades and at grade 8 in reading since 2009

- Higher percentages of fourth- and eighth-graders performed at or above *Proficient* in math, and a higher percentage of eighth-graders performed at or above *Proficient* in reading since 2009.
- A higher percentage of fourth-graders performed at *Advanced* in math, and a higher percentage of eighth-graders performed at *Advanced* in reading since 2009.

Change in students' performance over time

	From 2009				From 1990	From 1992	
	Math		Reading		Math	Reading	
	Grade 4	Grade 8	Grade 4	Grade 8	Both Grades	Grade 4	Grade 8
Average score	▲	▲	◆	▲	▲	▲	▲
Percentages of students							
at or above <i>Basic</i>	◆	◆	◆	◆	▲	▲	▲
at or above <i>Proficient</i>	▲	▲	◆	▲	▲	▲	▲
at <i>Advanced</i>	▲	◆	◆	▲	▲	▲	◆

▲ Indicates the score or percentage was higher in 2011.
◆ Indicates no significant change in the score or percentage in 2011.

About one-half of states show changes in students' performance

- Hawaii was the only state to improve in both subjects and at both grades.
- The District of Columbia, New Mexico, and Rhode Island were the only other states to improve in math at both grades.
- Reading scores were higher at both grades in Maryland.

Change in average state scores from 2009

	Mathematics			Reading		
	Grade 4 only	Grade 8 only	Both grades	Grade 4 only	Grade 8 only	Both grades
Higher	Alabama Arizona Georgia Maryland Wyoming	Arkansas Colorado Maine Mississippi Nevada Ohio Oklahoma Texas West Virginia	District of Columbia Hawaii New Mexico Rhode Island	Alabama Massachusetts	Colorado Connecticut Idaho Michigan Montana Nevada North Carolina Rhode Island	Hawaii Maryland
Lower	New York	Missouri		Missouri South Dakota		

Improvement continues in math

Highest math scores to date

Grade 4 average math scale scores

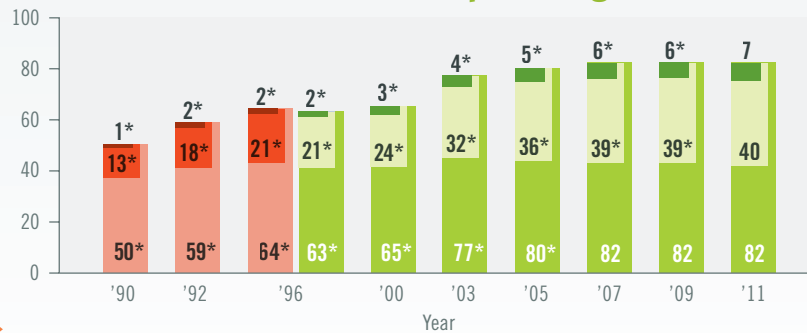


Grade 8 average math scale scores

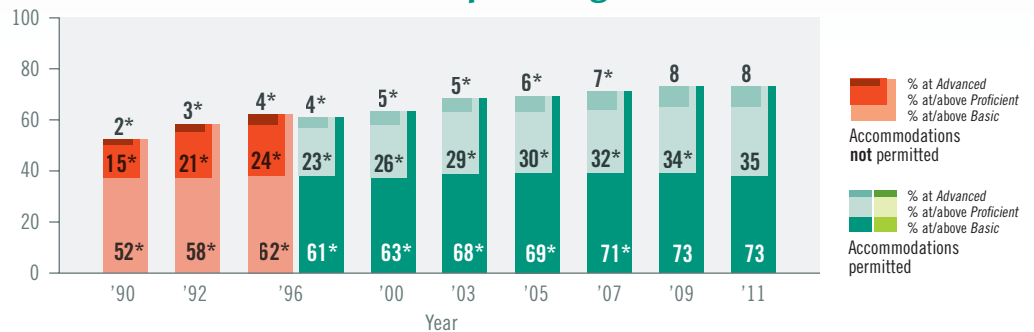


Proportion of students at or above *Proficient* triples at fourth grade and more than doubles at eighth grade since 1990

Grade 4 math achievement-level percentages



Grade 8 math achievement-level percentages

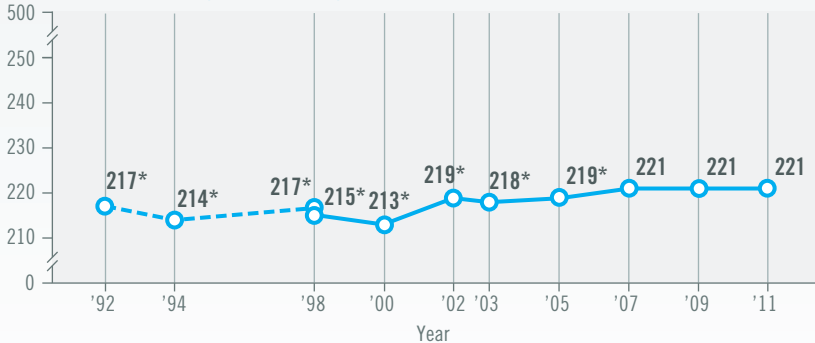


* Significantly different ($p < .05$) from 2011.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1990-2011 Mathematics Assessments.

Fourth- and eighth-grade reading scores show mixed results

Grade 4 average reading scale scores

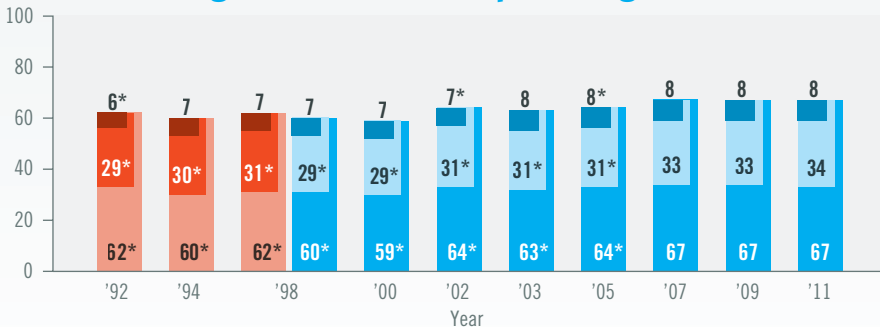


Grade 8 average reading scale scores

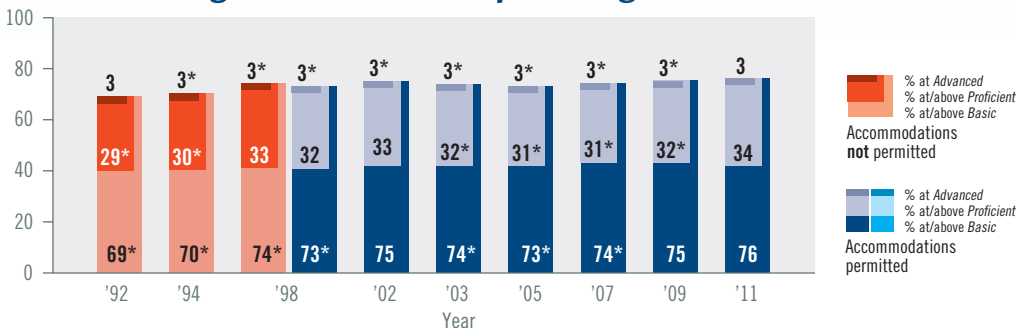


Eighth-graders improve since 2009, no change at grade 4

Grade 4 reading achievement-level percentages



Grade 8 reading achievement-level percentages



About one-third of fourth- and eighth-graders reach the Proficient level

* Significantly different (p < .05) from 2011.

Average scores improve for all racial/ethnic groups at both grades since 1990

Change in average math scores for racial/ethnic groups

Race/ethnicity	Grade 4		Grade 8	
	From 1990	From 2009	From 1990	From 2009
White	▲	▲	▲	◆
Black	▲	▲	▲	◆
Hispanic	▲	▲	▲	▲
Asian/Pacific Islander	▲	◆	▲	◆
American Indian/Alaska Native	‡	◆	‡	◆
Racial/ethnic gaps				
White – Black	Narrowed	◆	◆	◆
White – Hispanic	◆	◆	◆	Narrowed

▲ Indicates the score was higher in 2011.
 ◆ Indicates no significant change in the score or the gap in 2011.
 ‡ Reporting standards not met. Sample size insufficient to permit a reliable estimate.

- The White-Black score gap narrowed in comparison to 1990 at grade 4.
- The White-Hispanic score gap narrowed in comparison to 2009 at grade 8.

Hispanic students improve since 2009

Percentages and average math scores for racial/ethnic groups in 2011

Race/ethnicity	Grade 4		Grade 8	
	Percentage of students	Average score	Percentage of students	Average score
White	54	249	55	293
Black	15	224	15	262
Hispanic	22	229	21	270
Asian	5	257	5	305
American Indian/Alaska Native	1	225	1	265
Native Hawaiian/Other Pacific Islander	#	236	#	269
Two or more races	2	245	2	288

Rounds to zero.
 In compliance with new standards from the U.S. Office of Management and Budget for collecting and reporting data on race/ethnicity, additional information on students' race/ethnicity was collected in 2011 so that results could be reported separately for Asian students, Native Hawaiian/Other Pacific Islander students, and students categorized as being two or more races (multiracial).

Asian students score higher than other racial/ethnic groups

Average scores improve at grade 4 for all racial/ethnic groups since 1992

Change in average reading scores for racial/ethnic groups

Race/ethnicity	Grade 4		Grade 8	
	From 1992	From 2009	From 1992	From 2009
White	▲	◆	▲	▲
Black	▲	◆	▲	▲
Hispanic	▲	◆	▲	▲
Asian/Pacific Islander	▲	◆	◆	◆
American Indian/Alaska Native	‡	◆	‡	◆
Racial/ethnic gaps				
White – Black	Narrowed	◆	Narrowed	◆
White – Hispanic	◆	◆	Narrowed	Narrowed

▲ Indicates the score was higher in 2011.

◆ Indicates no significant change in the score or the gap in 2011.

‡ Reporting standards not met. Sample size insufficient to permit a reliable estimate.

- The White-Black score gap narrowed in comparison to 1992 at both grades.
- The White-Hispanic score gap narrowed in comparison to 2009 at grade 8.

White, Black, and Hispanic students improve since 2009 at grade 8

Percentages and average reading scores for racial/ethnic groups in 2011

Race/ethnicity	Grade 4		Grade 8	
	Percentage of students	Average score	Percentage of students	Average score
White	54	231	55	274
Black	15	205	15	249
Hispanic	22	206	21	252
Asian	5	236	5	277
American Indian/Alaska Native	1	202	1	252
Native Hawaiian/Other Pacific Islander	#	216	#	254
Two or more races	2	227	2	269

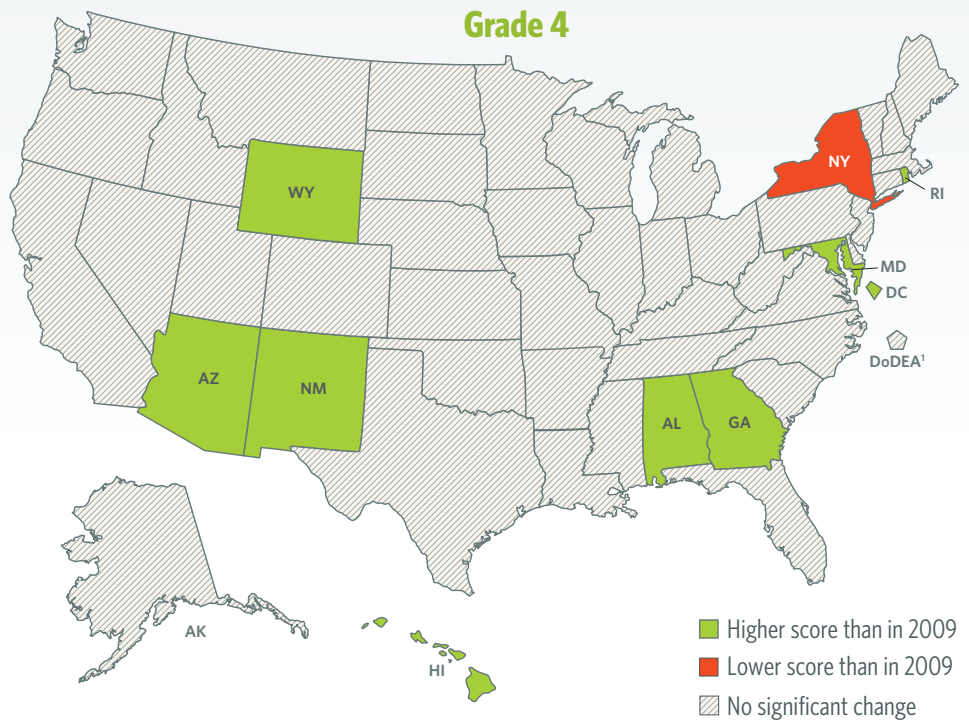
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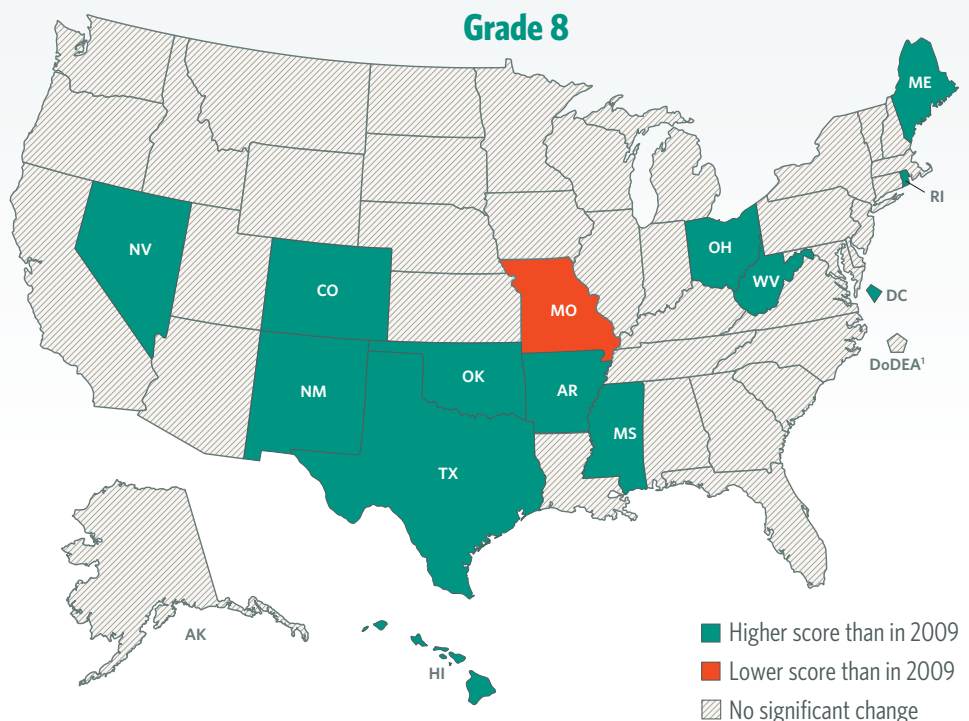
Asian students score higher than other racial/ethnic groups

Average math scores improve at both grades in four states

Scores higher in 9 states and lower in 1 state compared to 2009

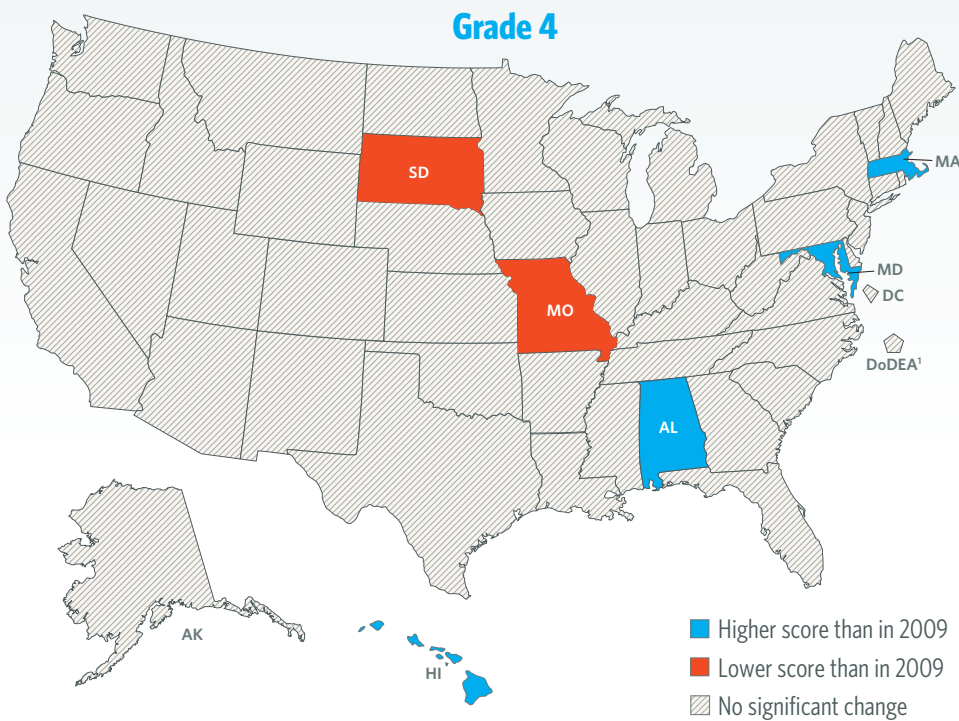


Scores higher in 13 states and lower in 1 state compared to 2009

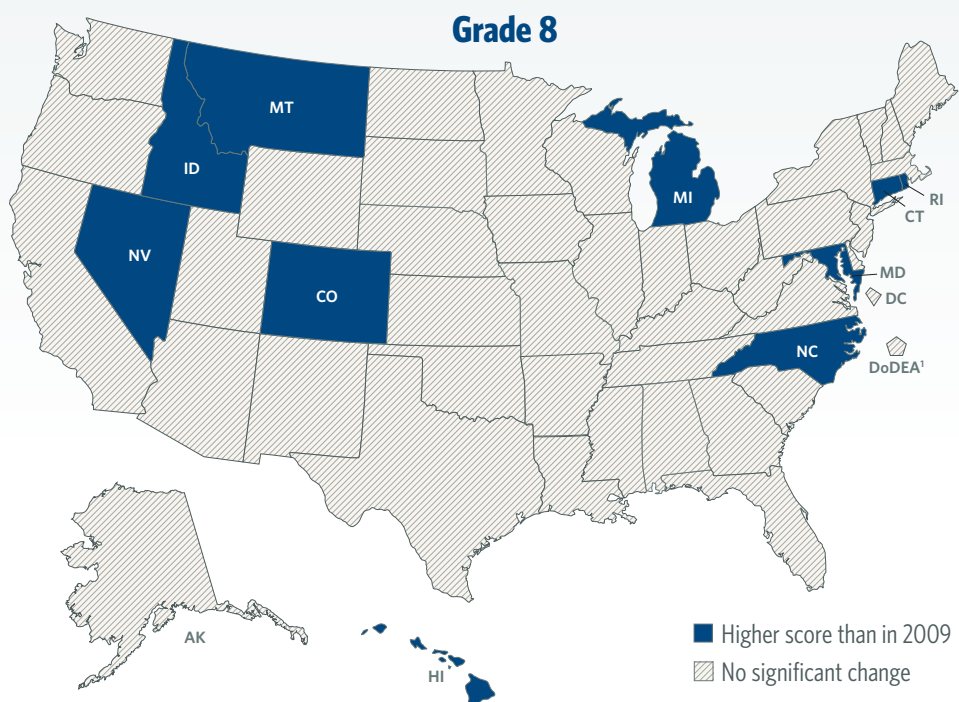


¹ Department of Defense Education Activity (overseas and domestic schools).

Average reading scores improve at both grades in two states



Scores higher in 4 states and lower in 2 states compared to 2009



Scores higher in 10 states compared to 2009

¹ Department of Defense Education Activity (overseas and domestic schools).

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 and 2011 Reading Assessments.

Highest scores to date for students across income levels

Grade 4 mathematics average scores trend by NSLP eligibility

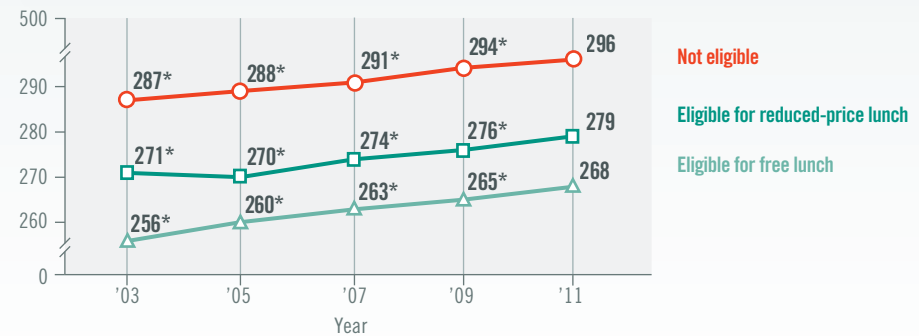


Percentage distribution of students assessed, by NSLP eligibility

Eligibility status	2003	2005	2007	2009	2011
Eligible for free lunch	33*	35*	36*	38*	43
Eligible for reduced-price lunch	8*	7*	6*	6*	5
Not eligible	50*	50*	52*	49*	46
Information not available	10*	8*	7	7*	6

Percentage of students eligible for free lunch continues to increase

Grade 8 mathematics average scores trend by NSLP eligibility



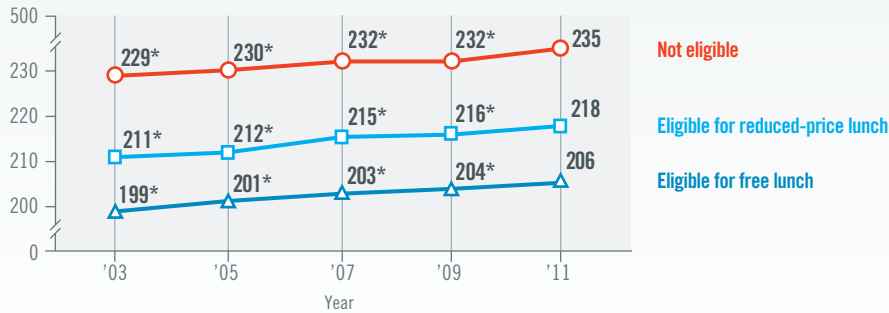
Percentage distribution of students assessed, by NSLP eligibility

Eligibility status	2003	2005	2007	2009	2011
Eligible for free lunch	26*	29*	32*	34*	39
Eligible for reduced-price lunch	7*	7*	6*	6*	5
Not eligible	55*	56*	55*	54*	50
Information not available	11*	8*	7*	7*	6

* Significantly different ($p < .05$) from 2011. NSLP = National School Lunch Program.
NOTE: Detail may not sum to totals because of rounding.

Students across income levels score higher compared to previous assessment years

Grade 4 reading average scores trend by NSLP eligibility



Percentage distribution of students assessed, by NSLP eligibility

Eligibility status	2003	2005	2007	2009	2011
Eligible for free lunch	32*	34*	35*	38*	43
Eligible for reduced-price lunch	8*	7*	6*	6*	5
Not eligible	50*	50*	52*	50*	46
Information not available	10*	8*	7	7*	6

Grade 8 reading average scores trend by NSLP eligibility



Percentage distribution of students assessed, by NSLP eligibility

Eligibility status	2003	2005	2007	2009	2011
Eligible for free lunch	26*	29*	31*	33*	39
Eligible for reduced-price lunch	7*	7*	6*	6*	5
Not eligible	55*	56*	55*	54*	50
Information not available	11*	8*	7*	7	6

* Significantly different ($p < .05$) from 2011. NSLP = National School Lunch Program
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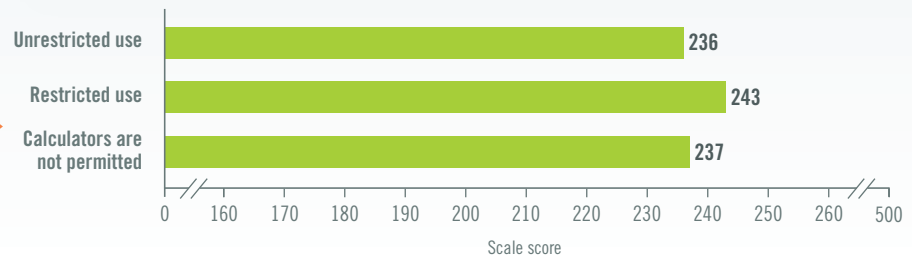
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 2003-11 Reading Assessments.

Percentage of students eligible for free lunch continues to increase

Context for Math Education at Grade 4

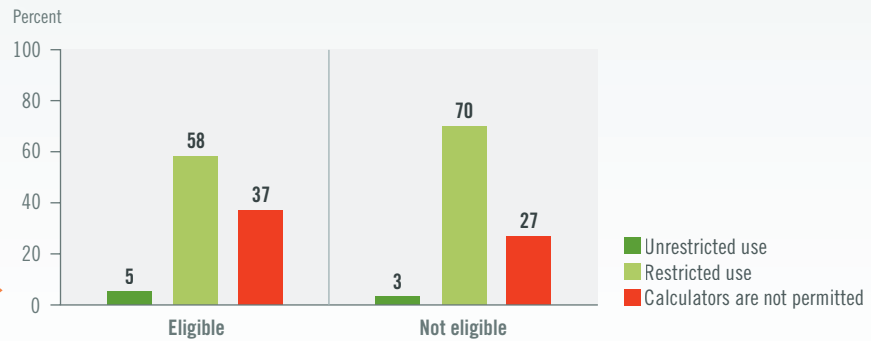
Fourth-graders whose teachers permit restricted calculator use score higher

Average scores in 2011 based on the extent that students are permitted to use calculators during mathematics lessons



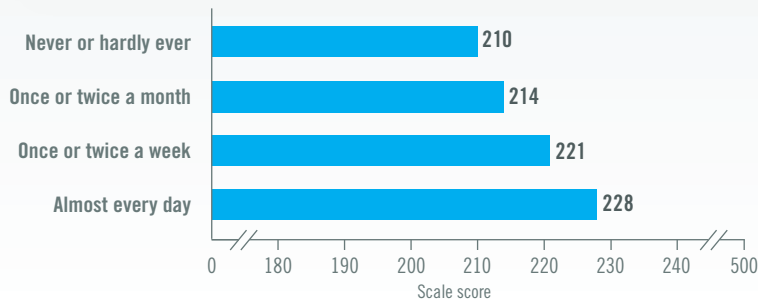
The percentage of students whose teachers did not permit them to use calculators higher for eligible students

Percentage of students assessed, by eligibility for free/reduced-price school lunch and extent of calculator use in mathematics lessons: 2011



Context for Reading Education at Grade 4

Average scores in 2011 by how often students read for fun on their own time



Fourth-graders who read for fun more frequently score higher

Trend in percentage of students reading for fun

Frequency of reading for fun	2002	2003	2005	2007	2009	2011
Never or hardly ever	15*	15*	16*	18*	15*	14
Once or twice a month	14*	15*	15*	16*	15*	14
Once or twice a week	26	25	26*	27*	25	25
Almost every day	45*	45*	43*	40*	44*	46

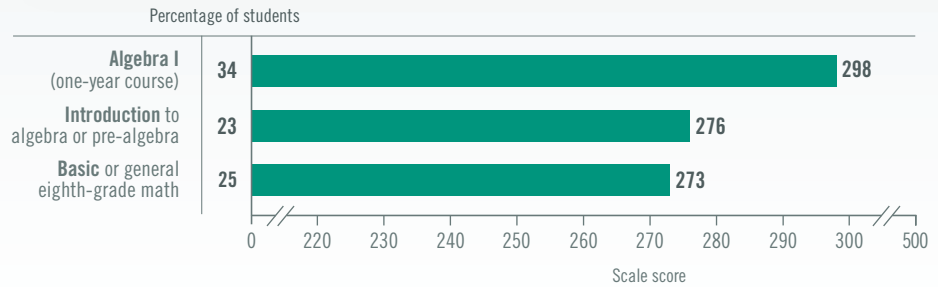
*Significantly different ($p < .05$) from 2011.
NOTE: Detail may not sum to totals because of rounding.

A higher percentage of fourth-graders reading for fun almost every day than in previous years



Context for Math Education at Grade 8

Average scores in 2011 for students taking selected mathematics classes



Eighth-graders who report taking algebra I score higher

- The percentage of Asian students taking algebra I was higher than the percentages of most other racial/ethnic groups (it was not significantly different from the percentage of Native Hawaiian/Other Pacific Islander students).
- The percentage of American Indian/Alaska Native students taking an introductory algebra class was higher than the percentages of other racial/ethnic groups.
- The percentages of students taking a basic math course were higher for Black, Hispanic, and American Indian/Alaska Native students than for White, Asian, and multiracial students.

Percentage of racial/ethnic groups in 2011 taking selected mathematics classes

Type of class taken	White	Black	Hispanic	Asian	American Indian/Alaska Native	Native Hawaiian/Other Pacific Islander	Two or more races
Algebra I (one-year course)	36	28	33	45	24	37	34
Introduction to algebra or pre-algebra	25	23	20	13	32	20	24
Basic or general eighth-grade math	23	30	29	13	29	26	23

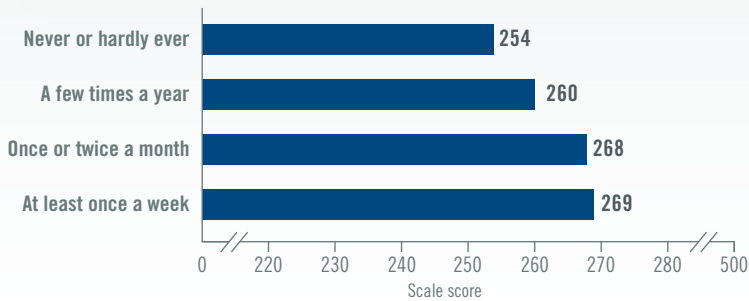
Asian students more likely to take algebra I than White, Black, or Hispanic students

NOTE: Results are not shown for the other types of mathematics classes taken by students.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2011 Mathematics Assessment.

Context for Reading Education at Grade 8

Average scores in 2011 by how often students reported having a class discussion about something they read in English class



Eighth-graders having more frequent class discussions score higher

Percentage of students reporting how often they had a class discussion about something they had read in 2011, by selected school characteristics

Characteristics	Frequency of class discussion			
	Never or hardly ever	A few times a year	Once or twice a month	At least once a week
Type of school				
Public	11	18	24	47
Private	8	12	19	61
School location				
City	10	16	23	50
Suburb	10	17	24	49
Town	12	19	24	45
Rural	11	18	24	46
School enrollment				
1-399	10	16	21	52
400-599	11	17	24	49
600-799	10	17	24	49
800-999	10	19	25	45
1000 or more	11	18	25	46

Frequency of eighth-grade class discussion differs by school type, location, and enrollment

NOTE: Detail may not sum to totals because of rounding.

In 2011, the percentages of eighth-graders who reported having a class discussion at least once a week were

- lower for students attending public schools than for those attending private schools,
- higher for students attending schools in city and suburban locations than for those attending schools in town or rural locations, and
- higher for students attending schools with enrollments of 1 to 399 students than with larger school enrollments.

What is The Nation's Report Card™?

The Nation's Report Card™ informs the public about the academic achievement of elementary and secondary students in the United States. Report cards communicate the findings of the National Assessment of Educational Progress (NAEP), a continuing and nationally representative measure of achievement in various subjects over time.

Since 1969, NAEP assessments have been conducted periodically in reading, mathematics, science, writing, U.S. history, civics, geography, and other subjects. NAEP collects and reports information on student performance at the national and state levels, making the assessment an integral part of our nation's evaluation of the condition and progress of education. Only academic achievement data and related background information are collected. The privacy of individual students and their families is protected.

NAEP is a congressionally authorized project of the National Center for Education Statistics (NCES) within the Institute of Education Sciences of the U.S. Department of Education. The Commissioner of Education Statistics is responsible for carrying out the NAEP project. The National Assessment Governing Board oversees and sets policy for NAEP.

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