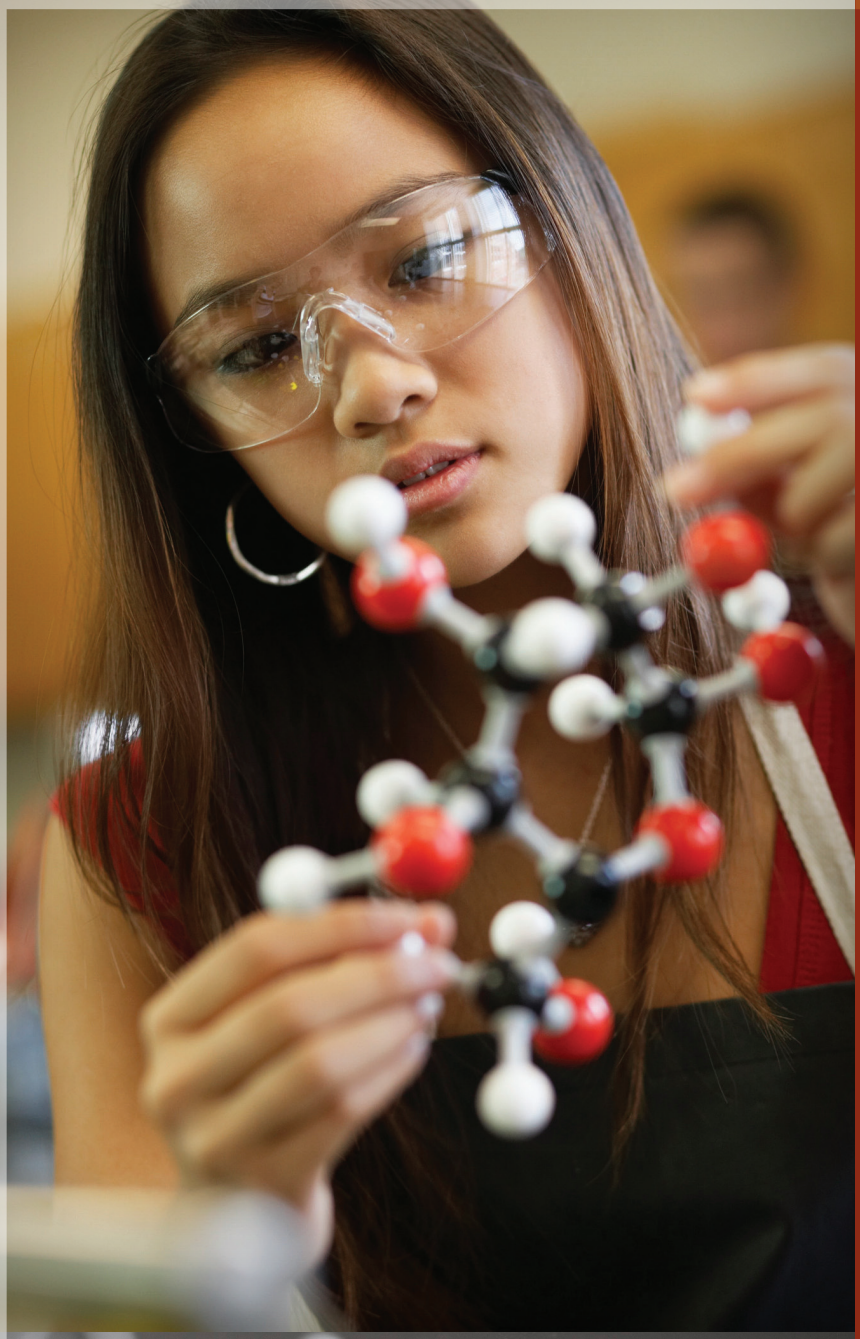
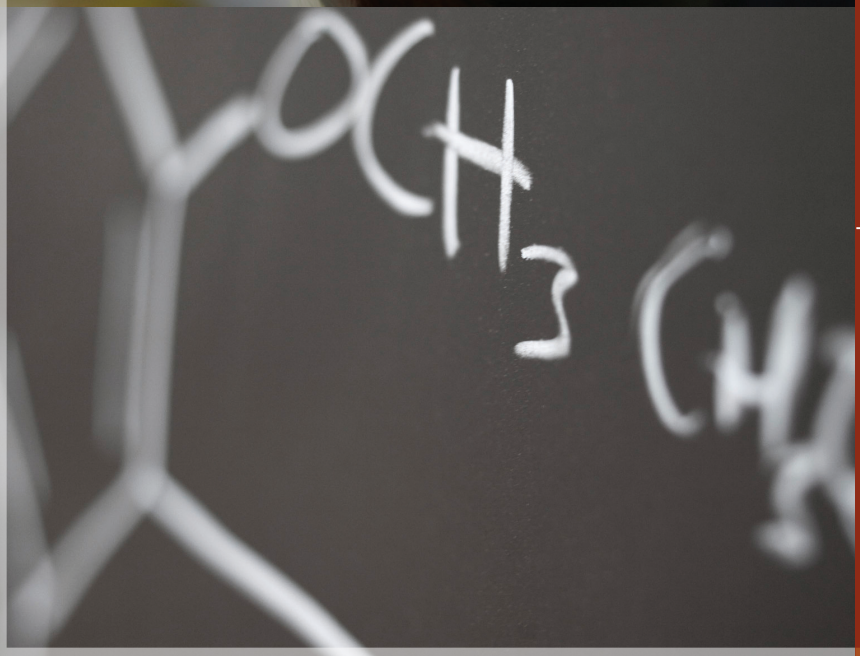




The Nation's Report Card

Science 2009

TRIAL URBAN DISTRICT ASSESSMENT

RESULTS AT GRADES 4 AND 8

ies NATIONAL CENTER FOR EDUCATION STATISTICS
Institute of Education Sciences
U.S. Department of Education
NCES 2011-452

Contents

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, state, and local 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.

Executive Summary

Results from the 2009 NAEP Trial Urban District Assessment (TUDA) make it possible to compare the performance of public school students in participating urban districts to public school students in the nation and, more specifically, students in large cities (i.e., cities with populations of 250,000 or more) across the nation.

Students in most participating districts score lower than the nation in 2009

Science results are based on representative samples of fourth- and eighth-grade public school students from the 17 urban districts that volunteered to participate in the 2009 assessment. Between 900 and 2,200 students were assessed at each grade in each of the participating districts.

At grade 4, the average score in large cities overall and the average scores in 14 of the 17 participating districts were lower than the average score for the nation. Scores for Austin, Charlotte, and Jefferson County were not significantly different from the score for the nation.

At grade 8, the average score in large cities overall and the average scores in 16 of the 17 districts were lower than the average score for the nation. The score for Austin was not significantly different from the score for the nation.

A New Science Assessment

The NAEP science assessment was updated in 2009 to keep the content current with key developments in science, curriculum standards, assessments, and research. Because of the recent changes to the assessment, the results from 2009 cannot be compared to those from previous assessment years; however, they provide a current snapshot of what fourth- and eighth-graders in participating urban districts know and can do in science that will serve as the basis for comparisons on future science assessments.

Comparison of national and district average science scores in 2009

Jurisdiction	GRADE 4	GRADE 8
Nation	149	149
Large city[1]	▼ 14	▼ 15
Atlanta	▼ 15	▼ 22
Austin	◆ –2	◆ 1
Baltimore City	▼ 31	▼ 35
Boston	▼ 10	▼ 19
Charlotte	◆ 1	▼ 8
Chicago	▼ 24	▼ 27
Cleveland	▼ 34	▼ 27
Detroit	▼ 38	▼ 35
Fresno	▼ 27	▼ 24
Houston	▼ 13	▼ 11
Jefferson County (KY)	◆ 1	▼ 3
Los Angeles	▼ 25	▼ 25
Miami-Dade	▼ 5	▼ 11
Milwaukee	▼ 23	▼ 26
New York City	▼ 13	▼ 19
Philadelphia	▼ 28	▼ 30
San Diego	▼ 5	▼ 11

▼ Lower average score than the nation.

◆ No significant difference between the district and the nation.

[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

NOTE: The score-point differences appear within each symbol and are based on the differences between the unrounded scores for the nation and the district as opposed to the rounded scores shown in figures presented in the report. A score-point difference preceded by a minus sign (-) indicates that the score for the district was numerically lower than the score for the nation.

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

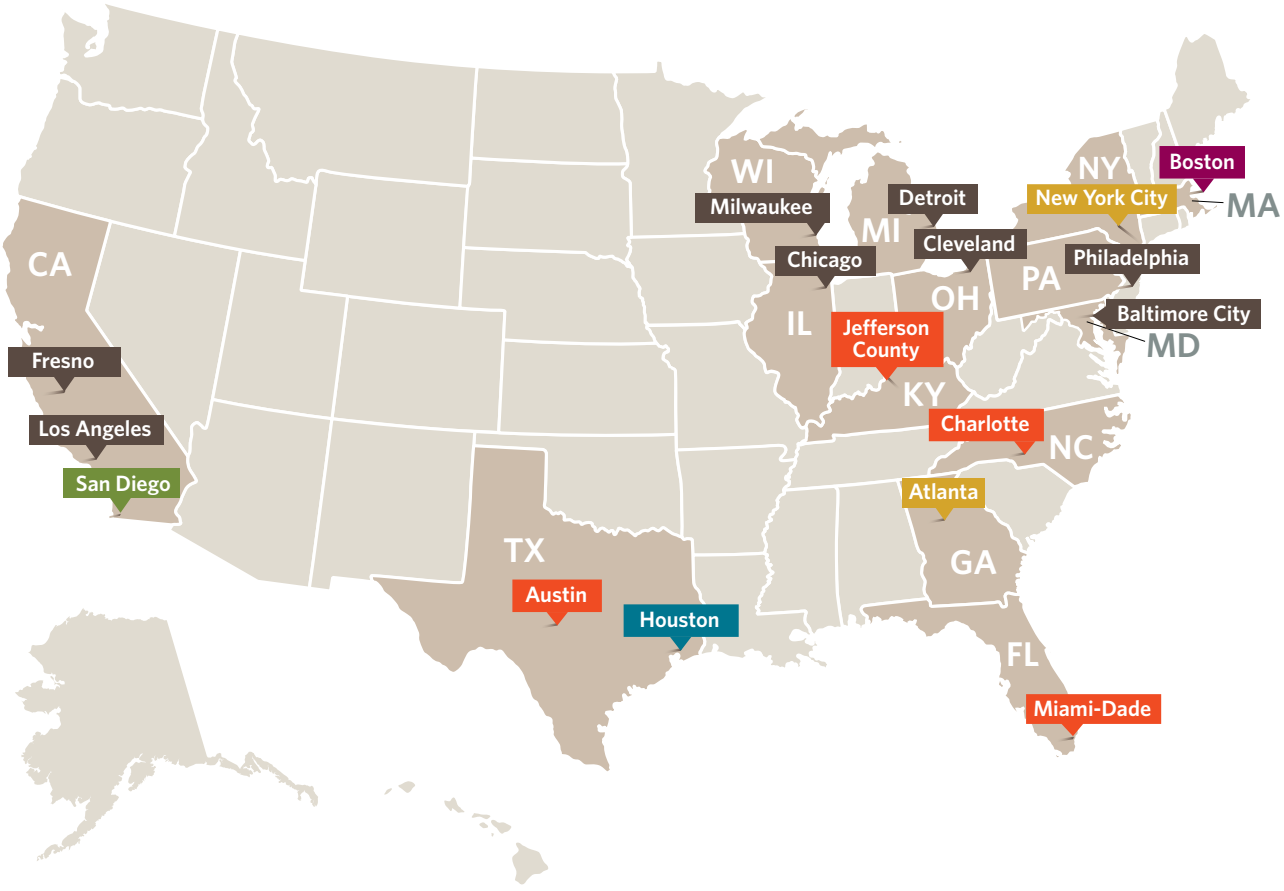
Four districts score above large cities at both grades in 2009

Among the 17 urban districts that participated in the 2009 science assessment, scores for both fourth- and eighth-graders in 4 districts were higher than the scores for their respective peers attending public schools in large cities overall. Scores for both grades in 8 districts were lower than the scores for large cities nationally.

In comparison to the average scores for large cities in the nation,

- Austin, Charlotte, Jefferson County (Louisville, KY), and Miami-Dade had higher scores at both grades;
- scores in San Diego were higher at grade 4 and not significantly different at grade 8;
- scores in Boston were higher at grade 4 and lower at grade 8;
- scores in Houston were not significantly different at grade 4 and higher at grade 8;
- scores in Atlanta and New York City were not significantly different at grade 4 and lower at grade 8; and
- Baltimore City, Chicago, Cleveland, Detroit, Fresno, Los Angeles, Milwaukee, and Philadelphia had lower scores at both grades.

Comparison of district and large city average science scores in 2009



A Closer Look at District Results Compared to Large Cities

Differences in overall average scores between participating districts and large cities were not always consistent across student groups. In Boston, for example, the overall average science score was lower than the score for large cities at grade 8. However, the scores for White, Black, and Hispanic students in the district were not significantly different from the score for their peers in all large cities.

Among the four districts where overall scores were higher than the score for large cities at both grades 4 and 8, Charlotte was the only district to have higher scores for White, Black, and Hispanic students, and for students eligible for school lunch (an indicator of lower family income) at grade 4. Austin was the only district to have higher scores for White, Black, and Hispanic students, and for students from lower-income families at grade 8.

Among the eight districts where average scores at both grades were lower than the score for large cities, scores were lower for racial/ethnic groups with samples large enough to report results and for students from lower-income families at both grades in Baltimore City and Philadelphia.

Comparison of district and large city average science scores in 2009

	GRADE 4					GRADE 8				
		Race/ethnicity					Race/ethnicity			
District	Overall	White	Black	Hispanic	Eligible for school lunch	Overall	White	Black	Hispanic	Eligible for school lunch
Atlanta	◆	▲	▲	‡	▼	▼	‡	◆	‡	▼
Austin	▲	▲	◆	▲	▲	▲	▲	▲	▲	▲
Baltimore City	▼	▼	▼	‡	▼	▼	‡	▼	‡	▼
Boston	▲	◆	▲	▲	▲	▼	◆	◆	◆	◆
Charlotte	▲	▲	▲	▲	▲	▲	▲	▲	◆	◆
Chicago	▼	◆	▼	◆	▼	▼	▼	▼	◆	▼
Cleveland	▼	▼	▼	▼	▼	▼	▼	◆	◆	◆
Detroit	▼	‡	▼	◆	▼	▼	‡	▼	◆	▼
Fresno	▼	▼	▼	▼	▼	▼	▼	◆	▼	▼
Houston	◆	▲	▲	▲	▲	▲	▲	▲	▲	▲
Jefferson County (KY)	▲	◆	▲	◆	▲	▲	◆	▲	‡	▲
Los Angeles	▼	▼	◆	▼	▼	▼	▼	▼	▼	▼
Miami-Dade	▲	▲	◆	▲	▲	▲	◆	◆	▲	▲
Milwaukee	▼	◆	▼	◆	▼	▼	▼	▼	◆	▼
New York City	◆	◆	◆	◆	▲	▼	▼	◆	▼	◆
Philadelphia	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
San Diego	▲	◆	◆	◆	◆	◆	◆	◆	◆	◆

▲ Higher average score than large city.
▼ Lower average score than large city.
◆ No significant difference between the district and large city.
‡ Sample size insufficient to permit a reliable estimate.

NOTE: Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

Demographics vary among the nation, large cities, and individual urban districts

When comparing the results for urban districts to results for the nation and large cities, it is important to consider how the demographics of the jurisdictions are different. Nationally, the percentages of White students at both grades 4 and 8 were higher than the combined percentages of Black and Hispanic students in 2009, while the opposite was true for large cities and for most of the participating urban districts.

Large cities and participating urban districts also differed from the nation in the proportion of students eligible for the National School Lunch Program. While the percentages of students eligible for free/reduced-price school lunch in the nation were 48 percent at grade 4 and 43 percent at grade 8, the percentages of eligible students in the districts ranged from 47 to 100 percent.

More detailed information about the demographic characteristics of fourth- and eighth-graders in the nation, large cities, and participating districts is included in this report.

Introduction

A primary goal of the NAEP Trial Urban District Assessment (TUDA) is to measure what students in the nation's large urban school districts know and can do in academic subjects. Seventeen urban districts participated in the TUDA in science in 2009.

The New Science Framework

The National Assessment Governing Board oversees the development of NAEP frameworks that describe the specific knowledge and skills that should be assessed in each subject. Frameworks incorporate ideas and input from subject-area experts, educators, policymakers, parents, and others. The NAEP science assessment is a key measure in informing the nation on how well the goal of scientific literacy for all students is being met. Thus, the new *Science Framework for the 2009 National Assessment of Educational Progress* was developed to keep the assessment content current with key developments in science standards (including the *National Science Education Standards*[1] and *Benchmarks for Science Literacy*[2]), innovative assessment approaches, and recent research in both science and cognition. This 2009 framework replaces the framework that was used for earlier NAEP science assessments in 1996, 2000, and 2005. Because of the recent changes to the assessment content, the results from 2009 cannot be compared to those from previous assessment years.

In contrast to the earlier framework, the 2009 science framework employs crosscutting questions, that is, questions classified as one content area that also require knowledge of one or both of the other content areas. In addition, the framework gives greater emphasis to Earth and space sciences in the eighth-grade assessment and life and physical sciences in the twelfth-grade assessment. It defines four science practices that take into account cognitive conceptual complexity and describe how students use their science knowledge. It also recommends the use of new question types and the inclusion of questions on technological design. The complete science framework for the 2009 assessment, including additional information on how it differs from the previous framework, is available at http://www.nagb.org/publications/frameworks/science-09.pdf.

Science content

The 2009 framework organizes science content into three broad content areas, physical science, life science, and Earth and space sciences, reflecting the science curriculum students are generally exposed to across the grades K through 12. The new framework recommends an approximately equal distribution of questions across the three content areas at grade 4. At grade 8, there is a greater emphasis on Earth and space sciences.

Science Content Areas

Physical science includes concepts related to properties and changes of matter, forms of energy, energy transfer and conservation, position and motion of objects, and forces affecting motion.

Life science includes concepts related to organization and development, matter and energy transformations, interdependence, heredity and reproduction, and evolution and diversity.

Earth and space sciences include concepts related to objects in the universe, the history of the Earth, properties of Earth materials, tectonics, energy in Earth systems, climate and weather, and biogeochemical cycles.

[1] National Research Council (1996). *National Science Education Standards*. Coordinating Council for Education, National Committee on Science Education Standards and Assessment. Washington, DC: National Academy Press.
[2] American Association for the Advancement of Science (1993). *Benchmarks for Science Literacy*. New York: Oxford University Press.

Science practices

Four science practices are defined in the framework in addition to the science content areas. These four practices—identifying science principles, using science principles, using scientific inquiry, and using technological design—describe *how* students use their scientific knowledge by measuring what they *are able to do* with the science content. Sixty percent of the 2009 assessment focused on conceptual understanding (i.e., identifying and using science principles), 30 percent focused on using scientific inquiry, and 10 percent focused on using technological design.

Science Practices

Identifying science principles focuses on students' ability to recognize, recall, define, relate, and represent basic science principles in each of the three content areas.

Using science principles focuses on the importance of science knowledge in making accurate predictions about and explaining observations of the natural world.

Using scientific inquiry focuses on designing, critiquing, and evaluating scientific investigations; identifying patterns in data; and using empirical evidence to validate or criticize conclusions.

Using technological design focuses on the systematic process of applying science knowledge and skills to propose or critique solutions to real-world problems, identify trade-offs, and anticipate effects of technological design decisions.

Types of Questions

The results presented in this report are based on students' responses to both multiple-choice and constructed-response (open-ended) questions. Short constructed-response questions required students to write a concise explanation for a given situation or result, illustrate with a brief example, or describe a quantitative relationship in response to the question provided. Extended constructed-response questions generally required students to solve a problem by applying and integrating science concepts and/or required students to analyze a science situation and explain a concept. At both grades 4 and 8, students spent approximately one-half of the assessment time answering constructed-response questions.

A separate sample of students also completed hands-on performance or interactive computer tasks to further probe their abilities to combine their understanding with the investigative skills that reflect science practices as specified in the 2009 framework. The hands-on and interactive computer tasks in the 2009 science assessment were administered as part of a NAEP research study. Results for these tasks did not contribute to the results in this report and will be reported separately.

Reporting NAEP Results

The NAEP science results are reported for public school students in the following 17 urban districts that volunteered to participate in 2009:

Atlanta Public Schools
Austin Independent School District
Baltimore City Public Schools
Boston Public Schools
Charlotte-Mecklenburg Schools
Chicago Public Schools
Cleveland Metropolitan School District
Detroit Public Schools
Fresno Unified School District
Houston Independent School District
Jefferson County Public Schools (Louisville, KY)
Los Angeles Unified School District
Miami-Dade County Public Schools
Milwaukee Public Schools
New York City Department of Education
San Diego Unified School District
School District of Philadelphia

The District of Columbia public schools that participated in the reading and mathematics TUDAs were unable to participate in the 2009 science assessment because the samples for the mandatory reading and mathematics assessments included most of their fourth- and eighth-grade students. Only a few schools in the District of Columbia participated in the science assessment at each grade to provide data for the national sample in science.

Representative samples of between 900 and 2,200 fourth-graders and between 900 and 2,100 eighth-graders were assessed in each district. Sample sizes are proportionate to district enrollment (see appendix table **A-1** for the number of participating schools and the number of students assessed in each district). Charter schools are included in TUDA results if they contribute to the district's Adequate Yearly Progress (AYP) results as part of the Elementary and Secondary Education Act (see the Technical Notes for more information).

Scale scores

Proficiency scales were developed for each grade in 2009 to facilitate NAEP science reporting and to establish the baseline for future science assessment results. For grades 4 and 8, the scales were set ranging from 0 to 300 with a mean of 150 and a standard deviation of 35. That is, the overall average student performance for each grade corresponds to a score of 150. Because NAEP scales are developed independently for each subject, scores cannot be compared across subjects. Similarly, although the scales are identical, the scale scores for grades 4 and 8 were derived independently; therefore, scores cannot be compared across grades.

Average scores for the three subscales based on each of the science content areas specified in the framework are also available in the NAEP Data Explorer at http://nces.ed.gov/nationsreportcard/naepdata/, and are reported on the 0–300 scale for each grade. Because subscales are set separately for each content area, comparisons cannot be made from one area to another.

Achievement levels

Based on recommendations from policymakers, educators, and members of the general public, the Governing Board sets specific achievement levels for each subject area and grade. Achievement levels are performance standards showing what students know and can do at the *Basic*, *Proficient*, and *Advanced* levels. NAEP results are reported as percentages of students performing at or above each level.

As provided by law, NCES, upon review of congressionally mandated evaluations of NAEP, has determined that achievement levels are to be used on a trial basis and should be interpreted with caution. The NAEP achievement levels have been widely used by national and state officials.

NAEP 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.

Additional information about NAEP achievement levels can be found at http://nces.ed.gov/nationsreportcard/tdw/analysis/describing_achiev.asp.

Interpreting the Results

The performance of students in each participating urban district is compared to the performance of public school students in the nation and in large cities (i.e., cities with populations of 250,000 or more). The comparison to the nation's large cities is made because students in these cities represent a peer group with characteristics that may be more similar to the characteristics of students in the 17 TUDA districts than the characteristics of students in the nation overall.

NAEP reports results using widely accepted statistical standards; findings are reported based on a statistical significance level set at .05 with appropriate adjustments for multiple comparisons, as well as adjustments for the part-whole relationship when individual districts are compared to results for their home state, large cities, or the nation (see the Technical Notes for more information). The symbol (*) is used in tables and figures to indicate that the scores or percentages being compared are significantly different.

Although comparisons are made in students' performance based on demographic characteristics, the results cannot be used to establish a cause-and-effect relationship between student characteristics and achievement. Many factors may influence student achievement, including educational policies and practices, available resources, and demographic characteristics of the student body.

Accommodations and exclusions in NAEP

It is important to assess all selected students from the target population, including students with disabilities (SD) and English language learners (ELL). To accomplish this goal, many of the same testing accommodations allowed on state and district assessments (e.g., extra testing time or individual rather than group administration) are provided for SD and ELL students participating in NAEP. Even with the availability of accommodations, some students may still be excluded. Variations in exclusion and accommodation rates, due to differences in policies and practices for identifying and including SD and ELL students, should be considered when comparing students' performance across districts. Districts also vary in their proportion of special-needs students, particularly ELL students. While the effect of exclusion is not precisely known, comparisons of performance results could be affected if exclusion rates are markedly different among districts. See appendix tables **A-2** and **A-3** for the percentages of students accommodated and excluded in each district.

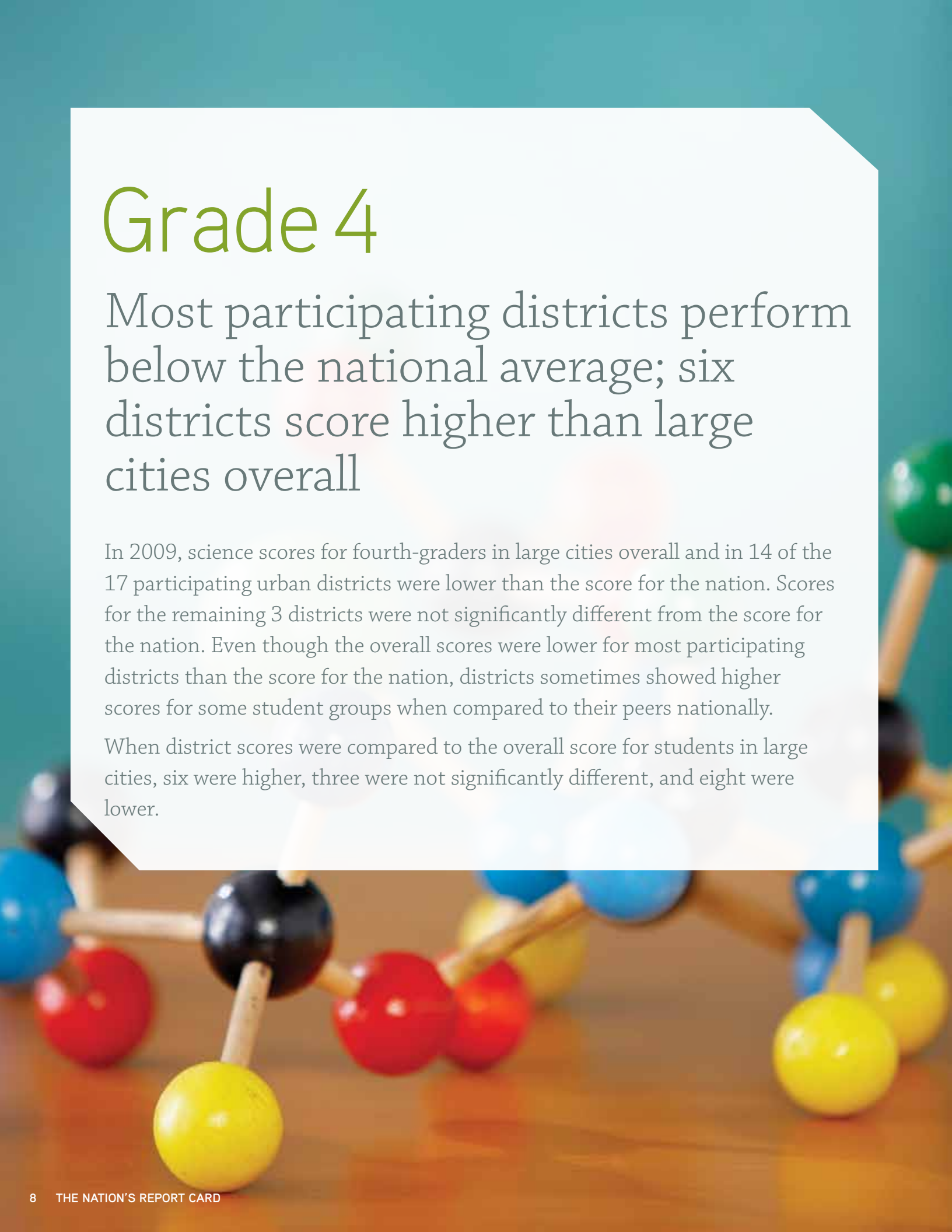
More information about NAEP's policy on the inclusion of special-needs students is available at http://nces.ed.gov/nationsreportcard/about/inclusion.asp.

Grade 4

Most participating districts perform below the national average; six districts score higher than large cities overall

In 2009, science scores for fourth-graders in large cities overall and in 14 of the 17 participating urban districts were lower than the score for the nation. Scores for the remaining 3 districts were not significantly different from the score for the nation. Even though the overall scores were lower for most participating districts than the score for the nation, districts sometimes showed higher scores for some student groups when compared to their peers nationally.

When district scores were compared to the overall score for students in large cities, six were higher, three were not significantly different, and eight were lower.

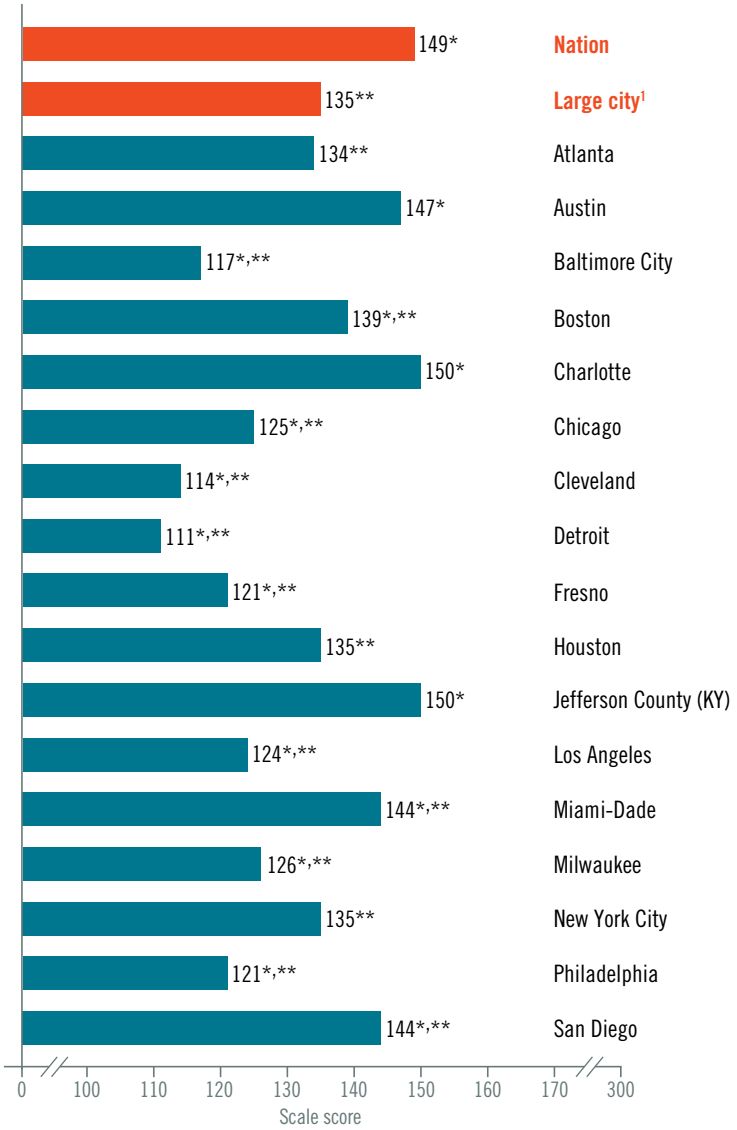


Six districts score higher than large cities

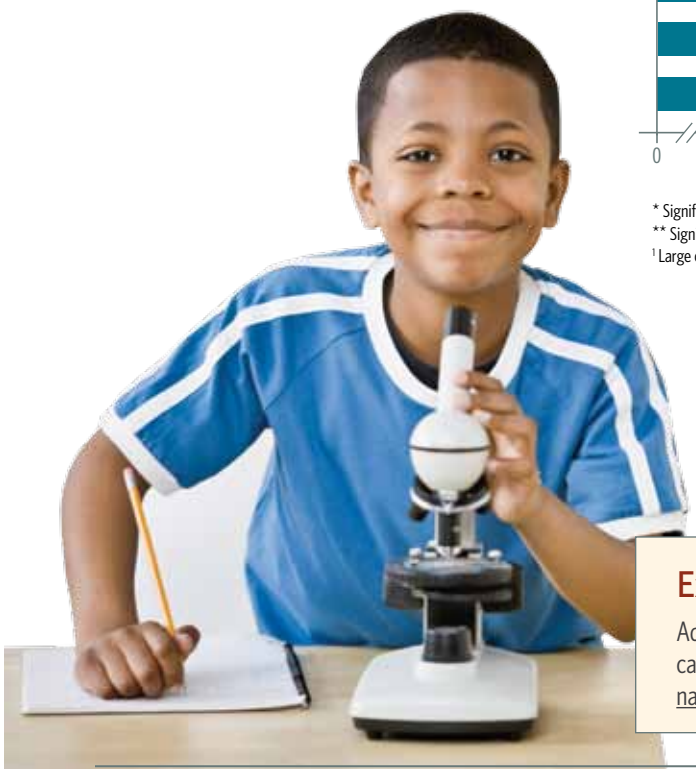
When compared to the average score for large cities nationally in 2009, scores were higher in Austin, Boston, Charlotte, Jefferson County, Miami-Dade, and San Diego (figure **1**). Average scores for Atlanta, Houston, and New York City were not significantly different, and scores for the remaining eight districts were lower.

The average science score for fourth-graders attending public schools in large cities was 14 points lower than the score for public school students in the nation. Scores in most of the participating urban districts were also lower than the national average with the exceptions of Austin, Charlotte, and Jefferson County where scores were not significantly different from the national average.

Figure **1.** Average scores in NAEP science for fourth-grade public school students, by jurisdiction: 2009



* Significantly different ($p < .05$) from large city.
** Significantly different ($p < .05$) from the nation.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.



Explore Additional Results

Additional Results for the 17 districts that participated in the 2009 science assessment can be found in the NAEP Data Explorer at http://nces.ed.gov/nationsreportcard/naepdata/.

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

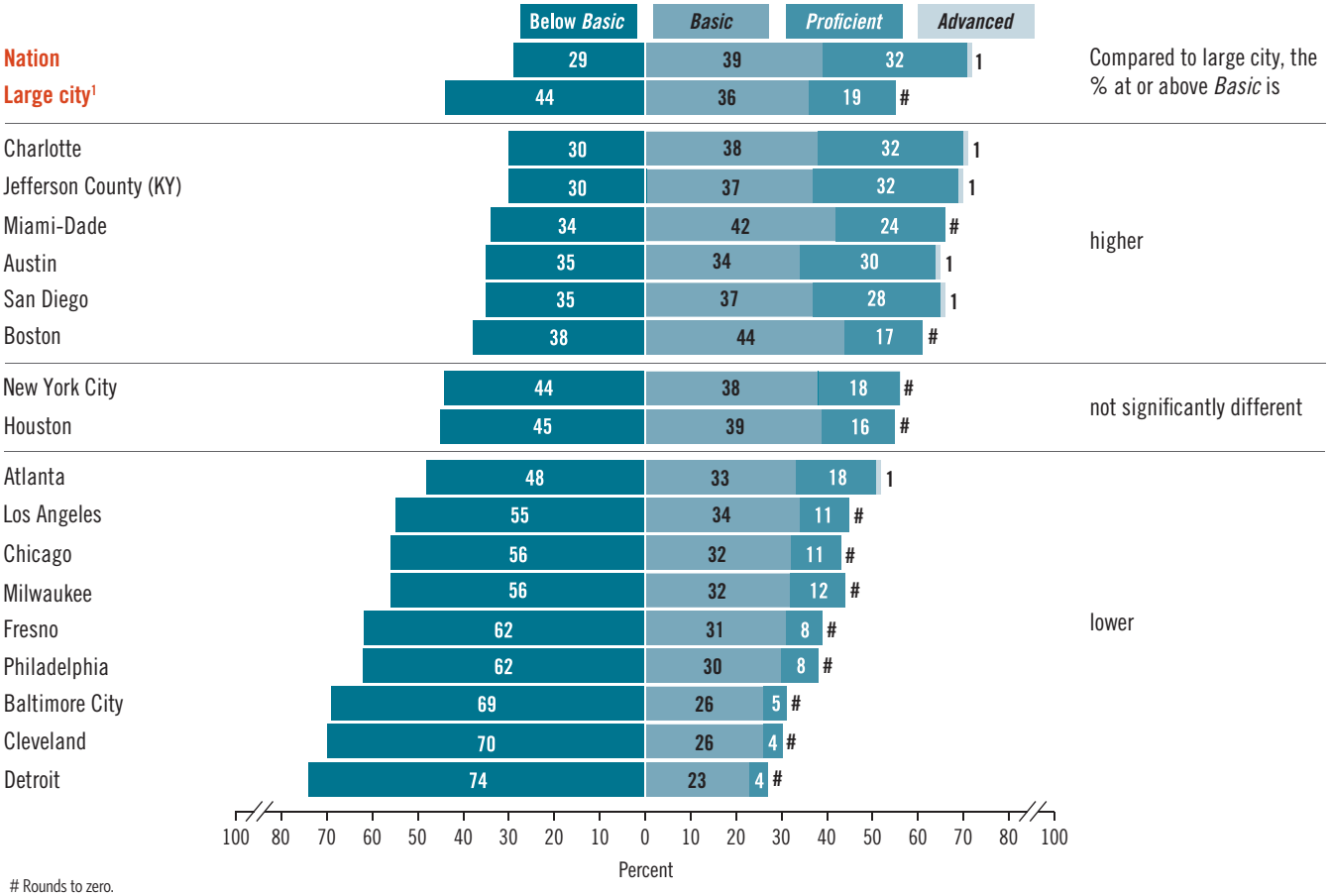
Districts show range of knowledge and skills

Among the 17 districts that participated in the 2009 science assessment, the percentages of students performing at or above the *Basic* level ranged from 26 percent in Detroit to 70 percent in Charlotte and Jefferson County (figure **2**).[3] All the districts had some students performing at or above the *Proficient* level.

The same six districts with scores higher than the overall score for large cities (Austin, Boston, Charlotte, Jefferson County, Miami-Dade, and San Diego) also had higher percentages of students performing at or above *Basic*. The eight districts with scores lower than large cities (Baltimore City, Chicago, Cleveland, Detroit, Fresno, Los Angeles, Milwaukee, and Philadelphia) also had lower percentages of students performing at or above *Basic*, as did Atlanta. The percentages of students at or above *Basic* in Houston and New York City were not significantly different from the percentage in large cities.

[3] Percentages are based on the sum of unrounded percentages as opposed to the rounded percentages shown in the figure.

Figure **2.** Achievement-level results in NAEP science for fourth-grade public school students, by jurisdiction: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Districts vary in demographic makeup

When comparing the results for urban districts to results for the nation and large cities, it is important to consider the differences in their demographic makeup. In 2009, the percentage of White fourth-graders in the nation was higher than the combined percentage of Black and Hispanic fourth-graders (table **1**). The opposite was true for large cities and for 16 districts where the combined percentages of Black and Hispanic students were higher than the percentage of White students. Jefferson County was the only district where the percentage of White students was higher.

Large cities and districts also differed from the nation in the proportion of students eligible for the National School Lunch Program (see the Technical Notes for eligibility criteria). Forty-eight percent of fourth-graders were eligible for free/reduced-price school lunch nationally compared to 71 percent in large cities. Charlotte was the only participating district with a percentage of eligible students comparable to the nation. The percentages of eligible students in the other districts were all higher than the nation—ranging from 60 percent in Jefferson County and San Diego to 100 percent in Cleveland, where all students were categorized as eligible.

Large cities in general, and some of the participating districts, also often had higher percentages of English language learners (ELL). The percentage of identified ELL students in large cities was 20 percent compared to 10 percent in the nation overall. The percentages of ELL students in Austin, Fresno, Houston, Los Angeles, and San Diego were higher than the percentages in both the nation and large cities.

Table **1.** Selected characteristics of fourth-grade public school students in NAEP science, by jurisdiction: 2009

			Weighted percentage of students assessed						
Jurisdiction	Number of fourth-graders	Number of students assessed	White	Black	Hispanic	Asian/Pacific Islander	Eligible for free/reduced-price school lunch	Students with disabilities	English language learners
Nation	3,485,000	151,500	54	16	22	5	48	12	10
Large city[1]	572,000	34,500	20	29	42	8	71	12	20
Atlanta	4,000	1,200	13	79	5	1	74	10	2
Austin	6,000	1,500	25	12	60	3	65	13	31
Baltimore City	6,000	1,200	8	88	2	1	85	15	1
Boston	4,000	1,100	15	40	37	7	79	19	16
Charlotte	10,000	1,600	36	39	16	4	47	11	7
Chicago	29,000	1,900	9	45	42	3	87	13	10
Cleveland	3,000	900	16	68	12	#	100[2]	12	5
Detroit	6,000	900	3	85	11	1	81	13	6
Fresno	5,000	1,400	14	10	64	12	89	8	30
Houston	15,000	2,200	7	26	64	3	83	6	37
Jefferson County (KY)	7,000	1,400	53	36	5	3	60	14	3
Los Angeles	48,000	2,100	9	7	77	7	84	10	40
Miami-Dade	24,000	2,200	10	25	62	1	68	12	8
Milwaukee	6,000	1,300	12	57	22	4	78	15	12
New York City	71,000	2,200	15	29	40	16	87	18	15
Philadelphia	13,000	1,300	12	61	19	6	87	13	7
San Diego	9,000	1,300	27	12	42	18	60	11	35

Rounds to zero.

[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

[2] In Cleveland, all students were categorized as eligible for the National School Lunch Program.

NOTE: The number of fourth-graders is rounded to the nearest 1,000. The number of students assessed is rounded to the nearest 100. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin. The race/ethnicity categories listed may not sum to 100 percent because the percentages for American Indian/Alaska Native and unclassified students are not shown.

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

A Closer Look at District Results Compared to the Nation

Overall average scores for participating districts provide an overview of how those districts are performing in comparison to the national average. Additional information can be obtained by comparing the average scores for student demographic groups within each district to the average scores for those groups in the nation. Of the 14 districts that scored lower than the nation overall, Baltimore City, Cleveland, Fresno, and Philadelphia had consistently lower scores than the nation for groups with samples large enough to report results by students' race/ethnicity and eligibility for free/reduced-price school lunch (figure **3**). Among the remaining 10 districts, Atlanta, Boston, Houston, Miami-Dade, and San Diego had at least one student group that scored higher than their peers in the nation. For example, Hispanic students in Miami-Dade (62 percent of the district's fourth-grade public school students) scored higher on average than Hispanic fourth-graders in the nation even though the district's overall score was lower than the score for the nation.

Among the three districts in which overall scores did not differ significantly from the national average, scores for White students in Austin and for White and Black students in Charlotte were higher than the scores for those students in the nation. In Austin and Jefferson County, the average scores for students who were not eligible for free/reduced-price school lunch were higher than the average score for noneligible students in the nation even though the districts' overall scores were not significantly different from the national average.

Figure **3.** Comparison of district and national average scores in NAEP science for fourth-grade public school students, by selected student groups: 2009

		Race/ethnicity				Eligibility for free/reduced-price school lunch	
Jurisdiction	Overall	White	Black	Hispanic	Asian/Pacific Islander	Eligible	Not eligible
Nation	149	162	127	130	160	134	163
Large city[1]	▼	◆	▼	▼	▼	▼	▼
Atlanta	▼	▲	◆	‡	‡	▼	◆
Austin	◆	▲	◆	◆	‡	◆	▲
Baltimore City	▼	▼	▼	‡	‡	▼	▼
Boston	▼	◆	▲	◆	◆	◆	▼
Charlotte	◆	▲	▲	◆	◆	◆	◆
Chicago	▼	◆	▼	◆	◆	▼	▼
Cleveland	▼	▼	▼	▼	‡	▼	†
Detroit	▼	‡	▼	◆	‡	▼	▼
Fresno	▼	▼	▼	▼	▼	▼	▼
Houston	▼	▲	◆	◆	◆	▼	◆
Jefferson County (KY)	◆	◆	◆	◆	‡	◆	▲
Los Angeles	▼	▼	▼	▼	◆	▼	▼
Miami-Dade	▼	▲	◆	▲	‡	◆	◆
Milwaukee	▼	◆	▼	◆	‡	▼	▼
New York City	▼	◆	◆	◆	◆	◆	◆
Philadelphia	▼	▼	▼	▼	▼	▼	▼
San Diego	▼	▲	◆	◆	◆	▼	◆

▲ Higher average score than the nation.
▼ Lower average score than the nation.
◆ No significant difference between the district and the nation.
† Not applicable.
‡ Sample size insufficient to permit a reliable estimate.

[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

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

A Closer Look at District Results Compared to Large Cities

Comparing district overall average scores to the average score for large cities provides further insight into district performance, especially when performance across student demographic groups is examined. Among the eight districts that scored lower than large cities overall, Baltimore City, Cleveland, and Philadelphia also had lower scores for groups with samples large enough to report results by students' race/ethnicity and eligibility for free/reduced-price school lunch (figure 4). In four of the remaining five districts (Chicago, Detroit, Los Angeles, and Milwaukee), the score for at least one racial/ethnic group was not significantly different from the large city score for that group.

In each of the six districts where overall average scores were higher than the score for large cities, the score for at least one racial/ethnic group was not significantly different from the large city score for that group. For example, the score for White students in Jefferson County (53 percent of the district's fourth-grade public school students) was not significantly different from the score for White students in large cities even though the district's overall score was higher than the large city score. Five of the six districts with higher overall scores than large cities also had higher scores for students eligible for free/reduced-price school lunch; the average score for eligible students in San Diego was not significantly different from the score for eligible students in large cities.

Although the overall average scores in Atlanta and Houston were not significantly different from the score for large cities, average scores for at least two racial/ethnic groups were higher than the large city scores for those groups. In Houston and New York City, the average score for students eligible for free/reduced-price school lunch was higher than the score for eligible students in large cities even though the overall score was not significantly different.

Figure 4. Comparison of district and large city average scores in NAEP science for fourth-grade public school students, by selected student groups: 2009

		Race/ethnicity				Eligibility for free/reduced-price school lunch	
Jurisdiction	Overall	White	Black	Hispanic	Asian/Pacific Islander	Eligible	Not eligible
Large city[1]	135	163	122	127	152	126	157
Atlanta	◆	▲	▲	‡	‡	▼	▲
Austin	▲	▲	◆	▲	‡	▲	▲
Baltimore City	▼	▼	▼	‡	‡	▼	▼
Boston	▲	◆	▲	▲	◆	▲	◆
Charlotte	▲	▲	▲	▲	◆	▲	▲
Chicago	▼	◆	▼	◆	◆	▼	◆
Cleveland	▼	▼	▼	▼	‡	▼	†
Detroit	▼	‡	▼	◆	‡	▼	▼
Fresno	▼	▼	▼	▼	▼	▼	◆
Houston	◆	▲	▲	▲	◆	▲	◆
Jefferson County (KY)	▲	◆	▲	◆	‡	▲	▲
Los Angeles	▼	▼	◆	▼	◆	▼	▼
Miami-Dade	▲	▲	◆	▲	‡	▲	◆
Milwaukee	▼	◆	▼	◆	‡	▼	▼
New York City	◆	◆	◆	◆	◆	▲	◆
Philadelphia	▼	▼	▼	▼	▼	▼	▼
San Diego	▲	◆	◆	◆	◆	◆	▲

▲ Higher average score than large city.
▼ Lower average score than large city.
◆ No significant difference between the district and large city.
† Not applicable.
‡ Sample size insufficient to permit a reliable estimate.

[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

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

Assessment Content at Grade 4

The proportion of the science assessment devoted to each of the three broad content areas specified in the 2009 science framework varies by grade to reflect differences in curricular emphasis.

$33\frac{1}{3}$% Physical Science

These questions focus on students' understanding of physical science principles, including physical properties of common substances, changes of state of substances, examples of different forms of energy, electrical circuits, descriptions of the position and motion of objects, and changes in the motion of objects from applied or gravitational forces.

$33\frac{1}{3}$% Life Science

These questions focus on students' understanding of life science principles, including the basic needs of organisms for survival and growth, interdependence of organisms, life cycles, and differences and adaptations of organisms.

$33\frac{1}{3}$% Earth and Space Sciences

These questions focus on students' understanding of patterns of objects in the sky, evidence of Earth changes, natural and human-made materials, role of the Sun, weather changes, and uses of Earth's resources.

Because NAEP assessments cover a breadth of content in each subject area and include more questions than any one student could reasonably answer, each student takes just a portion of the assessment. The 143 questions included in the fourth-grade science assessment were divided into nine sections, each containing between 15 and 17 questions depending on the balance between multiple-choice and constructed-response questions. Each student responded to two 25-minute sections.

NAEP Science Achievement-Level Descriptions for Grade 4

The specific descriptions of what fourth-graders should know and be able to do at the *Basic*, *Proficient*, and *Advanced* science achievement levels are presented below. (Note: Shaded text is a short, general summary to describe performance at each achievement level.) NAEP achievement levels are cumulative; therefore, student performance at the *Proficient* level includes the competencies associated with the *Basic* level, and the *Advanced* level also includes the skills and knowledge associated with both the *Basic* and the *Proficient* levels. The cut score indicating the lower end of the score range for each level is noted in parentheses.

Basic (131)

Students performing at the *Basic* level should be able to describe, measure, and classify familiar objects in the world around them, as well as explain and make predictions about familiar processes. These processes include changes of states of matter, movements of objects, basic needs and life cycles of plants and animals, changes in shadows during the day, and changes in weather. They should be able to critique simple observational studies, communicating observations and basic measurements of familiar systems and processes, and look for patterns in their observations. With regard to scientific constraints, they should also be able to propose and critique alternative solutions to problems involving familiar systems and processes.

Science Practices: Students performing at the *Basic* level should be able to describe, measure, and classify familiar objects in the world around them, as well as explain and make predictions about familiar processes, using evidence to support their observations and conclusions. They should be able to critique simple observational studies, communicate observations and basic measurements of familiar systems and processes, and look for patterns in their observations. They should also be able to propose and recognize alternative solutions to problems involving familiar systems and processes.

In the physical sciences, students performing at the *Basic* level should be able to describe the properties of the states of matter, describe how to change matter from one state to another, describe different forms of energy, predict the electrical energy transfers that will take place in a simple circuit, critique alternative explanations for changes in a moving object's position, and design an investigation to show how exerting a force on an object changes the object's motion.

In the life sciences, students performing at the *Basic* level should be able to identify the stages in the life cycles of familiar organisms; describe how familiar animals meet their basic needs for food, air, water, and shelter; observe and describe the changes in plants and animals during their life cycles; and describe how environments meet the survival needs of familiar plants and animals.

In the Earth and space sciences, students performing at the *Basic* level should be able to predict changes in the length and position of shadows cast by the sun, describe how slow Earth processes (e.g., erosion) and fast Earth processes (e.g., volcanic eruption) can change Earth's surface, distinguish between natural and manmade materials, choose and use a tool to monitor how weather conditions change, and identify Earth resources that are limited.

Proficient (167)

Students performing at the *Proficient* level should be able to demonstrate relationships among closely related science concepts, as well as analyze alternative explanations or predictions. They should be able to explain how changes in temperature cause changes of state, how forces can change motion, how adaptations help plants and animals meet their basic needs, how environmental changes can affect their growth and survival, how land formations can result from Earth processes, and how recycling can help conserve limited resources. They should be able to identify patterns in data and/or explain these patterns. They should also be able to identify and critique alternative responses to design problems.

Science Practices: Students performing at the *Proficient* level should be able to demonstrate relationships among closely related science concepts and familiar phenomena around them, as well as analyze alternative explanations or predictions, using evidence to support their explanations and predictions; critique observational studies and simple investigations; identify patterns in data and/or explain those patterns in data; and apply scientific ideas to identify and critique alternative designs to problems that personally affect them.

In the physical sciences, students performing at the *Proficient* level should be able to demonstrate the relationship between temperature change and changes in the physical properties of matter, explain how energy in one form can be changed into another form, design an investigation that measures how temperature changes when energy is added to a substance, propose a design for a container that will maintain the temperature of an object that is above or below room temperature, and measure changes in position of an object in motion as different forces are applied.

In the life sciences, students performing at the *Proficient* level should be able to describe needs of familiar plants and animals at different stages of their life cycles, explain adaptations of familiar plants and animals to their environments, predict effects of environmental changes on plant or animal growth and survival, and apply information about an animal's basic needs to propose a supportive environment.

In the Earth and space sciences, students performing at the *Proficient* level should be able to explain how the Sun's changing position in the sky during the day affects shadows; interpret land formations as resulting from either slow (e.g., erosion) or rapid (e.g., volcanic eruption) Earth processes; explain how natural materials can help sustain the lives of familiar plants and animals; identify how patterns of weather conditions change from season to season; and explain how the practices of recycling, reusing, and reducing help to conserve limited resources.

Continued on next page

Advanced (224)

Students performing at the *Advanced* level should be able to demonstrate relationships among different representations of science principles, as well as propose alternative explanations or predictions of phenomena. They should be able to use numbers, drawings, and graphs to describe and explain motions of objects; analyze how environmental conditions affect growth and survival of plants and animals; describe changes in the Sun's path through the sky at different times of year; and describe how human uses of Earth materials affect the environment. They should be able to design studies that use sampling strategies to obtain evidence. They should also be able to propose and critique alternative individual and local community responses to design problems.

Science Practices: Students performing at the *Advanced* level should be able to demonstrate relationships among different representations of principles, as well as propose alternative explanations or predictions of familiar phenomena, using evidence to support their explanations and predictions; design observational studies or simple investigations to validate or criticize explanations or predictions and use sampling strategies to obtain evidence; and propose and critique alternative individual and local community responses to design problems.

In the physical sciences, students at the *Advanced* level should be able to demonstrate the relationship between the quantity of energy needed to change the state of a sample of a substance and the weight of the sample, demonstrate how different representations (i.e., verbal, numerical, graphical) can be used to show the motion of an object, suggest an example of how the motion of an object can be changed without touching it, and design an investigation that demonstrates how long it takes different forms of energy to change the temperature of matter.

In the life sciences, students at the *Advanced* level should be able to evaluate relationships between changing environmental conditions and organisms' growth, survival, and reproduction; analyze environments for how they may have different effects on the growth and survival of plants or animals of the same kind; and investigate the relationship between light and plant growth.

In the Earth and space sciences, students at the *Advanced* level should be able to relate changes in the Sun's daily path through the sky to different times of year, suggest examples of Earth materials that can be modified to meet human needs, explain how erosion is caused by daily/seasonal weather events, propose methods of reducing the amount of erosion, describe how humans can change environments that can be either detrimental or beneficial for themselves and other organisms, and describe how the use of Earth materials by humans impacts the environment.

What Fourth-Graders Know and Can Do in Science

The item map below is useful for understanding performance at different levels on the NAEP scale. The scale scores on the left represent the scores for students who were likely to get the items correct or complete. The cut score at the lower end of the range for each achievement level is boxed. The descriptions of selected assessment questions indicating what students need to do to answer the question correctly are listed on the right, along with the corresponding science content areas.

For example, the map on this page shows that fourth-graders performing in the middle of the *Basic* range (students with a score of 153) were likely to be able to predict the impact of habitat loss. Students performing near the middle of the *Proficient* range (with a score of 190) were likely to be able to relate the calendar to the amount of daylight.

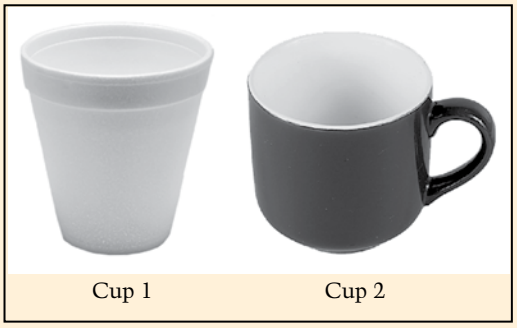
GRADE 4 NAEP SCIENCE ITEM MAP

	Scale score	Content area	Question description
	300 //		
Advanced	293	**Physical science**	Investigate the speed of a runner
	285	**Life science**	Design an investigation to compare types of bird food
	278	**Earth and space sciences**	*Predict the shape of the Moon*
	264	**Physical science**	*Determine the source of sound during an investigation about the pitch of sounds*
	264	**Life science**	Explain differences between related individuals (**shown on page 20**)
	253	**Life science**	Identify what an organism needs to live
	233	**Earth and space sciences**	*Draw a conclusion about differences in air temperatures based on data*
	224		
Proficient	222	**Life science**	Describe the different stages of the life cycle of an organism
	220	**Earth and space sciences**	*Recognize the cycle of Moon phases*
	212	**Earth and space sciences**	Critique a prediction about the amount of soil runoff
	210	**Physical science**	*Design an investigation to determine the volume of a container* (**shown on page 18**)
	205	**Earth and space sciences**	Recognize human-made versus natural materials
	204	**Physical science**	*Use evidence to critique a conclusion about the transparency of a material*
	194	**Physical science**	*Recognize that gravitational force constantly affects an object*
	190	**Earth and space sciences**	*Relate the calendar to amount of daylight*
	186	**Earth and space sciences**	*Interpret a temperature graph*
	175	**Physical science**	Predict the motion of an object when different forces act on it
	173	**Life science**	Predict an environmental effect of the use of a chemical
	169	**Physical science**	*Explain an example of heat (thermal energy) transfer*
	167		
Basic	165	**Physical science**	*Predict the relative motion of an object based on a diagram*
	164	**Life science**	*Investigate the range of bird population*
	161	**Earth and space sciences**	Explain the choice of material based on protection of the environment (**shown on page 19**)
	157	**Life science**	*Identify an essential characteristic of a plant*
	153	**Life science**	*Predict the impact of habitat loss*
	146	**Life science**	*Explain the benefit of an adaptation for an organism*
	143	**Earth and space sciences**	*Recognize how the Sun affects the Earth's surface*
	138	**Physical science**	*Recognize an example of a change of state*
	133	**Earth and space sciences**	*Modify a landscape to help prevent a natural disaster*
	131		
	128	**Life science**	*Identify the organism with a change in habitat from young to adult*
	118	**Physical science**	*Identify the data on a motion chart*
	113	**Earth and space sciences**	*Recognize a renewable source of energy*
	106	**Earth and space sciences**	*Identify the best tool to measure rainfall*
	94	**Life science**	*Place stages of a life cycle in correct order*
	77	**Physical science**	*Identify the source of energy used by a home appliance*
	56	**Life science**	*Recognize a related individual based on physical characteristics*
	// 0		

NOTE: Regular type denotes a constructed-response question. *Italic* type denotes a multiple-choice question. The position of a question on the scale represents the scale score attained by students who had a 65 percent probability of successfully answering a constructed-response question, or a 74 percent probability of correctly answering a four-option multiple-choice question. For constructed-response questions, the question description represents students' performance at the highest scoring level. Scale score ranges for science achievement levels are referenced on the map.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Sample Question: Physical Science

A student wants to know whether two cups hold the same volume of water. The two cups have different weights (masses).



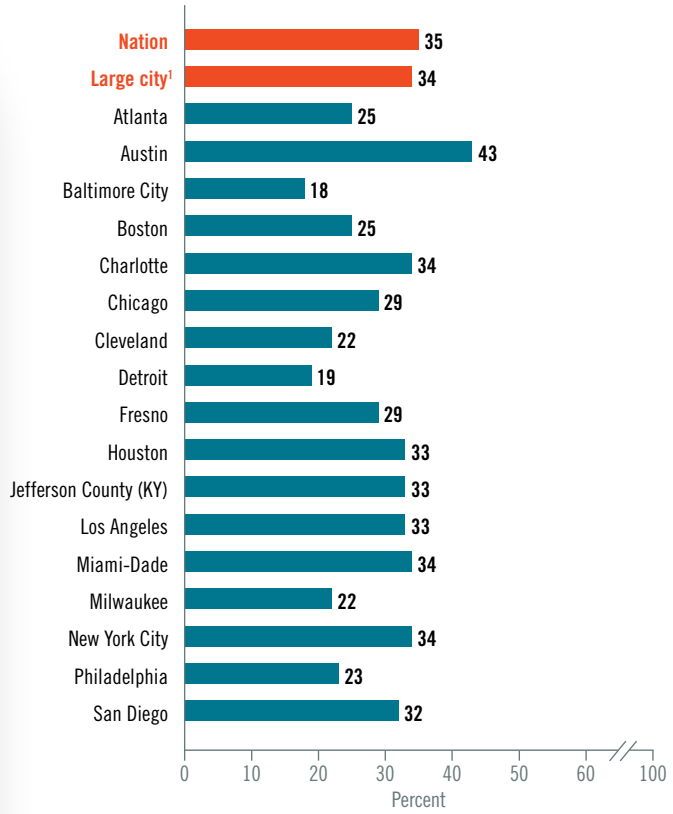
Cup 1 Cup 2

The student completely fills Cup 1 with water. The student wants to measure if Cup 2 holds the same volume of water.

What should the student do next to complete the measurements?

- (A) Completely fill Cup 2 with water and then look at the cups side by side
- (B) Pour half of the water from Cup 1 into Cup 2, weigh each cup and then compare their weights
- (C) Pour all of the water from Cup 1 into Cup 2 to see if the water completely fills Cup 2 without spilling over
- (D) Completely fill Cup 2 with water, weigh each filled cup, and then compare the weights

Percentage correct for fourth-grade public school students, by jurisdiction: 2009



[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

This sample question from the 2009 fourth-grade assessment measures students' performance in the physical science content area. The question asks students to design an investigation to determine the volume of a container.

Thirty-five percent of fourth-grade public school students in the nation answered correctly (Choice C). The percentage of correct responses in each of the districts ranged from 18 percent in Baltimore City to 43 percent in Austin.

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

Sample Question: Earth and Space Sciences

When people buy groceries, they may have their groceries packed in plastic bags, paper bags, or cloth bags they bring with them.

Complete response #1:

Which type of grocery bag is best to use to help protect the environment?

Ⓐ Plastic

Ⓑ Paper

Ⓒ Cloth

Explain why your choice helps protect the environment.

I think paper because it doesn't take long for paper witch is made out of trees to become apart of the graund unlike plastic or cloth.

Complete response #2:

Which type of grocery bag is best to use to help protect the environment?

Ⓐ Plastic

Ⓑ Paper

Ⓒ Cloth

Explain why your choice helps protect the environment.

because plastic bags and paper bags build up into piles of trash and Cloth bags we dont through away we save them for are groceries

This sample of a short constructed-response question measures fourth-graders' performance in the Earth and space sciences content area. It requires students to choose a type of material and to explain how using this material can help protect the environment. Student responses to this question were rated using two scoring levels.

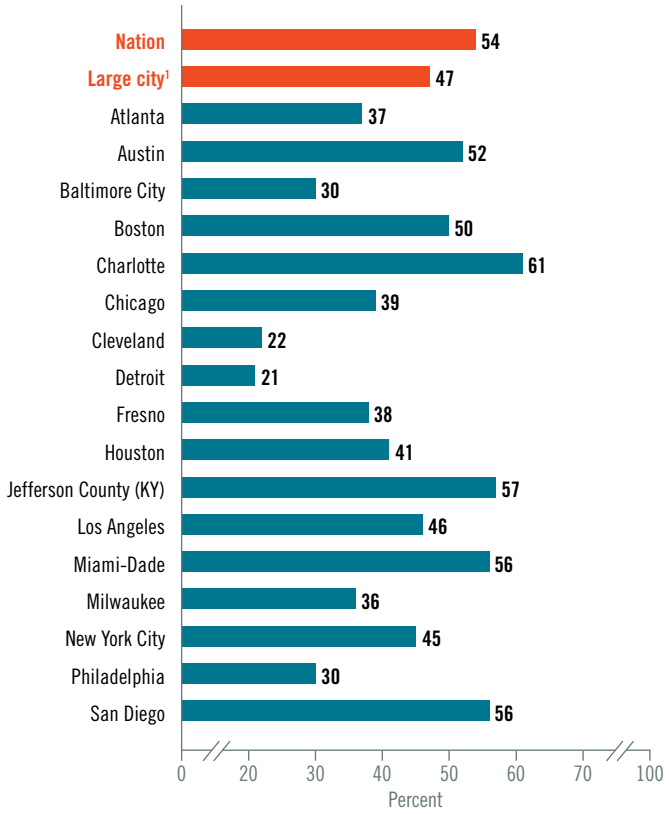
Complete responses either

- indicated one type of grocery bag and correctly explained why using this type of bag helps protect the environment by indicating reusing, recycling, or biodegradation of the bags, as appropriate, or
- indicated one type of grocery bag and correctly explained why not using bags made of one of the other materials helps protect the environment.

Unsatisfactory/Incorrect responses were inadequate or incorrect.

The sample student responses shown above were rated as "Complete" because they correctly answered all parts of the question. Fifty-four percent of fourth-grade public school students' responses to this question received a "Complete" rating. The percentages of student responses rated as "Complete" are presented on the right for the nation, large cities, and participating districts.

Percentage of answers rated as "Complete" for fourth-grade public school students, by jurisdiction: 2009



[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

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

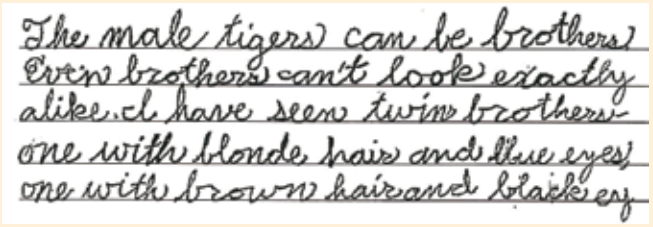
Sample Question: Life Science

Jaime and Manuel visit the zoo. They see two male tigers who are brothers. Jaime points out that the fur of one of the tigers has stripes that are a darker brown than the other tiger's stripes.

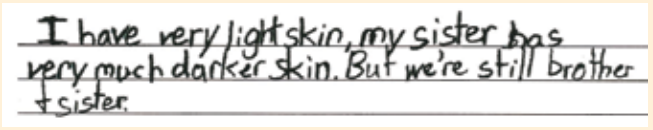
Manuel says the tigers cannot be brothers.

How can Jaime explain to Manuel that tigers with different-colored stripes can be brothers? In your answer, use a specific example of what you have observed about similarities and differences between people who are related.

Complete response #1:



Complete response #2:



This sample of a short constructed-response question measures fourth-graders' performance in the life science content area. It requires students to explain differences between related individuals. Student responses to this question were rated using three scoring levels.

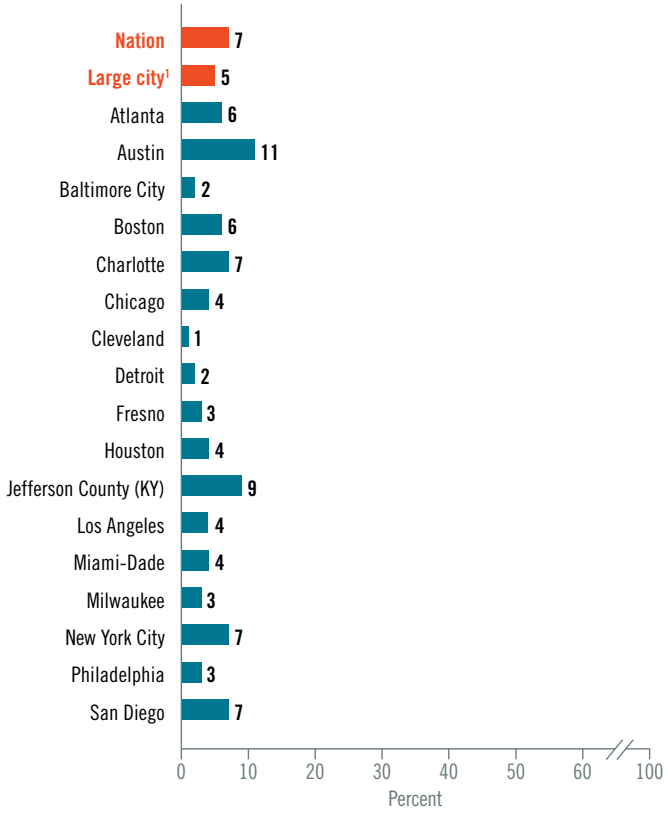
Complete responses correctly indicated that people or animals that are related can look different, and provided a comparison of a specific characteristic of individuals.

Partial responses correctly indicated that people or animals that are related can look different, but did not provide a comparison of a specific characteristic of individuals.

Unsatisfactory/Incorrect responses were inadequate or incorrect.

The sample student responses shown above were rated as "Complete" because both correctly explain that people or animals that are related can look different and provide a specific characteristic of individuals. Seven percent of fourth-grade public school students' responses to this question received a "Complete" rating. The percentages of student responses rated as "Complete" are presented on the right for the nation, large cities, and participating districts.

Percentage of answers rated as "Complete" for fourth-grade public school students, by jurisdiction: 2009



[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

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

Grade 8

Sixteen participating districts score lower than the national average; 5 districts score higher than large cities overall

In 2009, science scores for eighth-graders in large cities overall and in 16 of the 17 participating urban districts were lower than the average score for the nation. The score for the remaining district was not significantly different from the score for the nation. Districts sometimes showed higher scores for student groups when compared to their peers nationally even though the overall scores for almost all participating districts were lower than the score for the nation.

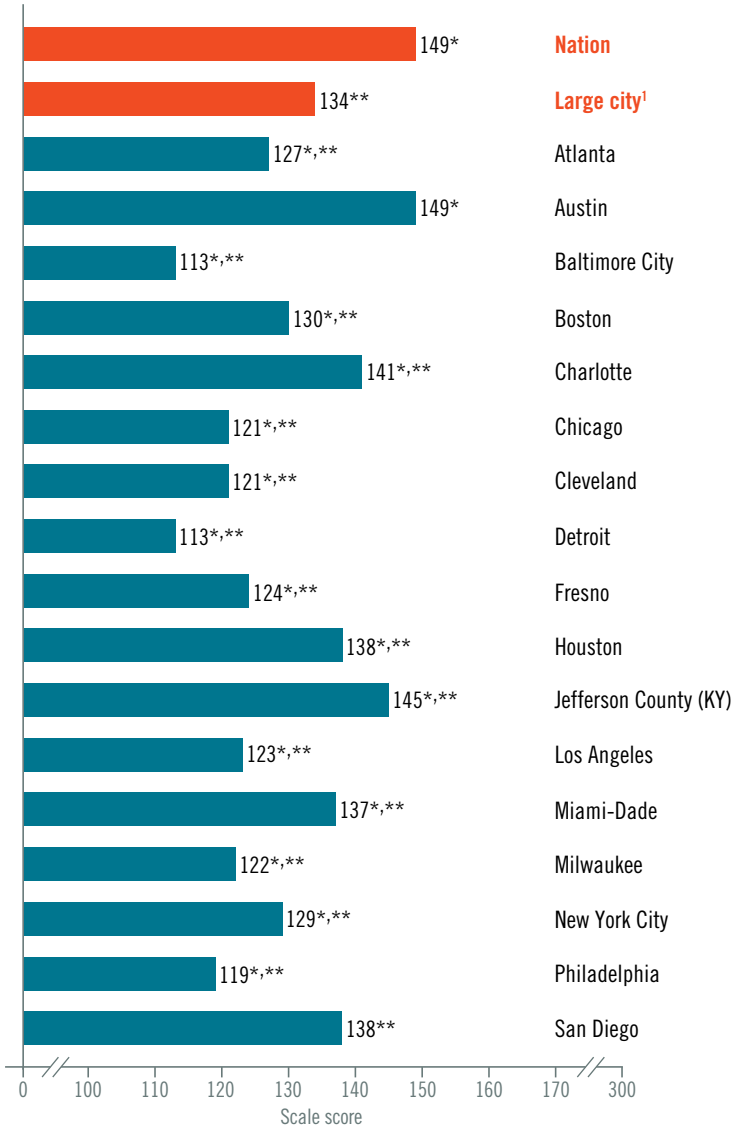
When compared to the overall score for students in large cities, the scores of 5 districts were higher, 1 was not significantly different, and the remaining 11 were lower.

Five districts score higher than large cities

When compared to the average score for large cities nationally in 2009, scores were higher in Austin, Charlotte, Houston, Jefferson County, and Miami-Dade (figure **5**). The average score for San Diego was not significantly different, and scores for the remaining 11 districts were lower.

The average science score for eighth-graders attending public schools in large cities was 15 points lower than the score for public school students in the nation. With the exception of Austin, where the score was not significantly different from the nation, the remaining participating districts had average scores that were lower than the national average.

Figure **5.** Average scores in NAEP science for eighth-grade public school students, by jurisdiction: 2009



* Significantly different ($p < .05$) from large city.
** Significantly different ($p < .05$) from the nation.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

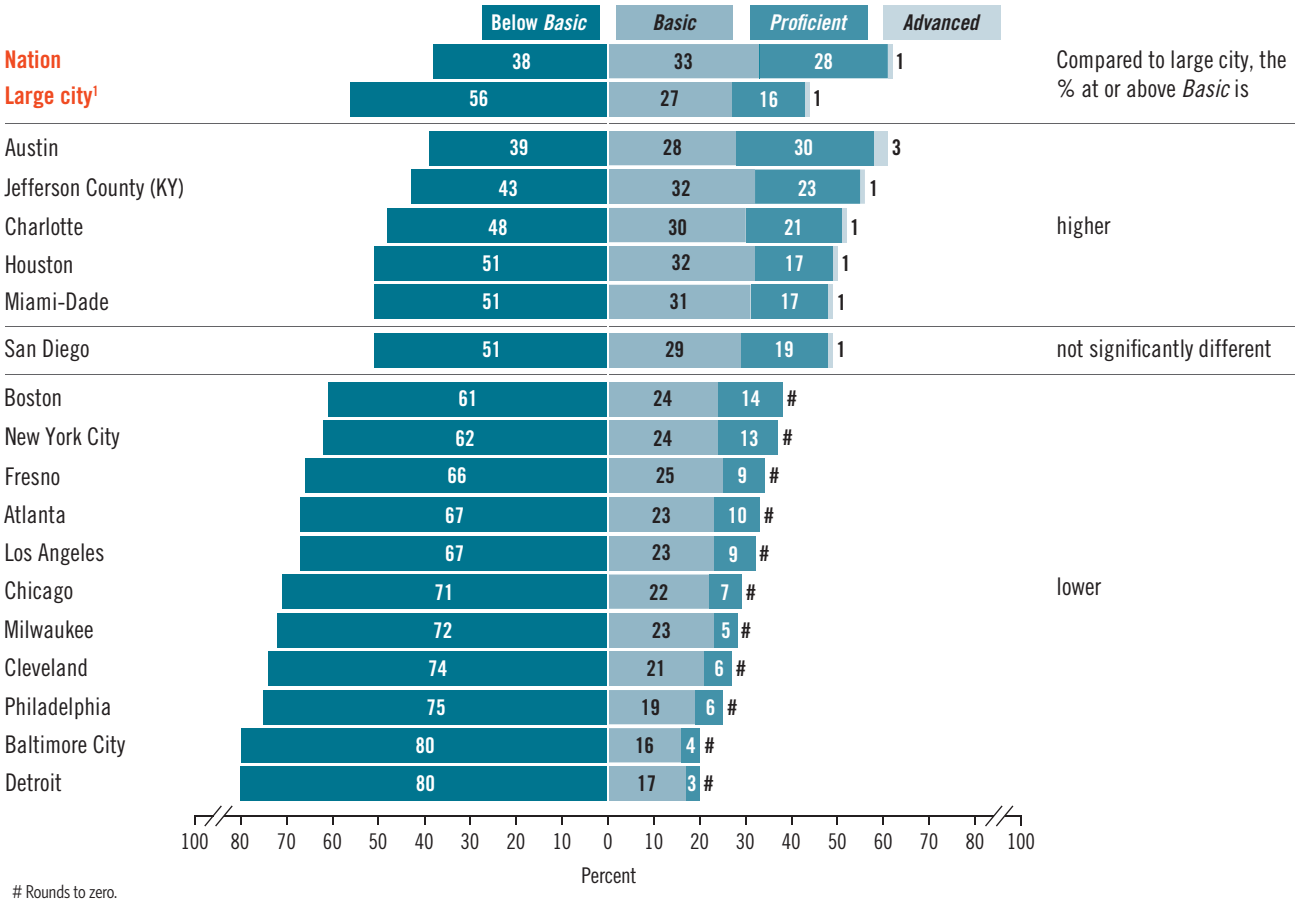
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Districts show range of knowledge and skills

Among the 17 districts that participated in the 2009 science assessment, the percentages of eighth-graders performing at or above the *Basic* level ranged from 20 percent in Baltimore City and Detroit to 61 percent in Austin (figure **6**). All the districts had some students performing at or above the *Proficient* level. In Austin, the percentage of students performing at or above *Proficient* was higher than the percentages for large cities and for the nation (see appendix table **A-5**).

The same 5 districts with higher overall average scores than the overall average score for large cities (Austin, Charlotte, Houston, Jefferson County, and Miami-Dade) also had higher percentages of students performing at or above *Basic*. The 11 districts with scores lower than the score for large cities (Atlanta, Baltimore City, Boston, Chicago, Cleveland, Detroit, Fresno, Los Angeles, Milwaukee, New York City, and Philadelphia) also had lower percentages of students performing at or above *Basic*. The percentage of students at or above *Basic* in San Diego was not significantly different from the percentage for large cities.

Figure 6. Achievement-level results in NAEP science for eighth-grade public school students, by jurisdiction: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Districts vary in demographic makeup

When comparing the results for urban districts to results for the nation and large cities, it is important to consider the differences in their demographic makeup. In 2009, the percentage of White eighth-graders in the nation was higher than the combined percentage of Black and Hispanic eighth-graders (table **2**). The opposite was true for large cities and for 16 districts where the combined percentages of Black and Hispanic students were higher than the percentage of White students. Jefferson County was the only district in which the percentage of White students was higher.

Large cities and districts also differed from the nation in the proportion of students eligible for the National School Lunch Program. Forty-three percent of eighth-graders were eligible for free/reduced-price school lunch nationally compared to 66 percent in large cities. The percentages of eligible students in the participating districts were all higher than the nation—ranging from 47 percent in Charlotte to 100 percent in Cleveland, where all students were categorized as eligible.

Large cities in general, and some of the participating districts, also often had higher percentages of English language learners (ELL). The percentage of ELL students in large cities was 11 percent compared to 5 percent in the nation overall. The percentages of ELL students in Austin, Fresno, and Los Angeles were higher than the percentages in both the nation and large cities.

Table 2. Selected characteristics of eighth-grade public school students in NAEP science, by jurisdiction: 2009

			Weighted percentage of students assessed						
Jurisdiction	Number of eighth-graders	Number of students assessed	White	Black	Hispanic	Asian/Pacific Islander	Eligible for free/reduced-price school lunch	Students with disabilities	English language learners
Nation	3,504,000	146,300	56	16	21	5	43	11	5
Large city[1]	537,000	31,600	21	28	42	7	66	11	11
Atlanta	3,000	900	6	88	4	1	78	10	2
Austin	5,000	1,400	31	11	55	3	55	13	14
Baltimore City	4,000	900	7	91	1	1	81	16	1
Boston	4,000	1,100	14	41	34	10	73	18	8
Charlotte	9,000	1,400	32	46	15	4	47	9	6
Chicago	28,000	1,900	9	48	40	3	86	15	5
Cleveland	3,000	900	15	71	12	#	100[2]	16	6
Detroit	6,000	1,000	2	89	7	1	70	14	7
Fresno	5,000	1,300	14	11	58	16	86	9	22
Houston	12,000	2,000	8	29	60	3	78	9	11
Jefferson County (KY)	7,000	1,400	55	36	4	3	55	10	2
Los Angeles	48,000	2,000	8	10	75	7	82	10	22
Miami-Dade	23,000	2,000	10	23	65	1	63	11	7
Milwaukee	5,000	1,000	11	62	20	4	78	18	6
New York City	69,000	2,100	16	32	39	14	79	14	9
Philadelphia	11,000	1,200	16	56	19	8	84	15	7
San Diego	8,000	1,000	29	12	40	19	55	9	16

Rounds to zero.

[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

[2] In Cleveland, all students were categorized as eligible for the National School Lunch Program.

NOTE: The number of eighth-graders is rounded to the nearest 1,000. The number of students assessed is rounded to the nearest 100. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin. The race/ethnicity categories listed may not sum to 100 percent because the percentages for American Indian/Alaska Native and unclassified students are not shown.

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

A Closer Look at District Results Compared to the Nation

Overall average scores for participating districts provide an overview of how those districts are performing in comparison to the national average. Additional information can be obtained by comparing the average scores for student demographic groups within each district to the average scores for those groups in the nation. Of the 16 districts that scored lower than the nation overall, Charlotte, Houston, and Miami-Dade had at least one racial/ethnic group that scored higher than their peers in the nation (figure 7). For example, Hispanic students in Houston (60 percent of the district's eighth-grade public school students) scored higher on average than Hispanic eighth-graders in the nation even though the district's overall score was lower than the nation. Of the remaining 13 districts that scored lower than the nation, Baltimore City, Chicago, Cleveland, and Philadelphia had consistently lower scores for groups with samples large enough to report results by students' race/ethnicity and eligibility for free/reduced-price school lunch.

In Austin, where the overall score for the district was not significantly different from the national average, White, Black, and Hispanic students scored higher than their peers in the nation, as did students who were not eligible for free/reduced-price school lunch.

Figure 7. Comparison of district and national average scores in NAEP science for eighth-grade public school students, by selected student groups: 2009

		Race/ethnicity				Eligibility for free/reduced-price school lunch	
Jurisdiction	Overall	White	Black	Hispanic	Asian/Pacific Islander	Eligible	Not eligible
Nation	149	161	125	131	159	133	161
Large city[1]	▼	◆	▼	▼	▼	▼	▼
Atlanta	▼	‡	◆	‡	‡	▼	▼
Austin	◆	▲	▲	▲	‡	◆	▲
Baltimore City	▼	‡	▼	‡	‡	▼	▼
Boston	▼	◆	▼	▼	◆	▼	▼
Charlotte	▼	▲	◆	◆	‡	▼	▼
Chicago	▼	▼	▼	▼	‡	▼	▼
Cleveland	▼	▼	▼	▼	‡	▼	†
Detroit	▼	‡	▼	◆	‡	▼	▼
Fresno	▼	▼	◆	▼	▼	▼	▼
Houston	▼	▲	◆	▲	◆	◆	◆
Jefferson County (KY)	▼	▼	◆	‡	‡	◆	◆
Los Angeles	▼	▼	▼	▼	◆	▼	▼
Miami-Dade	▼	◆	◆	▲	‡	◆	▼
Milwaukee	▼	▼	▼	◆	‡	▼	▼
New York City	▼	▼	▼	▼	◆	▼	▼
Philadelphia	▼	▼	▼	▼	▼	▼	▼
San Diego	▼	◆	◆	▼	▼	▼	◆

▲ Higher average score than the nation.
▼ Lower average score than the nation.
◆ No significant difference between the district and the nation.
† Not applicable.
‡ Sample size insufficient to permit a reliable estimate.

[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

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



A Closer Look at District Results Compared to Large Cities

Comparing district overall average scores to the average score for large cities provides further insight into district performance, especially when performance across student demographic groups is examined. In 10 of the 11 districts that scored lower than large cities overall, the score for at least one racial/ethnic group was not significantly different from the large city score for that group (figure 8). Only Baltimore City had lower scores than large cities for all student demographic groups with samples large enough to report scores by students' race/ethnicity and eligibility for free/reduced-price school lunch.

Among the five districts where overall average scores were higher than the score for large cities, only Austin also had higher scores for all student demographic groups with samples large enough to report scores by students' race/ethnicity and eligibility for free/reduced-price school lunch.

Figure 8. Comparison of district and large city average scores in NAEP science for eighth-grade public school students, by selected student groups: 2009

		Race/ethnicity				Eligibility for free/reduced-price school lunch	
Jurisdiction	Overall	White	Black	Hispanic	Asian/Pacific Islander	Eligible	Not eligible
Large city[1]	134	159	120	127	152	125	152
Atlanta	▼	‡	◆	‡	‡	▼	◆
Austin	▲	▲	▲	▲	‡	▲	▲
Baltimore City	▼	‡	▼	‡	‡	▼	▼
Boston	▼	◆	◆	◆	◆	◆	◆
Charlotte	▲	▲	▲	◆	‡	◆	◆
Chicago	▼	▼	▼	◆	‡	▼	▼
Cleveland	▼	▼	◆	◆	‡	◆	†
Detroit	▼	‡	▼	◆	‡	▼	▼
Fresno	▼	▼	◆	▼	▼	▼	◆
Houston	▲	▲	▲	▲	◆	▲	◆
Jefferson County (KY)	▲	◆	▲	‡	‡	▲	▲
Los Angeles	▼	▼	▼	▼	◆	▼	▼
Miami-Dade	▲	◆	◆	▲	‡	▲	◆
Milwaukee	▼	▼	▼	◆	‡	▼	▼
New York City	▼	▼	◆	▼	◆	◆	◆
Philadelphia	▼	▼	▼	▼	◆	▼	◆
San Diego	◆	◆	◆	◆	◆	◆	◆

▲ Higher average score than large city.
▼ Lower average score than large city.
◆ No significant difference between the district and large city.
† Not applicable.
‡ Sample size insufficient to permit a reliable estimate.

[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

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

Assessment Content at Grade 8

The distribution of items among the three content areas reflects the relative emphasis in each area specified in the 2009 science framework for each grade.

30% Physical Science

These questions focus on students' understanding of physical science principles, including the chemical properties of substances and particulate nature of matter, the organization of the Periodic Table of Elements, changes of matter and conservation of mass, kinetic energy and potential energy, energy transfer and conservation of energy, speed as a quantitative description of motion, characteristics of forces, and the net force on an object and its relationship to the object's motion.

30% Life Science

These questions focus on students' understanding of life science principles, including the levels of organization of living systems, the role of carbon compounds in growth and metabolism, specific types of interdependence, reproduction and the influence of heredity and the environment on an offspring's characteristics, and preferential survival and relatedness of organisms.

40% Earth and Space Sciences

These questions focus on students' understanding of a model of the solar system, estimating the timing and sequence of geologic events, soil analysis and layers of the atmosphere, the basics of tectonic theory and Earth's magnetism, the Sun's observable effects, global weather patterns, and natural and human-induced changes in Earth's materials and systems.

Because NAEP assessments cover a breadth of content in each subject area and include more questions than any one student could reasonably answer, each student takes just a portion of the assessment. The 162 questions included in the eighth-grade science assessment were divided into 10 sections, each containing between 14 and 18 questions depending on the balance between multiple-choice and constructed-response questions. Each student responded to two 25-minute sections.

NAEP Science Achievement-Level Descriptions for Grade 8

The specific descriptions of what eighth-graders should know and be able to do at the *Basic*, *Proficient*, and *Advanced* science achievement levels are presented below. (Note: Shaded text is a short, general summary to describe performance at each achievement level.) NAEP achievement levels are cumulative; therefore, student performance at the *Proficient* level includes the competencies associated with the *Basic* level, and the *Advanced* level also includes the skills and knowledge associated with both the *Basic* and the *Proficient* levels. The cut score indicating the lower end of the score range for each level is noted in parentheses.

Basic (141)

Students performing at the *Basic* level should be able to state or recognize correct science principles. They should be able to explain and predict observations of natural phenomena at multiple scales, from microscopic to global. They should be able to describe properties and common physical and chemical changes in materials; describe changes in potential and kinetic energy of moving objects; describe levels of organization of living systems—cells, multicellular organisms, and ecosystems; identify related organisms based on hereditary traits; describe a model of the solar system; and describe the processes of the water cycle. They should be able to design observational and experimental investigations employing appropriate tools for measuring variables. They should be able to propose and critique the scientific validity of alternative individual and local community responses to design problems.

Science Practices: Students performing at the *Basic* level should be able to state or recognize correct science principles; explain and predict observations of natural phenomena at multiple scales, from microscopic to global, using evidence to support their explanations and predictions; design investigations employing appropriate tools for measuring variables; and propose and critique the scientific validity of alternative individual and local community responses to design problems.

In the physical sciences, students at the *Basic* level should be able to recognize a class of chemical compounds by its properties; design an investigation to show changes in properties of reactants and products in a chemical process such as burning or rusting; describe the changes in kinetic and potential energy of an object such as a swinging pendulum; describe and compare the motions of two objects moving at different speeds from a table of their position and time data; describe the direction of all forces acting on an object; and suggest an example of a system in which forces are acting on an object but the motion of the object does not change.

In the life sciences, students at the *Basic* level should be able to identify levels of organization within cells, multicellular organisms, and ecosystems; describe how changes in an environment relate to an organism's survival; describe types of interdependence in ecosystems; identify related organisms based on hereditary traits; discuss the needs of animals and plants to support growth and metabolism; and analyze and display data showing simple patterns in population growth.

In the Earth and space sciences, students at the *Basic* level should be able to describe a Sun-centered model of the solar system that illustrates how gravity keeps the objects in regular motion; describe how fossils and rock formations can be used as evidence to infer events in Earth's history; relate major geologic events, such as earthquakes, volcanoes, and mountain building to the movement of lithospheric plates; use weather data to identify major weather events; and describe the processes of the water cycle including changes in the physical state of water.

Proficient (170)

Students performing at the *Proficient* level should be able to demonstrate relationships among closely related science principles. They should be able to identify evidence of chemical changes; explain and predict motions of objects using position-time graphs; explain metabolism, growth, and reproduction in cells, organisms, and ecosystems; use observations of the Sun, Earth, and Moon to explain visible motions in the sky; and predict surface and groundwater movements in different regions of the world. They should be able to explain and predict observations of phenomena at multiple scales, from microscopic to macroscopic and local to global, and to suggest examples of observations that illustrate a science principle. They should be able to use evidence from investigations in arguments that accept, revise, or reject scientific models. They should be able to use scientific criteria to propose and critique alternative individual and local community responses to design problems.

Science Practices: Students performing at the *Proficient* level should be able to demonstrate relationships among closely related science principles; explain and predict observations of phenomena at multiple scales, from microscopic to macroscopic and local to global, and to suggest examples of observations that illustrate a science principle; design investigations requiring control of variables to test a simple model, employing appropriate sampling techniques and data quality review processes, and use the evidence to communicate an argument that accepts, revises, or rejects the model; and propose and critique solutions and predict the scientific validity of alternative individual and local community responses to design problems.

In the physical sciences, students at the *Proficient* level should be able to demonstrate the relationship between the properties of chemical elements and their position on the periodic table; use empirical evidence to demonstrate that a chemical change has occurred; demonstrate the relationship of the motion of an object that experiences multiple forces with the representation of the motion on a position-time graph; predict the position of a moving object based on the position-time data presented in a table; and suggest examples of systems in which potential energy is converted into other forms of energy.

In the life sciences, students at the *Proficient* level should be able to explain metabolism, growth, and reproduction at multiple levels of living systems: cells, multicellular organisms, and ecosystems; predict the effects of heredity and environment on an organism's characteristics and survival; use sampling strategies to estimate population sizes in ecosystems; and suggest examples of sustainable systems for multiple organisms.

In the Earth and space sciences, students at the *Proficient* level should be able to explain how gravity accounts for the visible patterns of motion of the Earth, Sun, and Moon; explain how fossils and rock formations are used for relative dating; use models of Earth's interior to explain lithospheric plate movement; explain the formation of Earth materials using the properties of rocks and soils; identify recurring patterns of weather phenomena; and predict surface and groundwater movement in different regions of the world.

Advanced (215)

Students performing at the *Advanced* level should be able to develop alternative representations of science principles and explanations of observations. They should be able to use information from the periodic table to compare families of elements; explain changes of state in terms of energy flow; trace matter and energy through living systems at multiple scales; predict changes in populations through natural selection and reproduction; use lithospheric plate movement to explain geological phenomena; and identify relationships among regional weather and atmospheric and ocean circulation patterns. They should be able to design and critique investigations involving sampling processes, data quality review processes, and control of variables. They should be able to propose and critique alternative solutions that reflect science-based trade-offs for addressing local and regional problems.

Science Practices: Students performing at the *Advanced* level should be able to demonstrate relationships among different representations of science principles. They should be able to explain and predict observations of phenomena at multiple scales, from microscopic to macroscopic and local to global, and develop alternative explanations of observations, using evidence to support their thinking. They should be able to design control of variable investigations employing appropriate sampling techniques and data quality review processes that strengthen the evidence used to argue for one alternate model over another. They should be able to propose and critique alternative solutions that reflect science-based trade-offs for addressing local and regional problems.

In the physical sciences, students at the *Advanced* level should be able to interpret diagrams, graphs, and data to demonstrate the relationship between the particulate nature of matter and state changes (for instance, melting and freezing); demonstrate relationships between position on the periodic table and the characteristics of families of the chemical elements; explain changes of state in terms of energy flow in and out of a system; identify possible scientific trade-offs in making decisions on the design of an electrical energy power plant; suggest examples of systems in which objects are undergoing transitional, vibrational, and rotational motion; and suggest examples of systems in which forces are acting both through contact and at a distance.

In the life sciences, students at the *Advanced* level should be able to explain movement and transformations of matter and energy in living systems at cellular, organismal, and ecosystem levels; predict changes in populations through natural selection and reproduction; and describe an ecosystem's populations and propose an analysis for changes based on energy flow through the system.

In the Earth and space sciences, students at the *Advanced* level should be able to explain the seasons, Moon phases, and lunar and solar eclipses; illustrate how fossils and rock formations can provide evidence of changes in environmental conditions over time; use lithospheric plate movement to explain geological phenomena; identify relationships among regional weather and atmospheric and ocean circulation patterns; and use the water cycle to propose and critique ways for obtaining drinkable water.

What Eighth-Graders Know and Can Do in Science

The item map below illustrates the range of science skills demonstrated by eighth-graders. The scale scores on the left represent the scores for students who were likely to get the items correct or complete. The cut score at the lower end of the range for each achievement level is boxed. The descriptions of selected assessment questions indicating what students need to do to answer the question correctly are listed on the right, along with the corresponding science content areas.

For example, students performing in the middle of the *Basic* range (with a score of 157) were likely to be able to draw a conclusion based on fossil evidence. Students performing in the middle of the *Proficient* range (with a score of 188) were likely to be able to predict the long-term pattern in the volcanic activity of a region.

GRADE 8 NAEP SCIENCE ITEM MAP

	Scale score	Content area	Question description
	300		
	//		
Advanced	286	**Earth and space sciences**	Explain and critique two plans to prevent erosion (**shown on pages 34 and 35**)
	266	**Physical science**	Describe the evidence for chemical change
	254	**Earth and space sciences**	Explain the formation of a rock based on its features
	246	**Life science**	Form a conclusion based on data about behavior of an organism
	228	**Physical science**	*Recognize the direction of force of friction*
	223	**Earth and space sciences**	*Predict the Sun's position in the sky*
	215	**Earth and space sciences**	*Predict lunar phenomena*
	215		
Proficient	212	**Earth and space sciences**	Explain effects of human land use on wildlife
	202	**Physical science**	Select and explain the useful properties of a material used in an industrial process
	201	**Earth and space sciences**	*List soils in order of permeability* (**shown on page 36**)
	200	**Earth and space sciences**	*Relate characteristics of air masses to global regions*
	199	**Life science**	*Identify the main source of energy for certain organisms*
	194	**Physical science**	*Determine a controlled variable of a chemistry investigation*
	188	**Earth and space sciences**	*Predict the long-term pattern in the volcanic activity of a region*
	186	**Life science**	*Recognize that plants produce their own food*
	183	**Physical science**	*Recognize an effect of electrical forces*
	174	**Life science**	*Identify a function of a human organ system*
	172	**Earth and space sciences**	*Investigate the magnetic properties of some common objects*
	170		
Basic	169	**Life science**	Describe the competition between two species
	165	**Physical science**	Describe the energy transfer between two systems
	163	**Life science**	*Recognize the role of decomposers* (**shown on page 31**)
	163	**Physical science**	*Read a motion graph*
	160	**Earth and space sciences**	*Relate oxygen level to atmospheric conditions at higher elevations*
	157	**Earth and space sciences**	*Draw a conclusion based on fossil evidence*
	152	**Physical science**	Critique and improve an investigation about forces (**shown on pages 32 and 33**)
	149	**Life science**	*Recognize a factor that affects the success of a species*
	148	**Earth and space sciences**	*Identify the mechanism of a weather pattern*
	145	**Earth and space sciences**	*Identify how some lunar surface features are formed*
	141		
	140	**Earth and space sciences**	*Identify sequence of formation of Earth features*
	138	**Physical science**	*Identify an example of kinetic energy*
	130	**Life science**	*Predict the effect of an environmental change on an organism*
	127	**Life science**	*Explain an experimental setup to study populations of organisms*
	127	**Life science**	Predict changes in populations based on a food web
	119	**Physical science**	Describe part of a valid experiment to compare heating rates of different materials
	//		
	0		

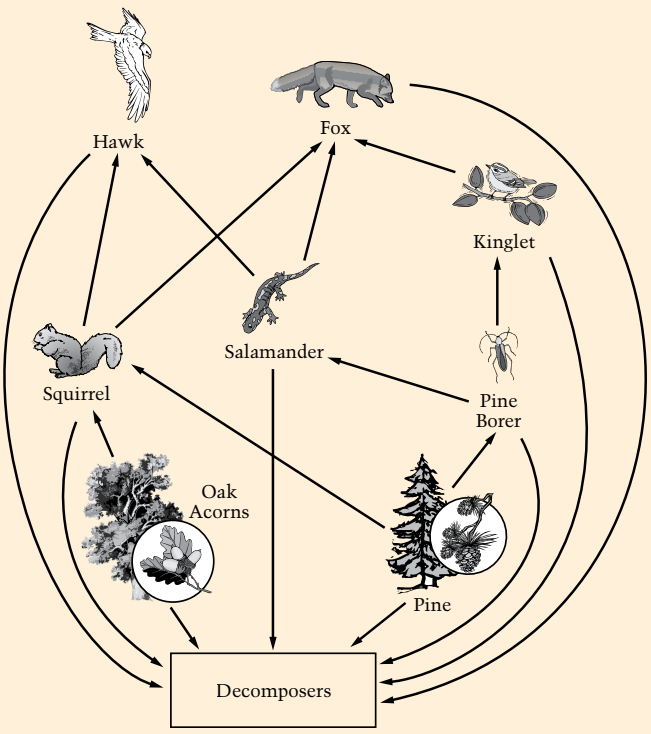
NOTE: Regular type denotes a constructed-response question. *Italic* type denotes a multiple-choice question. The position of a question on the scale represents the scale score attained by students who had a 65 percent probability of successfully answering a constructed-response question, or a 74 percent probability of correctly answering a four-option multiple-choice question. For constructed-response questions, the question description represents students' performance at the highest scoring level used in the analysis (with the exception of the description at a score of 119 which represents the performance of students receiving partial credit on their response). Scale score ranges for science achievement levels are referenced on the map.

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

Sample Question: Life Science

The diagram below shows a food web. The arrows show the direction of energy flow. Each arrow points from the organism that is consumed to the organism that consumes it. Use the information in the food web to answer the question that follows.

FOOD WEB



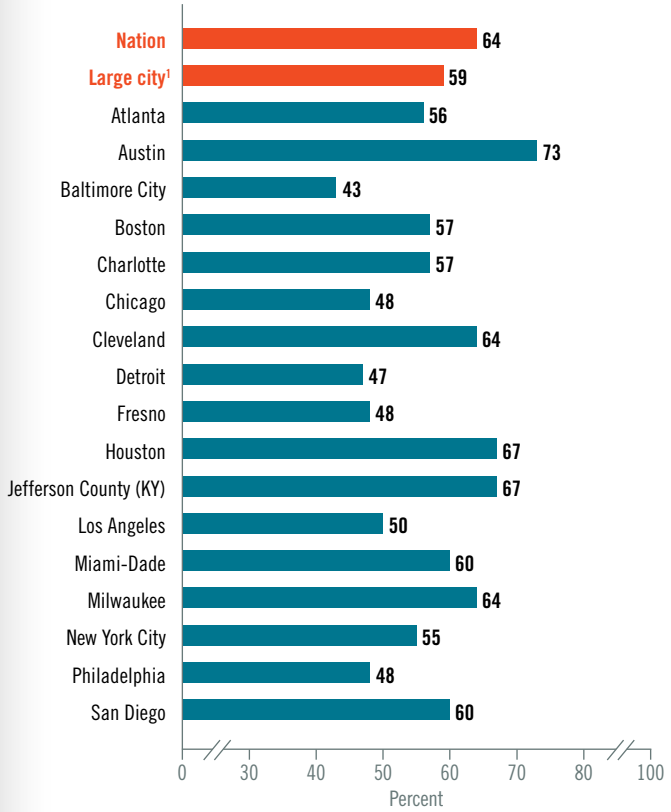
Which statement best explains why decomposers are an important part of this food web?

- (A) They use sunlight to make their own food.
- (B) They give off oxygen for animals to breathe.
- (C) They provide camouflage for small animals.
- (D) They make nutrients available to plants.

This sample question from the 2009 eighth-grade assessment measures students' performance in the life science content area. This question (as part of a two-question set) asks students to identify the role a decomposer plays in a food web.

Approximately two-thirds (64 percent) of eighth-grade public school students in the nation answered correctly (Choice D). The percentage of correct answers in each of the districts ranged from 43 percent in Baltimore City to 73 percent in Austin.

Percentage correct for eighth-grade public school students, by jurisdiction: 2009



[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

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

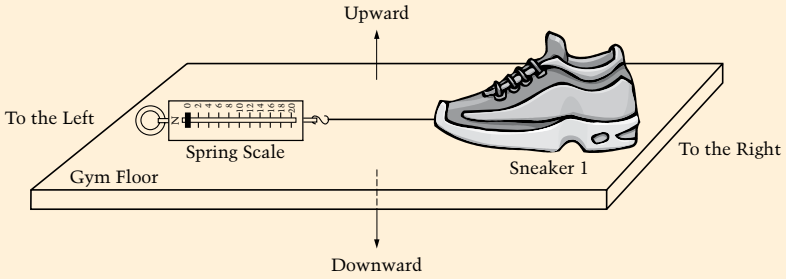
Sample Question: Physical Science

Meg designs an experiment to see which of three types of sneakers provides the most friction.

She uses the equipment listed below.

- Sneaker 1
- Sneaker 2
- Sneaker 3
- Spring scale

She uses the setup shown below and pulls the spring scale to the left.



Complete response #1:

Meg tests one type of sneaker on a gym floor, a second type of sneaker on a grass field, and a third type of sneaker on a cement sidewalk. Her teacher is not satisfied with the way Meg designed her experiment. Describe one error in Meg's experiment.

Meg's error in the experiment was that she did not have a controled vatible. She had too many variables being the type of shoes and where each was tested.

Describe how Meg could improve the experiment to find out which of the three types of sneakers provides the most friction.

To improve her experiment Meg could test all three shoes on the same ground.

Complete response #2:

Meg tests one type of sneaker on a gym floor, a second type of sneaker on a grass field, and a third type of sneaker on a cement sidewalk. Her teacher is not satisfied with the way Meg designed her experiment. Describe one error in Meg's experiment.

She tested them in diffepent places so her measurements were not accurate

Describe how Meg could improve the experiment to find out which of the three types of sneakers provides the most friction.

test them all in the same place

This sample of a short constructed-response question (shown on the previous page) measures eighth-graders' performance in the physical science content area. It requires students to critique an investigation on friction and identify a way to improve the investigation. Student responses to this question were rated using three scoring levels.

Complete responses indicated that the experiment did not control all variables except for the variable being tested, and indicated a valid way to redesign the experiment.

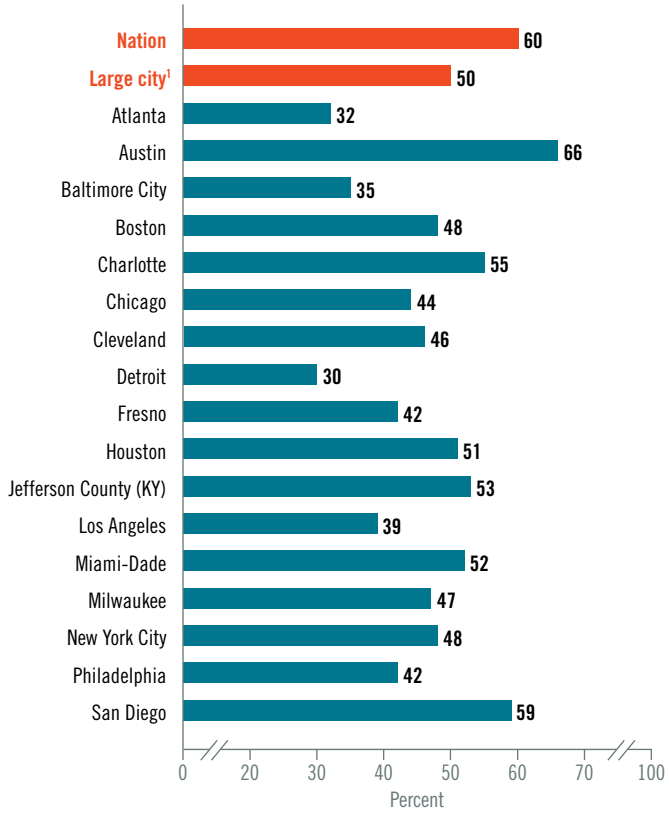
Partial responses either

- indicated that the experiment did not control all variables except for the variable being tested, or
- indicated a valid way to redesign the experiment.

Unsatisfactory/Incorrect responses were inadequate or incorrect.

The sample student responses shown on the previous page were rated as "Complete" because they correctly answered the question. Sixty percent of eighth-grade public school students' responses to this question received a "Complete" or "Partial" rating. The combined percentages of student responses rated as "Complete" or "Partial" are presented on the right for the nation, large cities, and participating districts.

Percentage of answers rated as "Complete" or "Partial" for eighth-grade public school students, by jurisdiction: 2009



[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

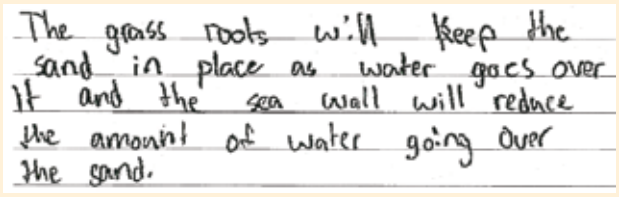
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Sample Question: Earth and Space Sciences

Some homes were built near the shoreline of the ocean. Sand dunes lie between the homes and the water. Each year a portion of the sand dunes is eroded by the ocean. To prevent erosion, some citizens suggest planting grasses on the sand dunes, and others suggest building a seawall, a solid barrier along the shoreline.

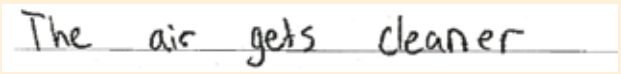
Complete response #1:

Explain how each plan would prevent erosion of the dunes.

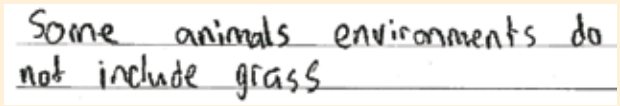


Give an environmental advantage and disadvantage of each plan.

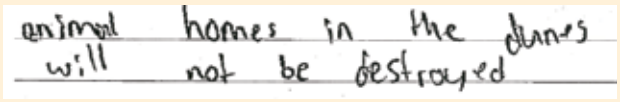
Environmental advantage of planting grasses:



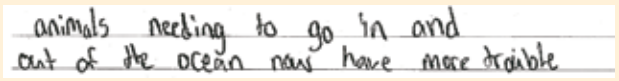
Environmental disadvantage of planting grasses:



Environmental advantage of building a seawall:

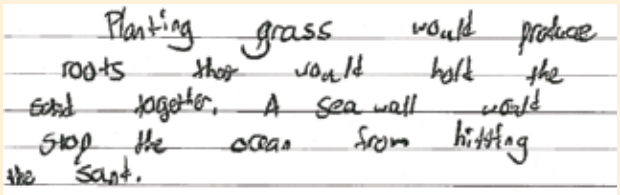


Environmental disadvantage of building a seawall:



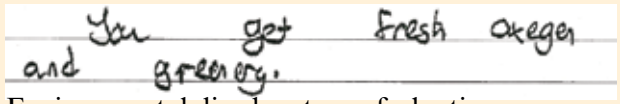
Complete response #2:

Explain how each plan would prevent erosion of the dunes.

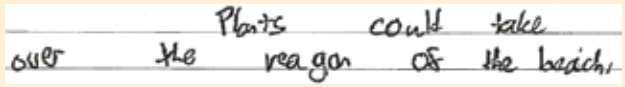


Give an environmental advantage and disadvantage of each plan.

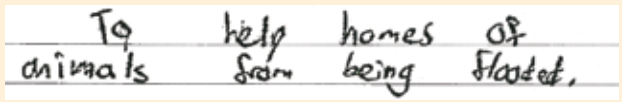
Environmental advantage of planting grasses:



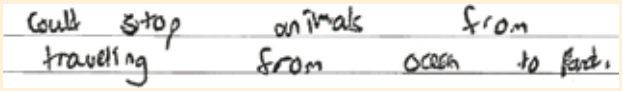
Environmental disadvantage of planting grasses:



Environmental advantage of building a seawall:



Environmental disadvantage of building a seawall:



This sample of an extended constructed-response question (shown on the previous page) measures eighth-graders' performance in the Earth and space sciences content area. It requires students to evaluate two proposed plans for preventing sand erosion. Student responses to this question were rated in three parts with three scoring levels for each part.

Part A: Explanation of both plans

Complete responses correctly explained how planting grasses and building a seawall would prevent erosion.

Partial responses correctly explained either how planting grasses or building a seawall would prevent erosion.

Unsatisfactory/Incorrect responses were inadequate or incorrect.

Part B: Planting grasses

Complete responses provided a plausible advantage and disadvantage of planting grasses.

Partial responses provided a plausible advantage or a plausible disadvantage of planting grasses.

Unsatisfactory/Incorrect responses were inadequate or incorrect.

Part C: Building a seawall

Complete responses provided a plausible advantage and disadvantage of building a seawall.

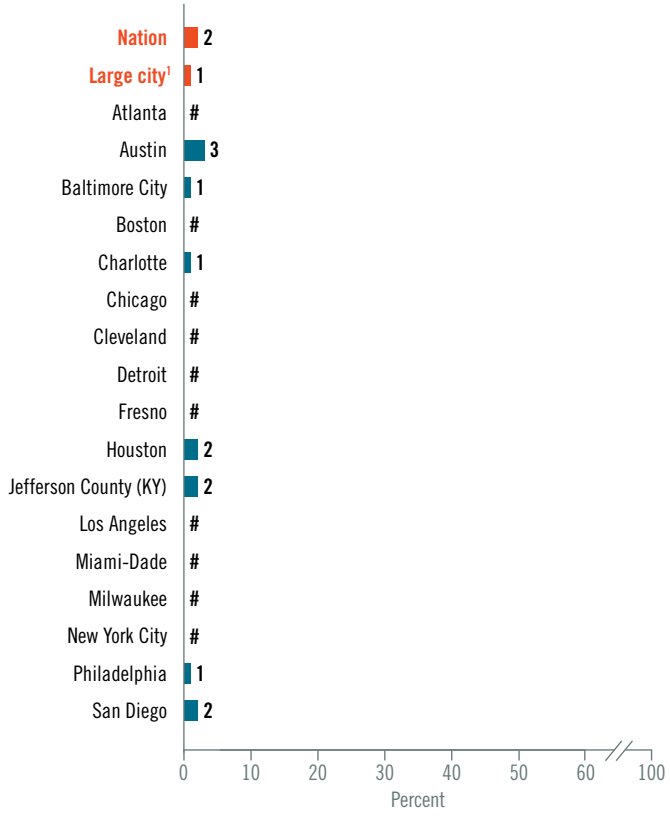
Partial responses provided a plausible advantage or a plausible disadvantage of building a seawall.

Unsatisfactory/Incorrect responses were inadequate or incorrect.

The sample student responses shown on the previous page were rated as "Complete" because they correctly answered all parts of the question.

Students received an overall combined rating of "Complete" for providing a complete response for each part. Students received an overall combined rating of "Satisfactory" for providing a complete response for two parts and a partial response for the third part. The percentages of student responses that received an overall rating of "Satisfactory" or better are presented below for the nation, large cities, and participating districts.

Percentage of answers rated as "Satisfactory" or better for eighth-grade public school students, by jurisdiction: 2009



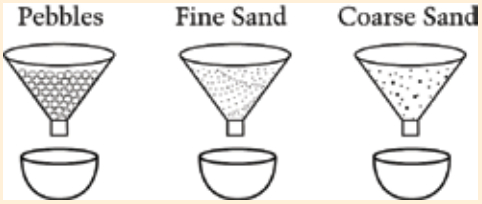
Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

More information about this sample question is available at http://nces.ed.gov/nationsreportcard/itmrlsx/search.aspx?subject=science.

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

Sample Question: Earth and Space Sciences

Three funnels were filled with equal volumes of pebbles, fine sand, and coarse sand, as shown in the diagram below. The same amount of water was poured into each funnel.

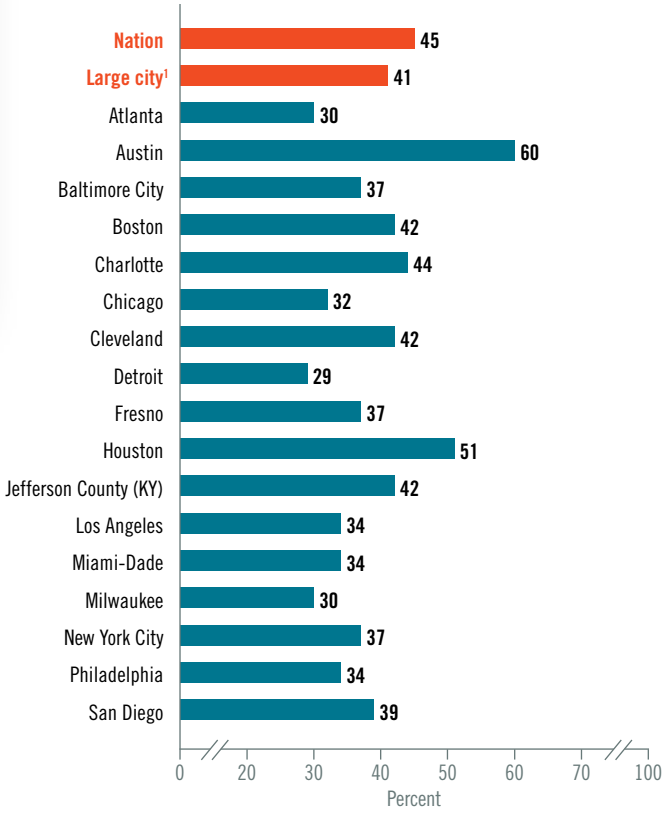


Which correctly lists the order in which the water passed through the funnels, from fastest to slowest?

- (A) Pebbles, fine sand, coarse sand
- (B) Pebbles, coarse sand, fine sand
- (C) Fine sand, coarse sand, pebbles
- (D) Coarse sand, pebbles, fine sand

This sample question from the 2009 eighth-grade assessment measures students' performance in the Earth and space sciences content area. The question asks students to order soils according to the rate that water flowed through them. Forty-five percent of eighth-grade public school students answered the question correctly (Choice B). The most common incorrect answer (Choice C) was selected by 33 percent of the students and represents a conceptual misunderstanding that the smaller the (soil) particles are, the faster water flows through them. The percentages of students who selected the correct answer are presented below for the nation, large cities, and participating districts.

Percentage correct for eighth-grade public school students, by jurisdiction: 2009



[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

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

District Profiles



Individual district profiles provide a closer look at some key findings for each district, including how districts' scores compare with percentiles for public school students in the nation, and with scores in their home states; how the performance of lower-income students in the districts compares to similar students in the nation; and how scores for White students compare to scores for Black and Hispanic students in districts where samples are large enough to report results for those groups. Web-generated profiles or "snapshots" of district results are available for each participating district at http://nces.ed.gov/nationsreportcard/pubs/dst2009/2011454.asp.

Atlanta, Grade 4

For Atlanta fourth-graders in 2009,

- the overall average score was 134.
- the average score of 134 was at the 32nd percentile for the nation.
- the average score was not significantly different from the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Georgia.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

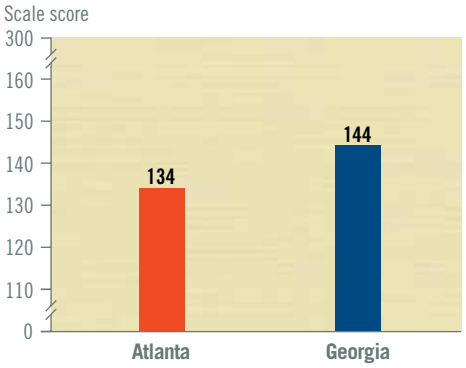
- a White – Black score gap of 56 points.[4]

Achievement-level results showed

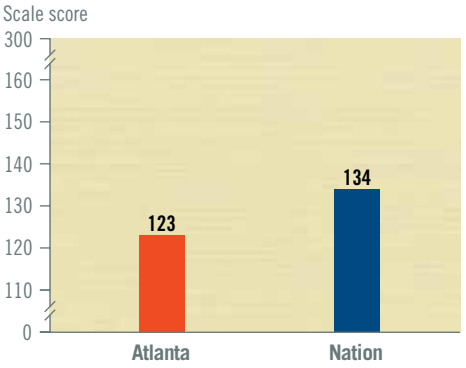
- a lower percentage at or above *Basic* compared to large cities.
- no significant difference in the percentage at or above *Proficient* compared to large cities.

[4] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

Average scores in NAEP science for fourth-graders in Atlanta and Georgia: 2009

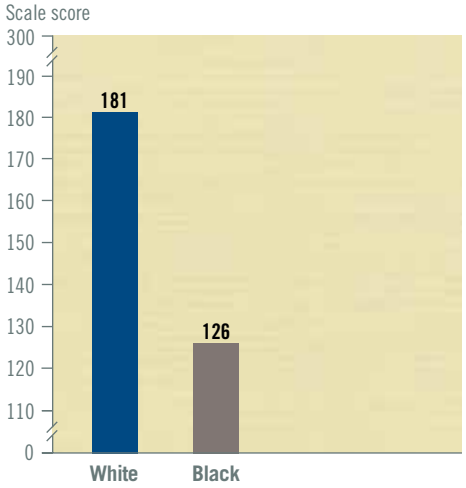


Average scores in NAEP science for lower-income fourth-graders in Atlanta and the nation: 2009



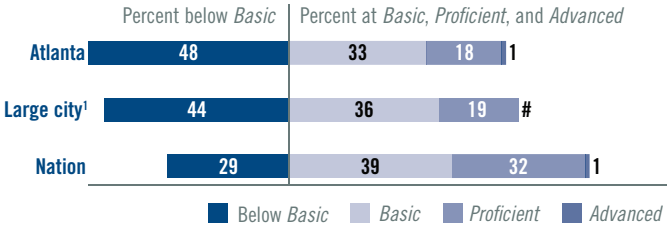
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Atlanta, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Atlanta: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Atlanta, Grade 8

For Atlanta eighth-graders in 2009,

- the overall average score was 127.
- the average score of 127 was at the 25th percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Georgia.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

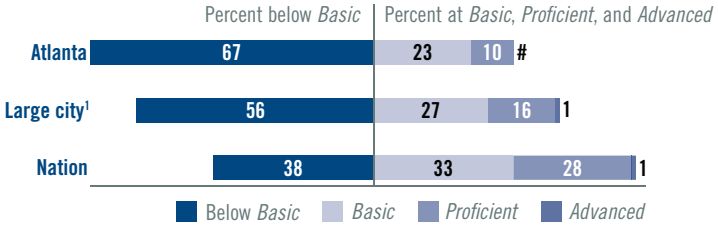
Results for racial/ethnic groups showed

- an average score of 123 for Black students.
- insufficient sample sizes to report results for racial/ethnic groups other than Black.

Achievement-level results showed

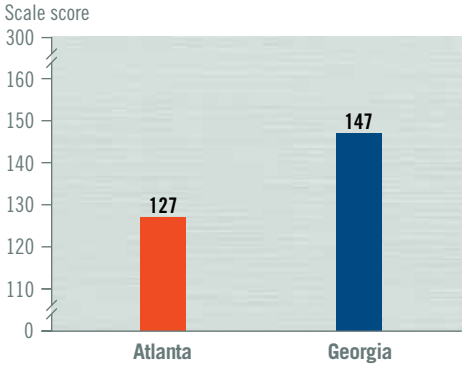
- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Atlanta: 2009

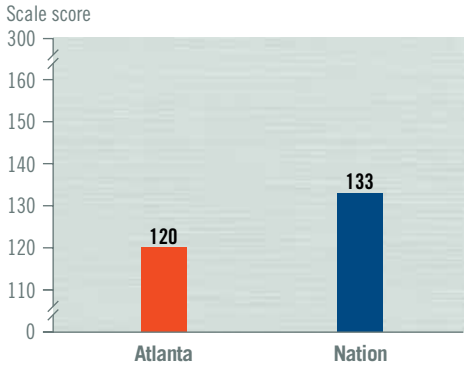


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

Average scores in NAEP science for eighth-graders in Atlanta and Georgia: 2009

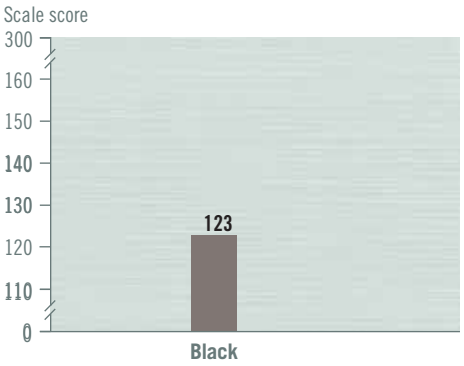


Average scores in NAEP science for lower-income eighth-graders in Atlanta and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Atlanta, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American and excludes Hispanic origin.

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

Austin, Grade 4

For Austin fourth-graders in 2009,

- the overall average score was 147.
- the average score of 147 was at the 44th percentile for the nation.
- the average score was higher than the average score for large cities (135).

The district-to-state comparison showed

- no significant difference from the overall score for Texas.

Results for lower-income students showed

- no significant difference in the average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

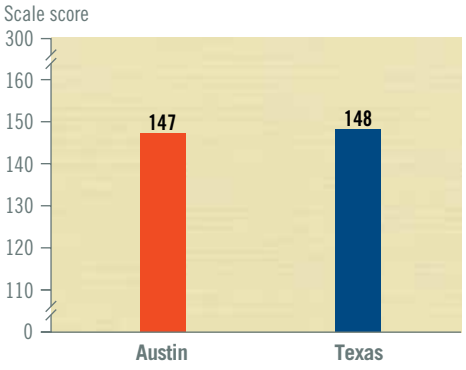
- a White – Black score gap of 54 points.
- a White – Hispanic score gap of 49 points.[5]

Achievement-level results showed

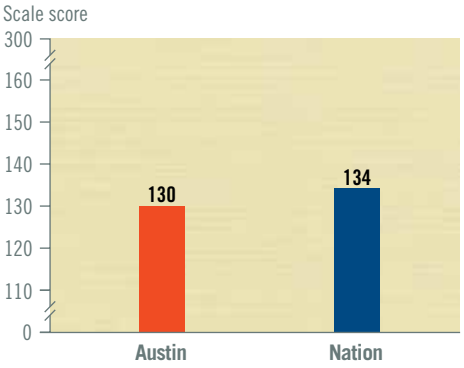
- a higher percentage at or above *Basic* compared to large cities.
- a higher percentage at or above *Proficient* compared to large cities.

[5] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

Average scores in NAEP science for fourth-graders in Austin and Texas: 2009

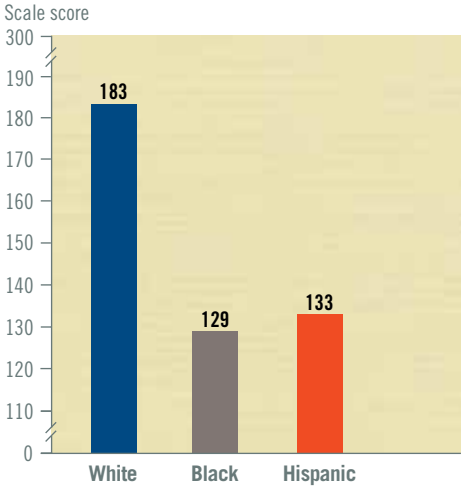


Average scores in NAEP science for lower-income fourth-graders in Austin and the nation: 2009



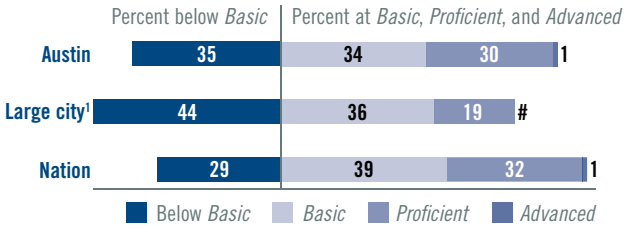
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Austin, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Austin: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Austin, Grade 8

For Austin eighth-graders in 2009,

- the overall average score was 149.
- the average score of 149 was at the 47th percentile for the nation.
- the average score was higher than the average score for large cities (134).

The district-to-state comparison showed

- no significant difference from the overall score for Texas.

Results for lower-income students showed

- no significant difference in the average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

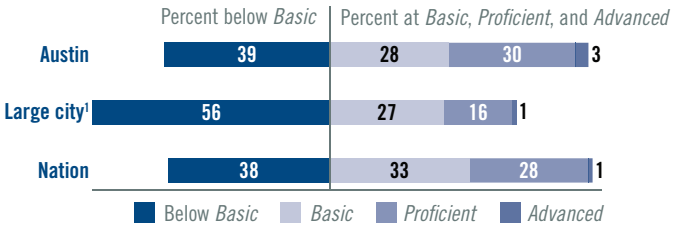
- a White – Black score gap of 40 points.
- a White – Hispanic score gap of 43 points.[6]

Achievement-level results showed

- a higher percentage at or above *Basic* compared to large cities.
- a higher percentage at or above *Proficient* compared to large cities.

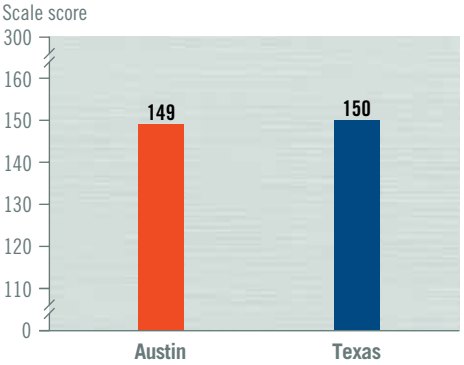
[6] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

Achievement-level results in NAEP science for eighth-graders in Austin: 2009

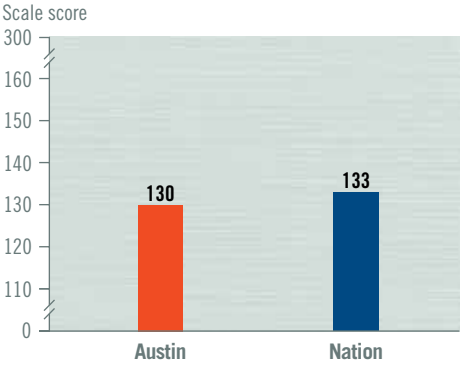


[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

Average scores in NAEP science for eighth-graders in Austin and Texas: 2009

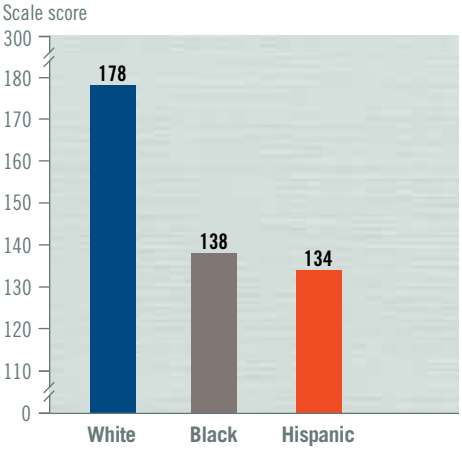


Average scores in NAEP science for lower-income eighth-graders in Austin and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Austin, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

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

Baltimore City, Grade 4

For Baltimore City fourth-graders in 2009,

- the overall average score was 117.
- the average score of 117 was at the 18th percentile for the nation.
- the average score was lower than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Maryland.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

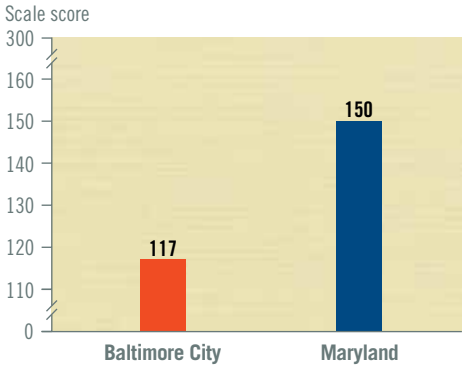
- a White – Black score gap of 29 points.[7]

Achievement-level results showed

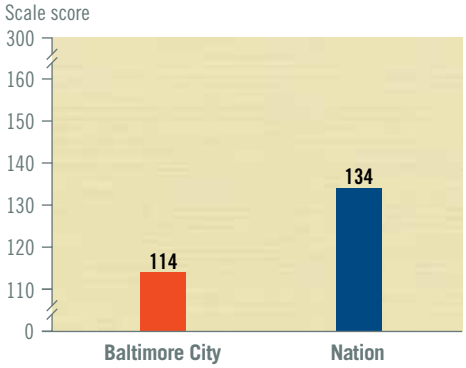
- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

[7] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

Average scores in NAEP science for fourth-graders in Baltimore City and Maryland: 2009

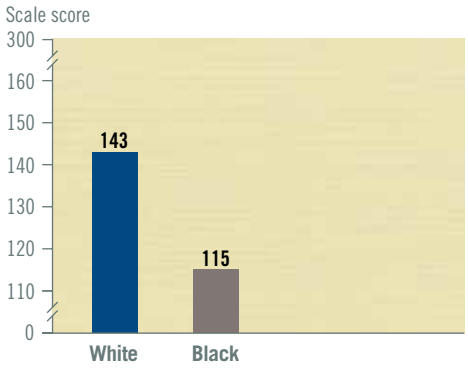


Average scores in NAEP science for lower-income fourth-graders in Baltimore City and the nation: 2009



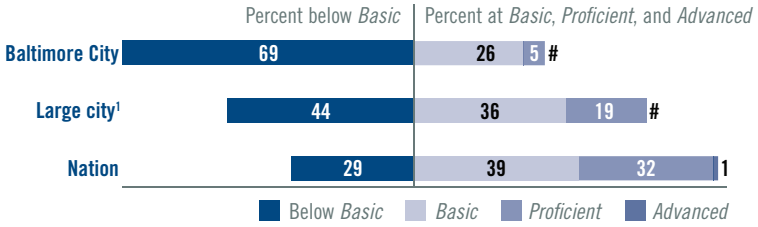
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Baltimore City, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Baltimore City: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Baltimore City, Grade 8

For Baltimore City eighth-graders in 2009,

- the overall average score was 113.
- the average score of 113 was at the 16th percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Maryland.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

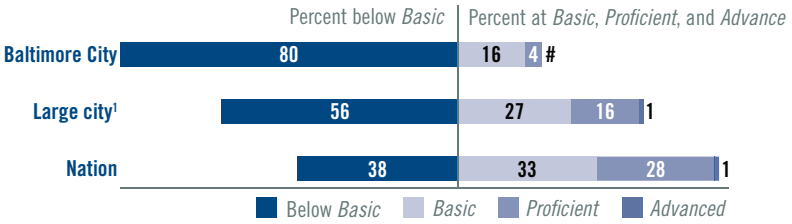
Results for racial/ethnic groups showed

- an average score of 110 for Black students.
- insufficient sample sizes to report results for racial/ethnic groups other than Black.

Achievement-level results showed

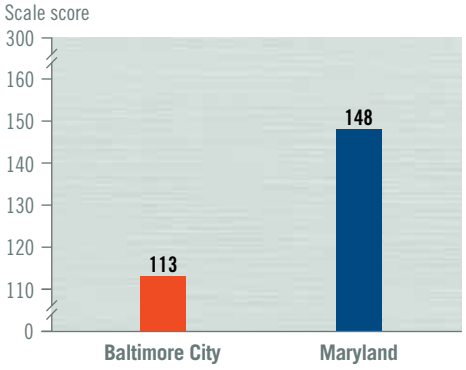
- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Baltimore City: 2009

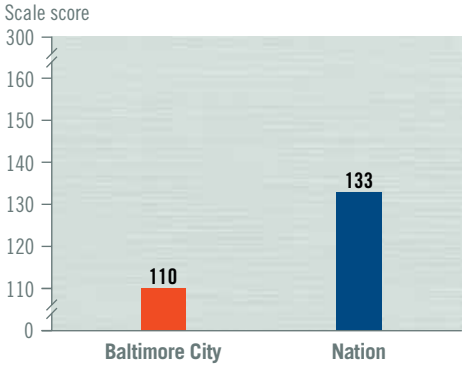


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

Average scores in NAEP science for eighth-graders in Baltimore City and Maryland: 2009

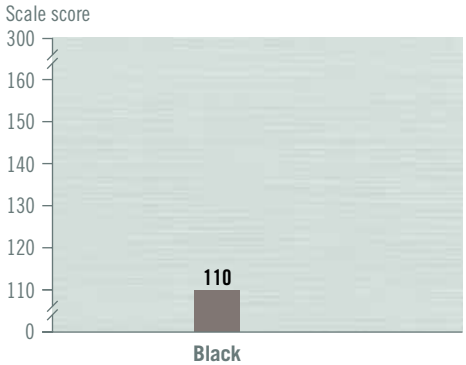


Average scores in NAEP science for lower-income eighth-graders in Baltimore City and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Baltimore City, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American and excludes Hispanic origin.

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

Boston, Grade 4

For Boston fourth-graders in 2009,

- the overall average score was 139.
- the average score of 139 was at the 36th percentile for the nation.
- the average score was higher than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Massachusetts.

Results for lower-income students showed

- no significant difference in the average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

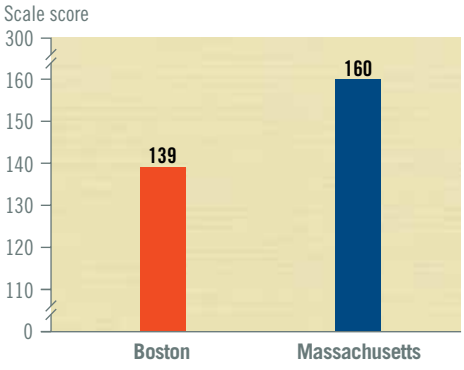
- a White – Black score gap of 28 points.
- a White – Hispanic score gap of 26 points.[8]

Achievement-level results showed

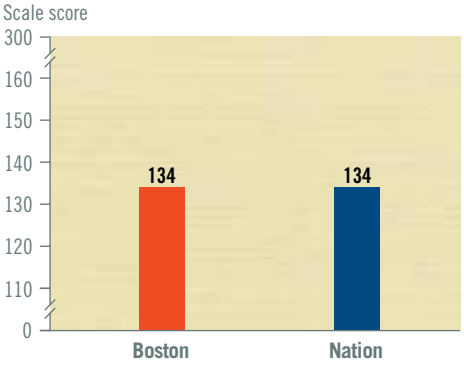
- a higher percentage at or above *Basic* compared to large cities.
- no significant difference in the percentage at or above *Proficient* compared to large cities.

[8] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

Average scores in NAEP science for fourth-graders in Boston and Massachusetts: 2009

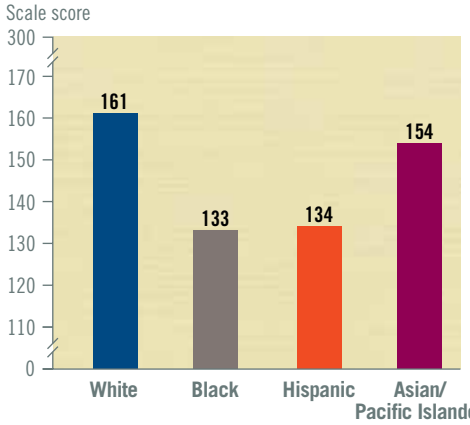


Average scores in NAEP science for lower-income fourth-graders in Boston and the nation: 2009



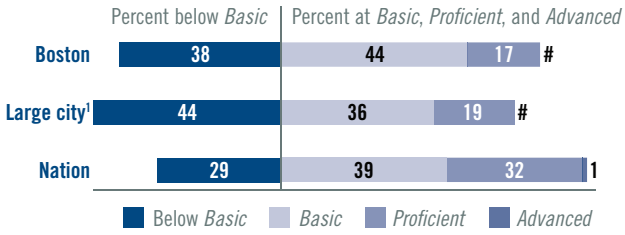
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Boston, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Boston: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Boston, Grade 8

For Boston eighth-graders in 2009,

- the overall average score was 130.
- the average score of 130 was at the 28th percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Massachusetts.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

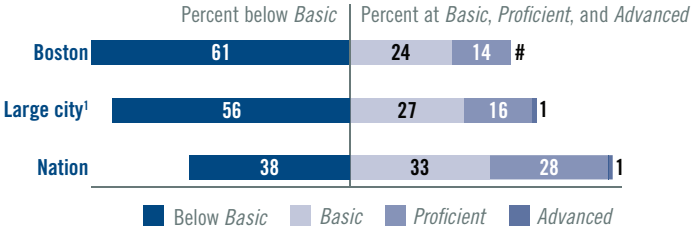
Results for racial/ethnic groups showed

- a White – Black score gap of 40 points.
- a White – Hispanic score gap of 37 points.

Achievement-level results showed

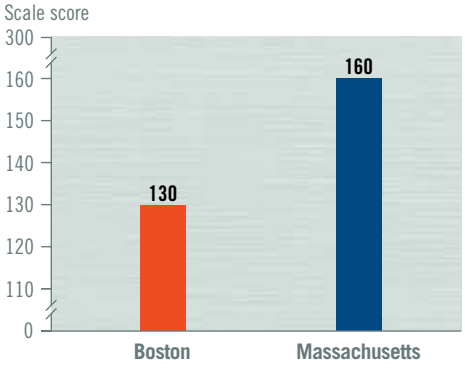
- a lower percentage at or above *Basic* compared to large cities.
- no significant difference in the percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Boston: 2009

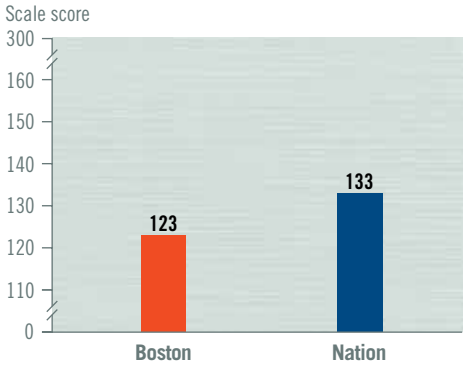


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

Average scores in NAEP science for eighth-graders in Boston and Massachusetts: 2009

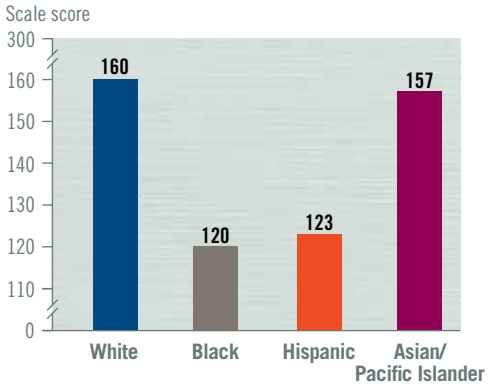


Average scores in NAEP science for lower-income eighth-graders in Boston and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Boston, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

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

Charlotte, Grade 4

For Charlotte fourth-graders in 2009,

- the overall average score was 150.
- the average score of 150 was at the 48th percentile for the nation.
- the average score was higher than the average score for large cities (135).

The district-to-state comparison showed

- no significant difference from the overall score for North Carolina.

Results for lower-income students showed

- no significant difference in the average score compared to lower-income students in the nation.

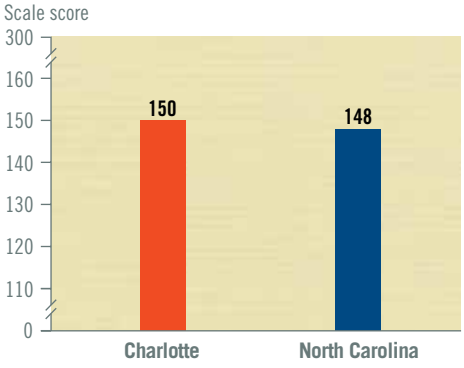
Results for racial/ethnic groups showed

- a White – Black score gap of 43 points.
- a White – Hispanic score gap of 38 points.

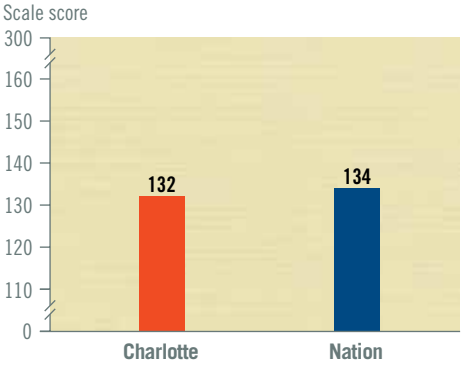
Achievement-level results showed

- a higher percentage at or above *Basic* compared to large cities.
- a higher percentage at or above *Proficient* compared to large cities.

Average scores in NAEP science for fourth-graders in Charlotte and North Carolina: 2009

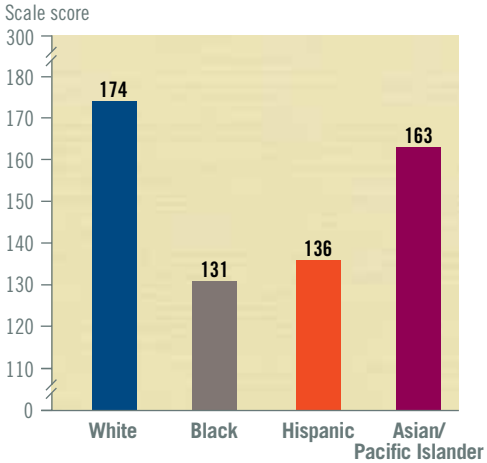


Average scores in NAEP science for lower-income fourth-graders in Charlotte and the nation: 2009



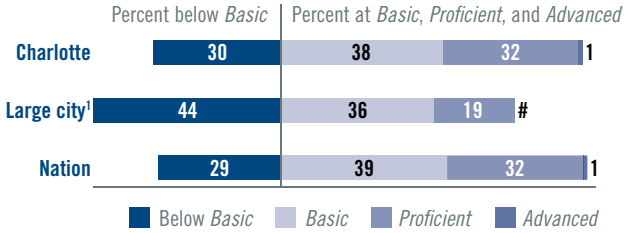
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Charlotte, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Charlotte: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Charlotte, Grade 8

For Charlotte eighth-graders in 2009,

- the overall average score was 141.
- the average score of 141 was at the 38th percentile for the nation.
- the average score was higher than the average score for large cities (134).

The district-to-state comparison showed

- no significant difference from the overall score for North Carolina.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

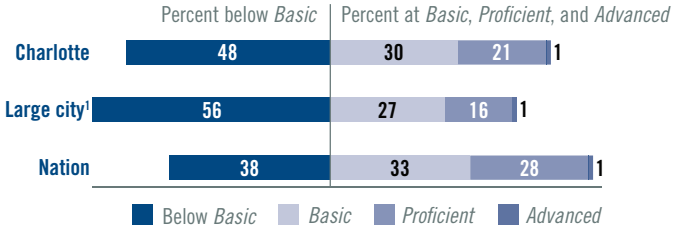
Results for racial/ethnic groups showed

- a White – Black score gap of 41 points.
- a White – Hispanic score gap of 36 points.

Achievement-level results showed

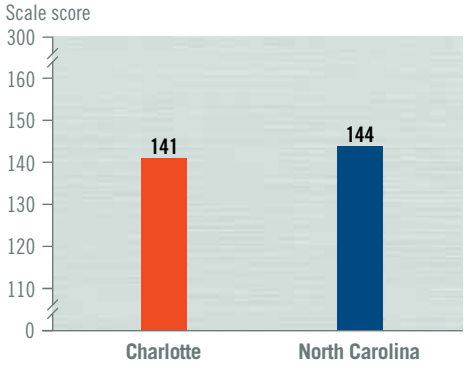
- a higher percentage at or above *Basic* compared to large cities.
- a higher percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Charlotte: 2009

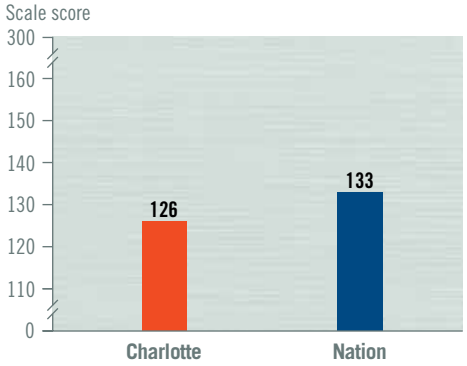


[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

Average scores in NAEP science for eighth-graders in Charlotte and North Carolina: 2009

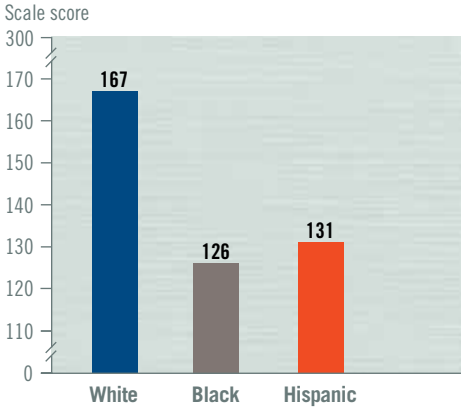


Average scores in NAEP science for lower-income eighth-graders in Charlotte and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Charlotte, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

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

Chicago, Grade 4

For Chicago fourth-graders in 2009,

- the overall average score was 125.
- the average score of 125 was at the 23rd percentile for the nation.
- the average score was lower than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Illinois.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

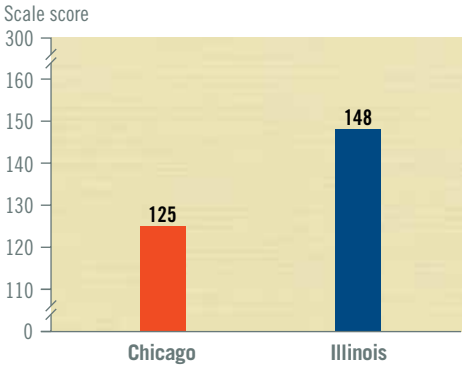
Results for racial/ethnic groups showed

- a White – Black score gap of 41 points.
- a White – Hispanic score gap of 26 points.

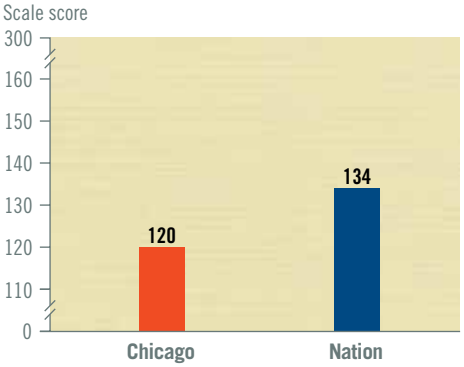
Achievement-level results showed

- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Average scores in NAEP science for fourth-graders in Chicago and Illinois: 2009

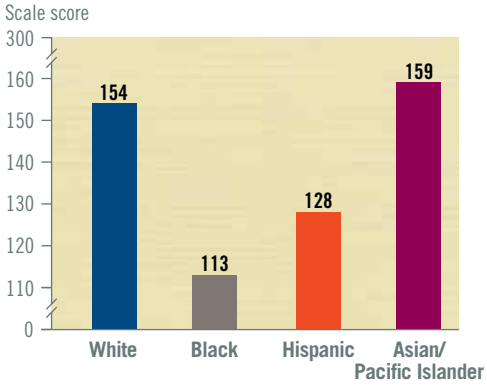


Average scores in NAEP science for lower-income fourth-graders in Chicago and the nation: 2009



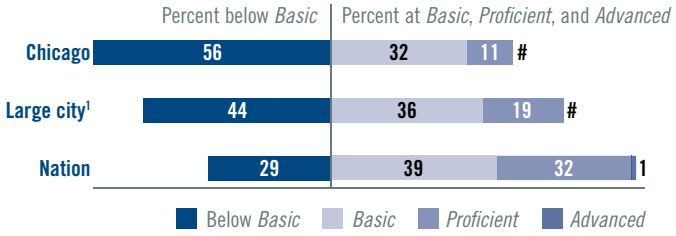
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Chicago, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Chicago: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Chicago, Grade 8

For Chicago eighth-graders in 2009,

- the overall average score was 121.
- the average score of 121 was at the 21st percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Illinois.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

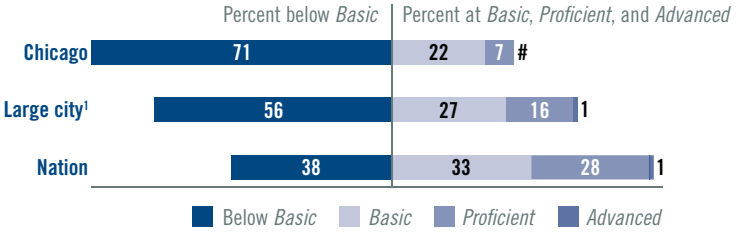
Results for racial/ethnic groups showed

- a White – Black score gap of 40 points.
- a White – Hispanic score gap of 25 points.

Achievement-level results showed

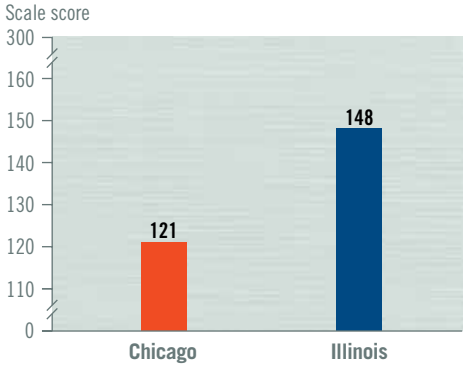
- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Chicago: 2009

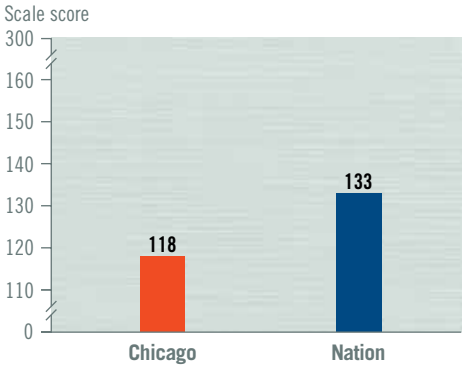


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

Average scores in NAEP science for eighth-graders in Chicago and Illinois: 2009

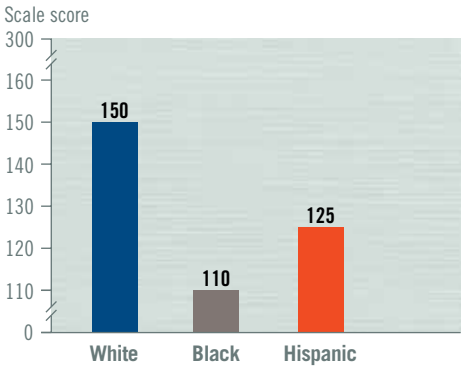


Average scores in NAEP science for lower-income eighth-graders in Chicago and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Chicago, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

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

Cleveland, Grade 4

For Cleveland fourth-graders in 2009,

- the overall average score was 114.
- the average score of 114 was at the 16th percentile for the nation.
- the average score was lower than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Ohio.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

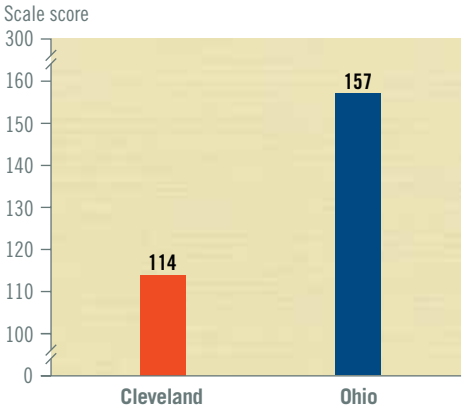
Results for racial/ethnic groups showed

- a White – Black score gap of 27 points.
- a White – Hispanic score gap of 23 points.

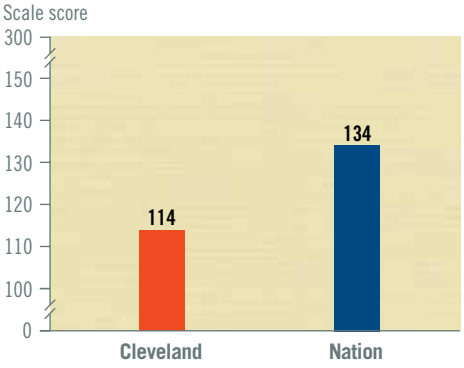
Achievement-level results showed

- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Average scores in NAEP science for fourth-graders in Cleveland and Ohio: 2009

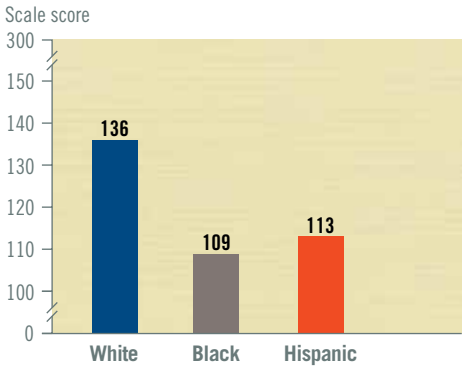


Average scores in NAEP science for lower-income fourth-graders in Cleveland and the nation: 2009



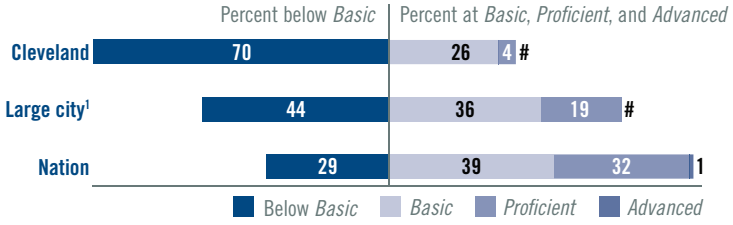
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program. In Cleveland, 100 percent of the students were identified as eligible, so the results for all students and lower-income students are the same.

Average scores in NAEP science for fourth-graders in Cleveland, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Cleveland: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Cleveland, Grade 8

For Cleveland eighth-graders in 2009,

- the overall average score was 121.
- the average score of 121 was at the 21st percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Ohio.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

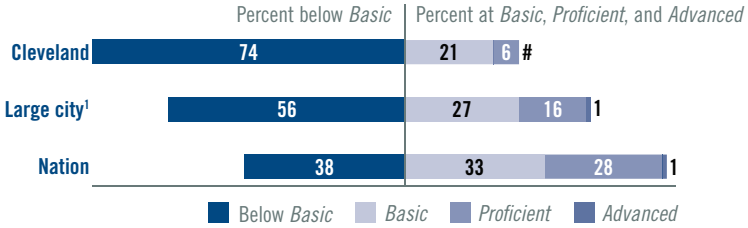
Results for racial/ethnic groups showed

- a White – Black score gap of 27 points.
- a White – Hispanic score gap of 22 points.

Achievement-level results showed

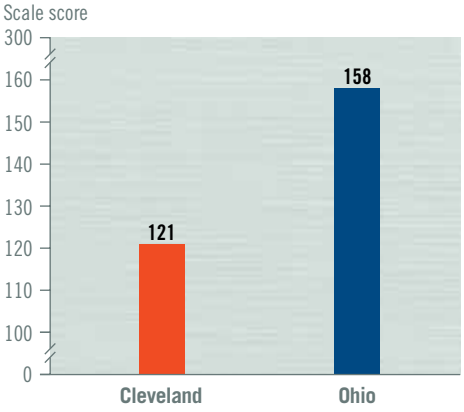
- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Cleveland: 2009

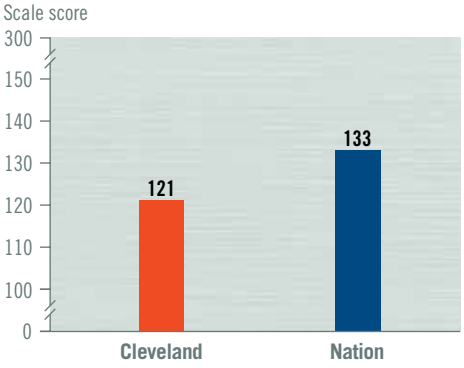


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

Average scores in NAEP science for eighth-graders in Cleveland and Ohio: 2009

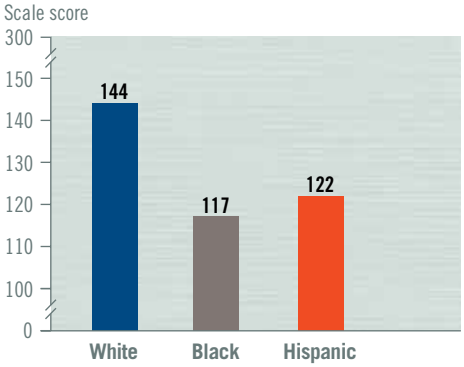


Average scores in NAEP science for lower-income eighth-graders in Cleveland and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program. In Cleveland, 100 percent of the students were identified as eligible, so the results for all students and lower-income students are the same.

Average scores in NAEP science for eighth-graders in Cleveland, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

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

Detroit, Grade 4

For Detroit fourth-graders in 2009,

- the overall average score was 111.
- the average score of 111 was at the 14th percentile for the nation.
- the average score was lower than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Michigan.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

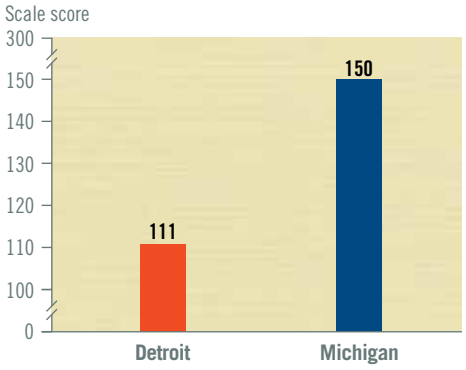
Results for racial/ethnic groups showed

- an average score of 109 for Black students.
- an average score of 122 for Hispanic students.

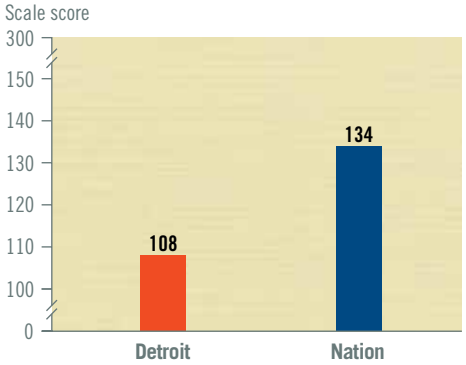
Achievement-level results showed

- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Average scores in NAEP science for fourth-graders in Detroit and Michigan: 2009

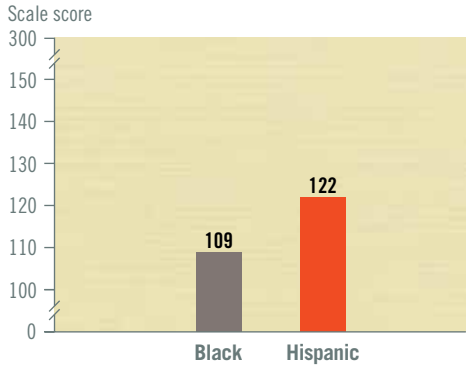


Average scores in NAEP science for lower-income fourth-graders in Detroit and the nation: 2009



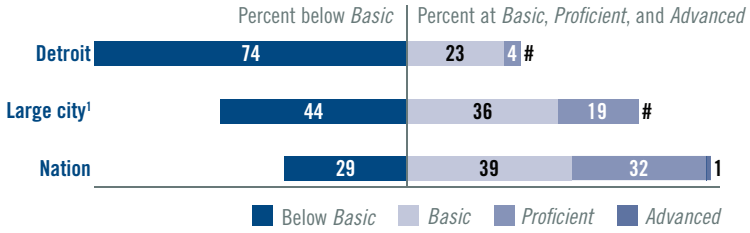
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Detroit, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Detroit: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Detroit, Grade 8

For Detroit eighth-graders in 2009,

- the overall average score was 113.
- the average score of 113 was at the 16th percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Michigan.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

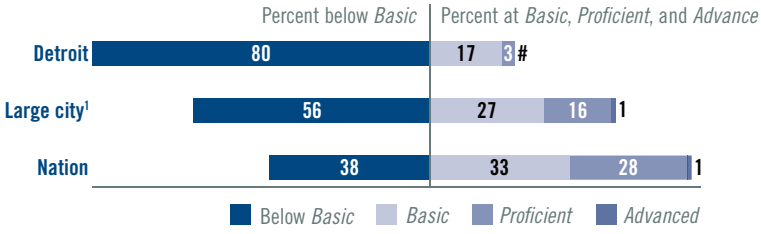
Results for racial/ethnic groups showed

- an average score of 113 for Black students.
- an average score of 117 for Hispanic students.

Achievement-level results showed

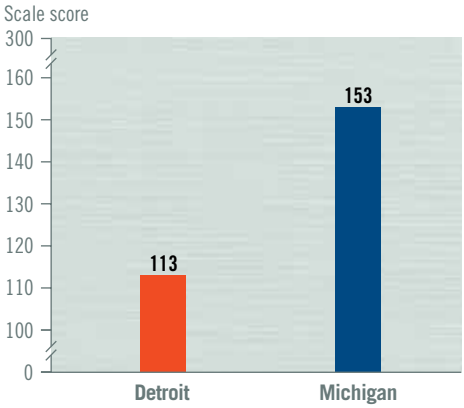
- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Detroit: 2009

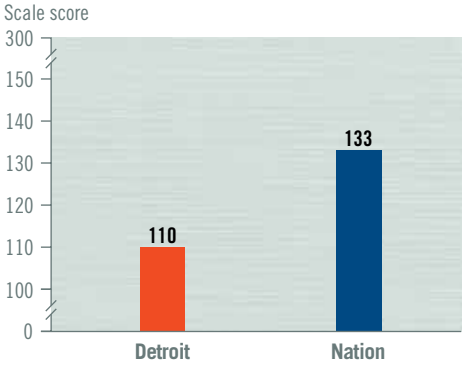


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

Average scores in NAEP science for eighth-graders in Detroit and Michigan: 2009

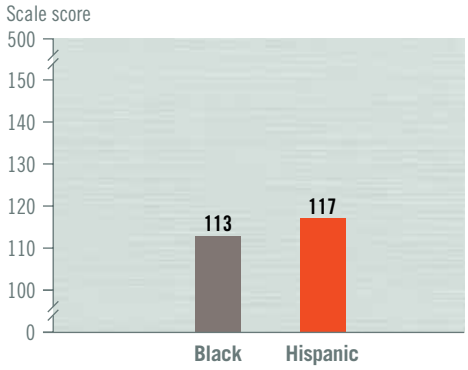


Average scores in NAEP science for lower-income eighth-graders in Detroit and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Detroit, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

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

Fresno, Grade 4

For Fresno fourth-graders in 2009,

- the overall average score was 121.
- the average score of 121 was at the 21st percentile for the nation.
- the average score was lower than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for California.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

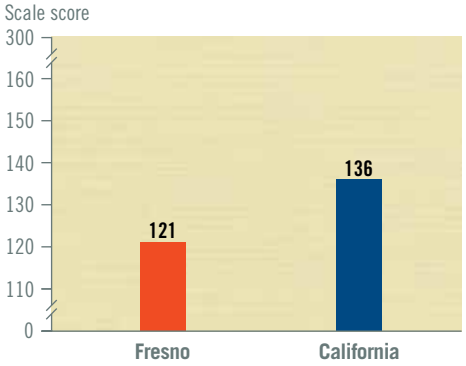
Results for racial/ethnic groups showed

- a White – Black score gap of 34 points.
- a White – Hispanic score gap of 26 points.

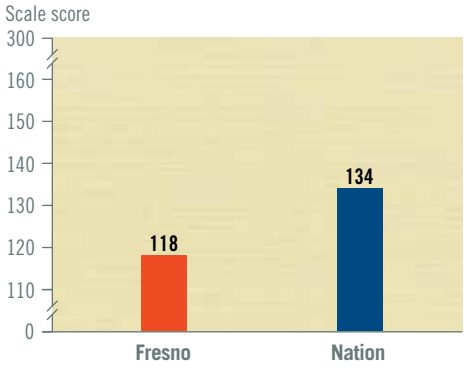
Achievement-level results showed

- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Average scores in NAEP science for fourth-graders in Fresno and California: 2009

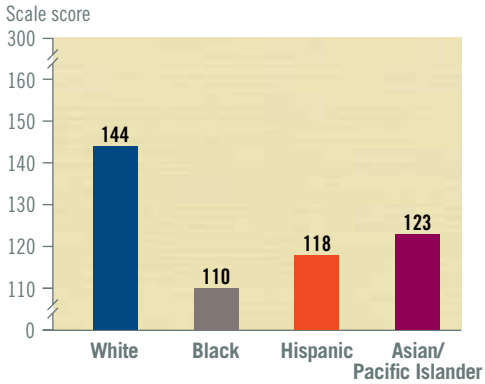


Average scores in NAEP science for lower-income fourth-graders in Fresno and the nation: 2009



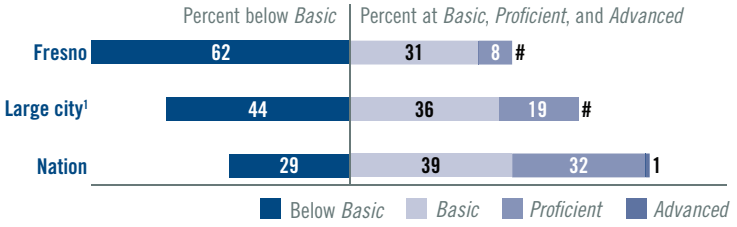
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Fresno, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Fresno: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Fresno, Grade 8

For Fresno eighth-graders in 2009,

- the overall average score was 124.
- the average score of 124 was at the 23rd percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for California.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

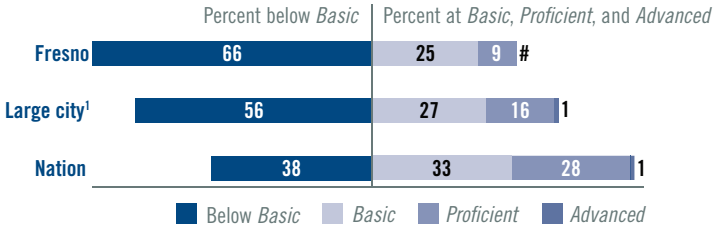
Results for racial/ethnic groups showed

- a White – Black score gap of 34 points.
- a White – Hispanic score gap of 32 points.

Achievement-level results showed

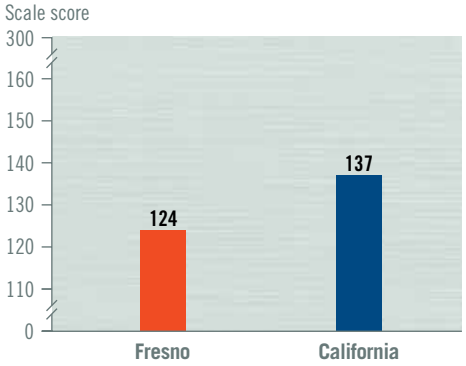
- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Fresno: 2009

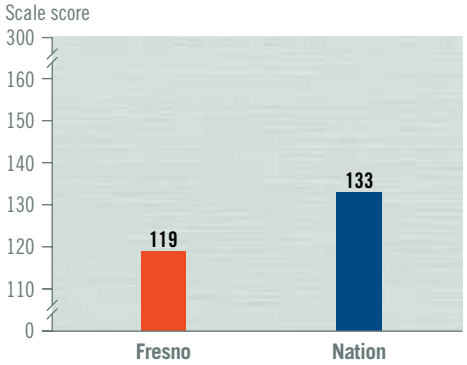


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

Average scores in NAEP science for eighth-graders in Fresno and California: 2009

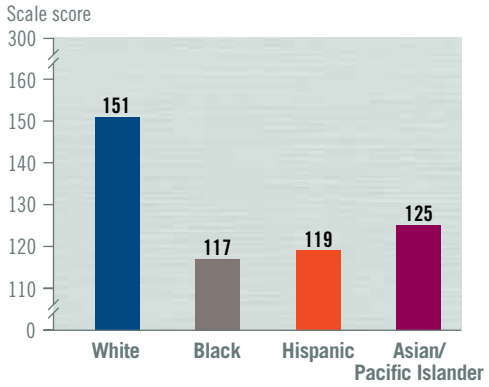


Average scores in NAEP science for lower-income eighth-graders in Fresno and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Fresno, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

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

Houston, Grade 4

For Houston fourth-graders in 2009,

- the overall average score was 135.
- the average score of 135 was at the 33rd percentile for the nation.
- the average score was not significantly different from the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Texas.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

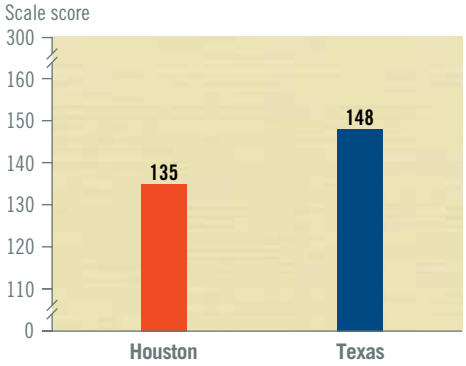
Results for racial/ethnic groups showed

- a White – Black score gap of 46 points.
- a White – Hispanic score gap of 41 points.

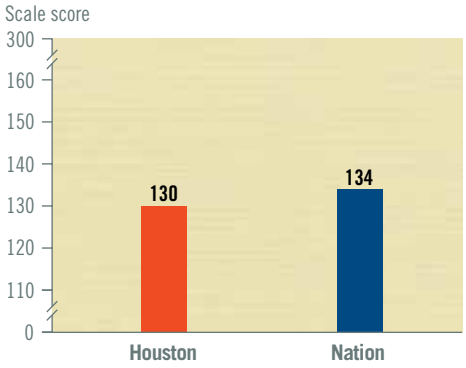
Achievement-level results showed

- no significant difference in the percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Average scores in NAEP science for fourth-graders in Houston and Texas: 2009

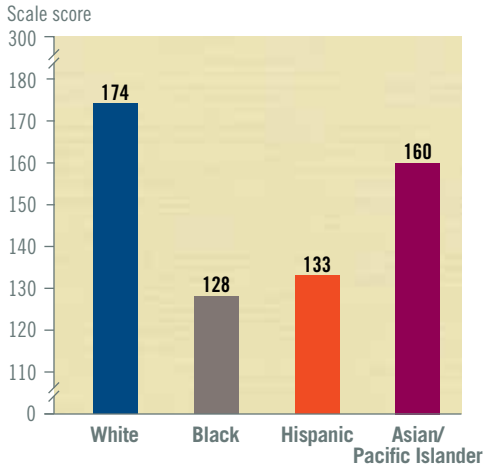


Average scores in NAEP science for lower-income fourth-graders in Houston and the nation: 2009



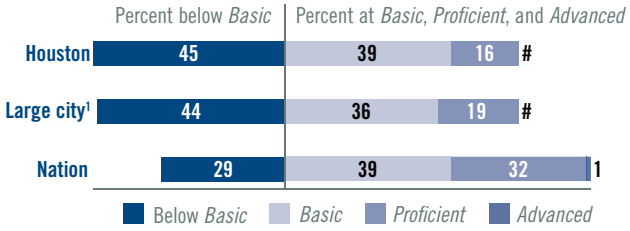
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Houston, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Houston: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Houston, Grade 8

For Houston eighth-graders in 2009,

- the overall average score was 138.
- the average score of 138 was at the 35th percentile for the nation.
- the average score was higher than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Texas.

Results for lower-income students showed

- no significant difference in the average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

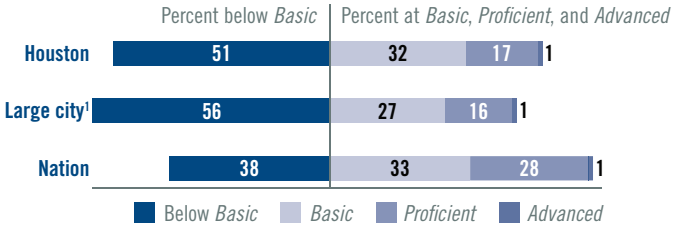
- a White – Black score gap of 43 points.[9]
- a White – Hispanic score gap of 35 points.

Achievement-level results showed

- a higher percentage at or above *Basic* compared to large cities.
- no significant difference in the percentage at or above *Proficient* compared to large cities.

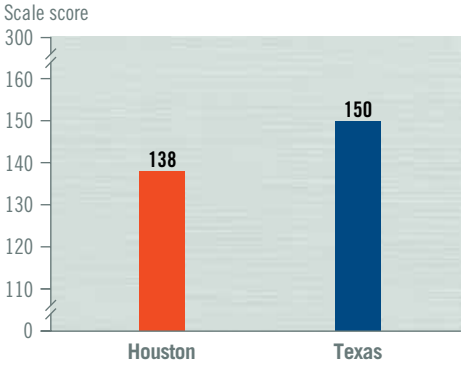
[9] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

Achievement-level results in NAEP science for eighth-graders in Houston: 2009

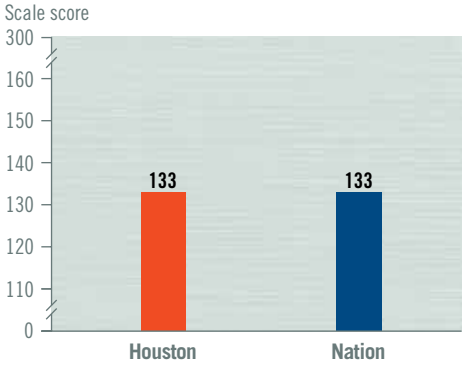


[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

Average scores in NAEP science for eighth-graders in Houston and Texas: 2009

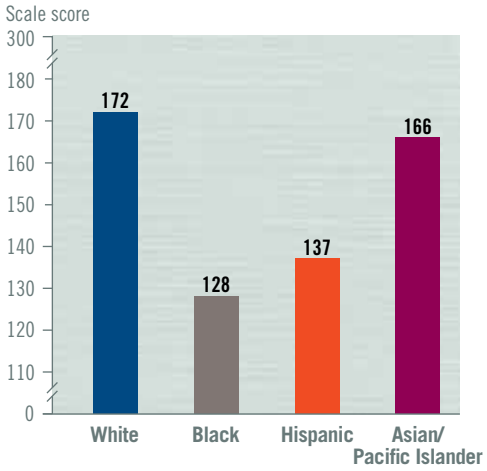


Average scores in NAEP science for lower-income eighth-graders in Houston and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Houston, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

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

Jefferson County (KY), Grade 4

For Jefferson County (KY) fourth-graders in 2009,

- the overall average score was 150.
- the average score of 150 was at the 48th percentile for the nation.
- the average score was higher than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Kentucky.

Results for lower-income students showed

- no significant difference in the average score compared to lower-income students in the nation.

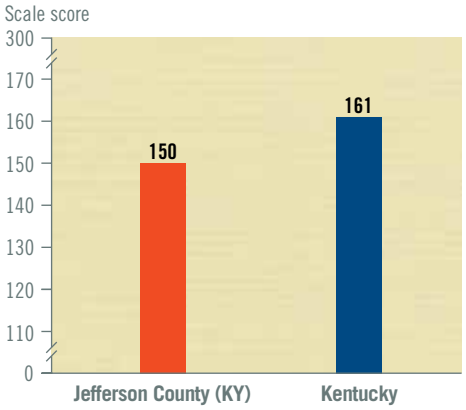
Results for racial/ethnic groups showed

- a White – Black score gap of 34 points.
- a White – Hispanic score gap of 25 points.

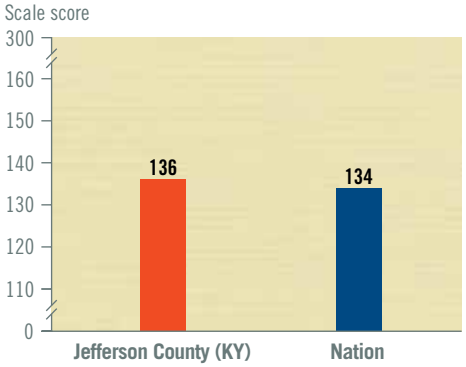
Achievement-level results showed

- a higher percentage at or above *Basic* compared to large cities.
- a higher percentage at or above *Proficient* compared to large cities.

Average scores in NAEP science for fourth-graders in Jefferson County (KY) and Kentucky: 2009

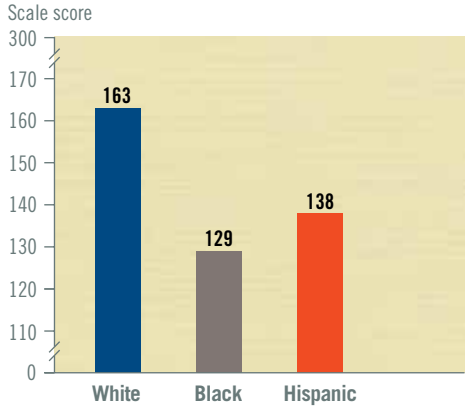


Average scores in NAEP science for lower-income fourth-graders in Jefferson County (KY) and the nation: 2009



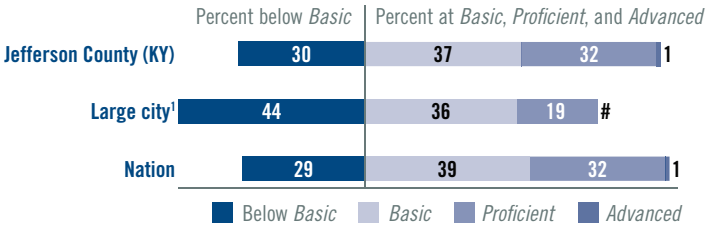
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Jefferson County (KY), by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Jefferson County (KY): 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Jefferson County (KY), Grade 8

For Jefferson County (KY) eighth-graders in 2009,

- the overall average score was 145.
- the average score of 145 was at the 43rd percentile for the nation.
- the average score was higher than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Kentucky.

Results for lower-income students showed

- no significant difference in the average score compared to lower-income students in the nation.

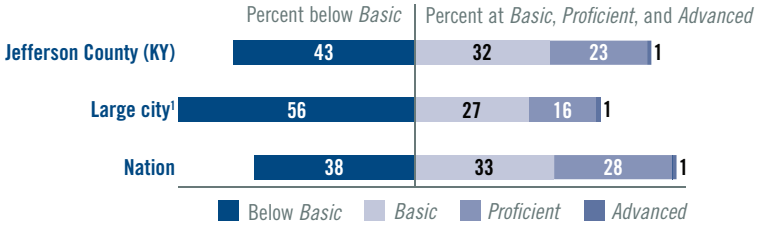
Results for racial/ethnic groups showed

- a White – Black score gap of 29 points.

Achievement-level results showed

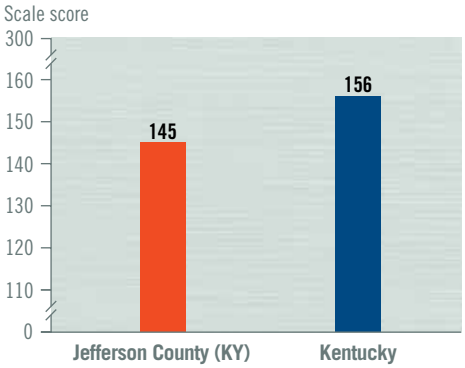
- a higher percentage at or above *Basic* compared to large cities.
- a higher percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Jefferson County (KY): 2009

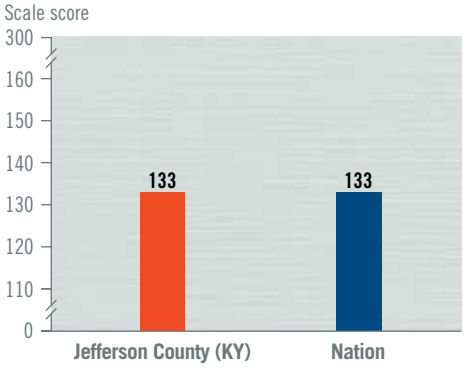


[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

Average scores in NAEP science for eighth-graders in Jefferson County (KY) and Kentucky: 2009

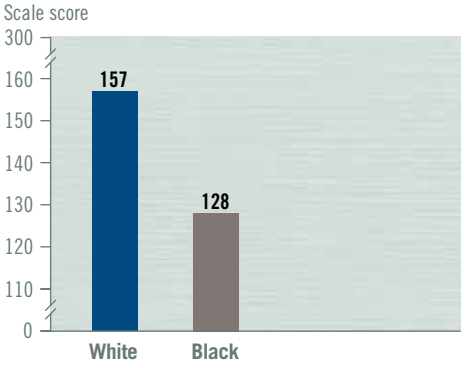


Average scores in NAEP science for lower-income eighth-graders in Jefferson County (KY) and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Jefferson County (KY), by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American. Race categories exclude Hispanic origin.

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

Los Angeles, Grade 4

For Los Angeles fourth-graders in 2009,

- the overall average score was 124.
- the average score of 124 was at the 23rd percentile for the nation.
- the average score was lower than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for California.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

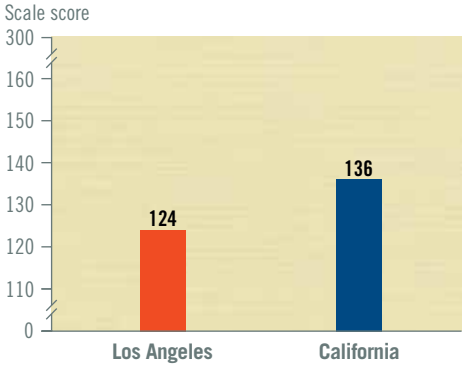
Results for racial/ethnic groups showed

- a White – Black score gap of 35 points.
- a White – Hispanic score gap of 33 points.

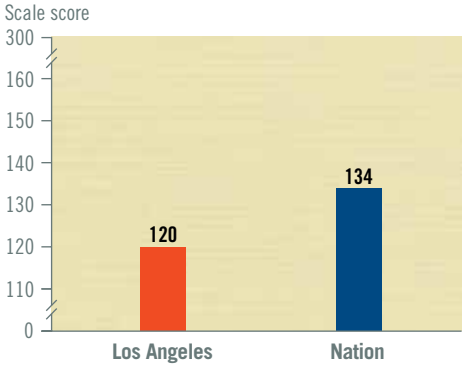
Achievement-level results showed

- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Average scores in NAEP science for fourth-graders in Los Angeles and California: 2009

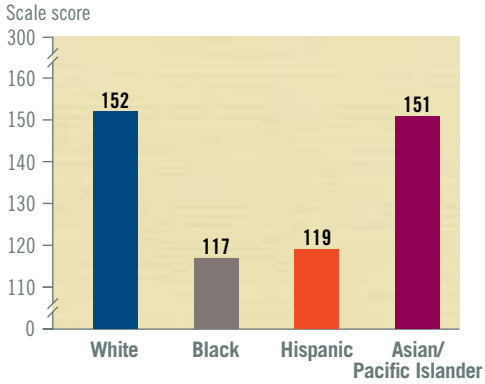


Average scores in NAEP science for lower-income fourth-graders in Los Angeles and the nation: 2009



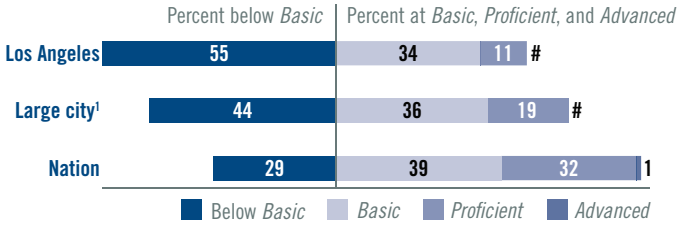
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Los Angeles, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Los Angeles: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Los Angeles, Grade 8

For Los Angeles eighth-graders in 2009,

- the overall average score was 123.
- the average score of 123 was at the 22nd percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for California.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

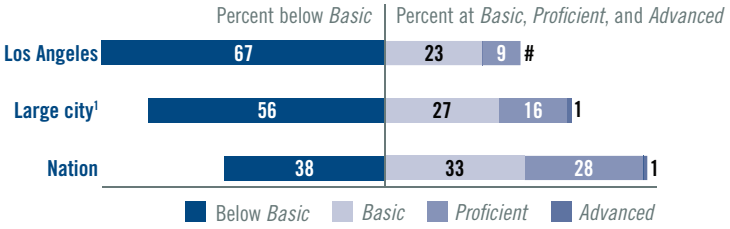
Results for racial/ethnic groups showed

- a White – Black score gap of 39 points.
- a White – Hispanic score gap of 34 points.

Achievement-level results showed

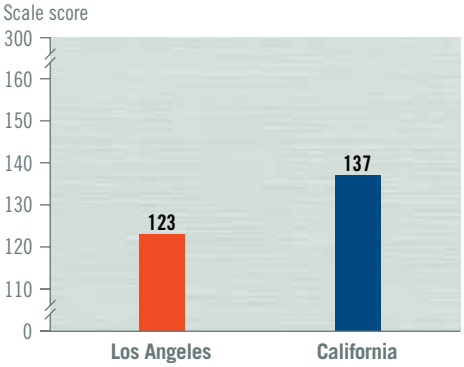
- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Los Angeles: 2009

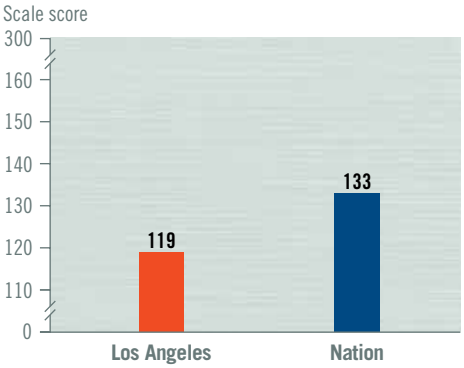


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

Average scores in NAEP science for eighth-graders in Los Angeles and California: 2009

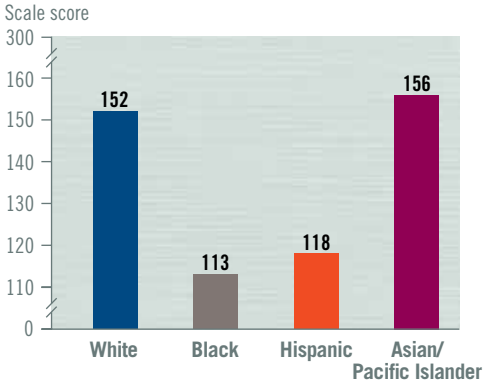


Average scores in NAEP science for lower-income eighth-graders in Los Angeles and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Los Angeles, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

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

Miami-Dade, Grade 4

For Miami-Dade fourth-graders in 2009,

- the overall average score was 144.
- the average score of 144 was at the 41st percentile for the nation.
- the average score was higher than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Florida.

Results for lower-income students showed

- no significant difference in the average score compared to lower-income students in the nation.

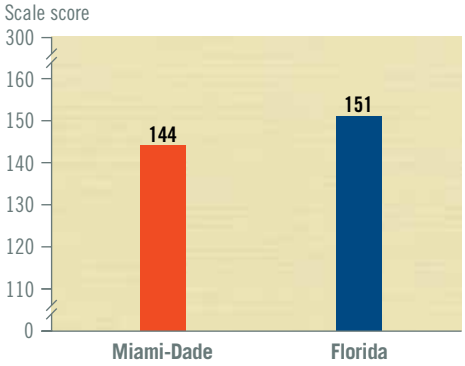
Results for racial/ethnic groups showed

- a White – Black score gap of 44 points.
- a White – Hispanic score gap of 23 points.

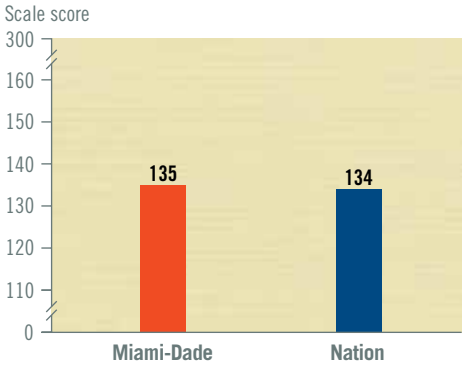
Achievement-level results showed

- a higher percentage at or above *Basic* compared to large cities.
- a higher percentage at or above *Proficient* compared to large cities.

Average scores in NAEP science for fourth-graders in Miami-Dade and Florida: 2009

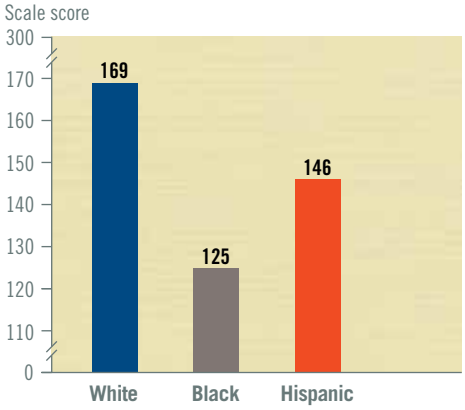


Average scores in NAEP science for lower-income fourth-graders in Miami-Dade and the nation: 2009



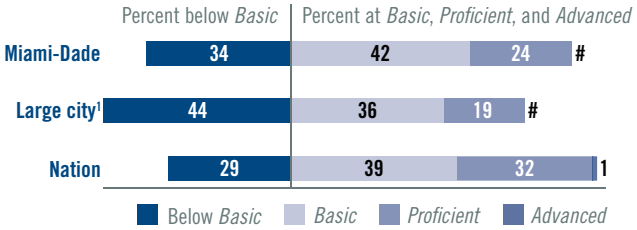
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Miami-Dade, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Miami-Dade: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Miami-Dade, Grade 8

For Miami-Dade eighth-graders in 2009,

- the overall average score was 137.
- the average score of 137 was at the 35th percentile for the nation.
- the average score was higher than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Florida.

Results for lower-income students showed

- no significant difference in the average score compared to lower-income students in the nation.

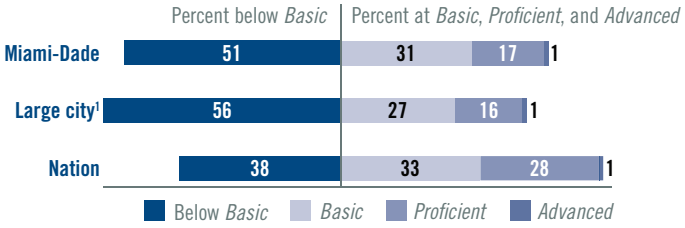
Results for racial/ethnic groups showed

- a White – Black score gap of 36 points.
- a White – Hispanic score gap of 21 points.

Achievement-level results showed

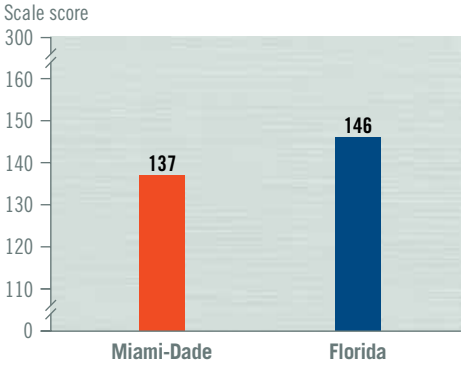
- a higher percentage at or above *Basic* compared to large cities.
- no significant difference in the percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in Miami-Dade: 2009

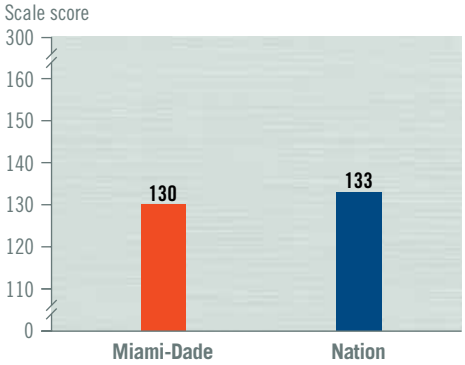


[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

Average scores in NAEP science for eighth-graders in Miami-Dade and Florida: 2009

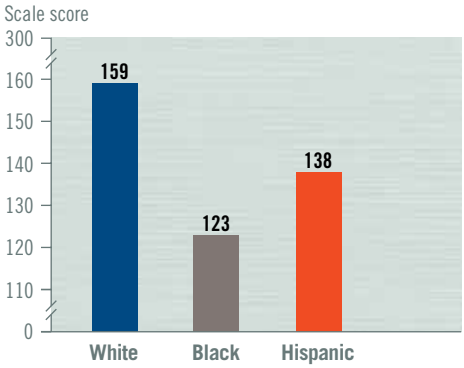


Average scores in NAEP science for lower-income eighth-graders in Miami-Dade and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Miami-Dade, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

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

Milwaukee, Grade 4

For Milwaukee fourth-graders in 2009,

- the overall average score was 126.
- the average score of 126 was at the 25th percentile for the nation.
- the average score was lower than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Wisconsin.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

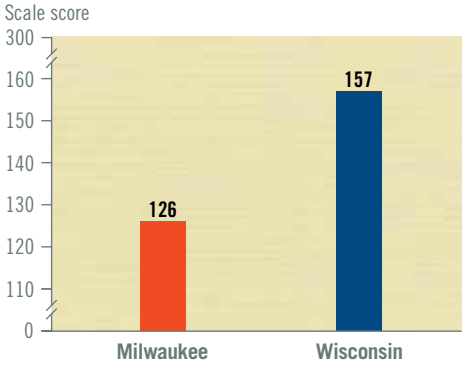
- a White – Black score gap of 42 points.[10]
- a White – Hispanic score gap of 25 points.[10]

Achievement-level results showed

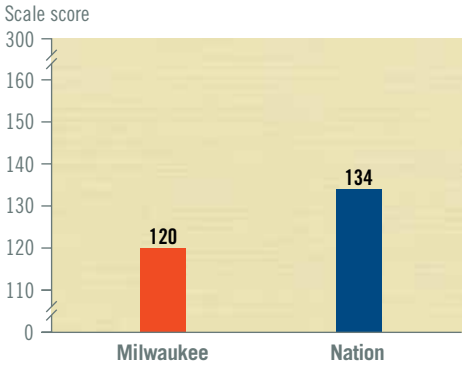
- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

[10] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

Average scores in NAEP science for fourth-graders in Milwaukee and Wisconsin: 2009

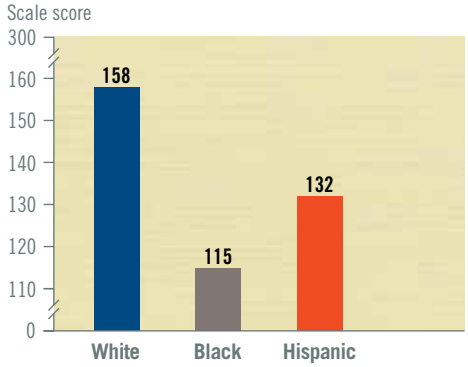


Average scores in NAEP science for lower-income fourth-graders in Milwaukee and the nation: 2009



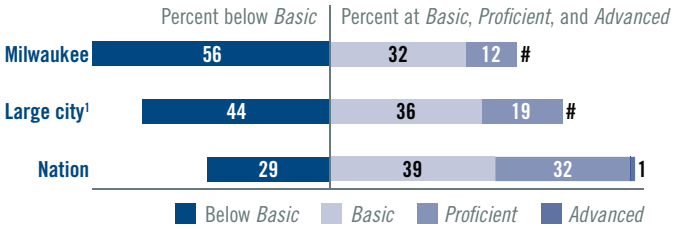
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Milwaukee, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Milwaukee: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Milwaukee, Grade 8

For Milwaukee eighth-graders in 2009,

- the overall average score was 122.
- the average score of 122 was at the 22nd percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Wisconsin.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

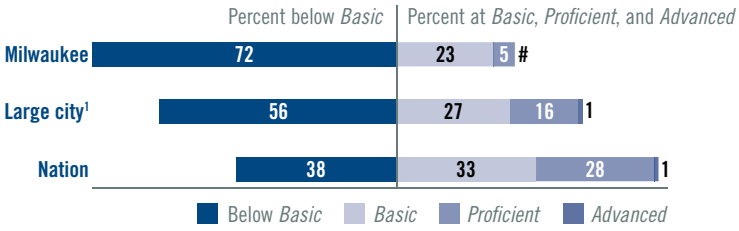
- a White – Black score gap of 28 points.
- a White – Hispanic score gap of 15 points.[11]

Achievement-level results showed

- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

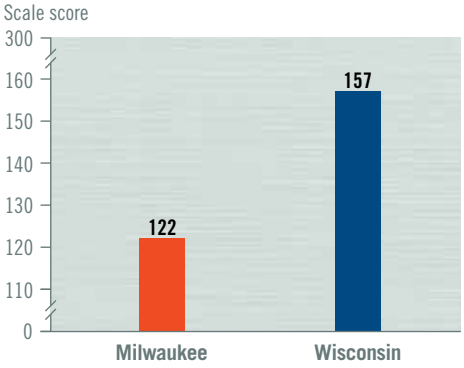
[11] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

Achievement-level results in NAEP science for eighth-graders in Milwaukee: 2009

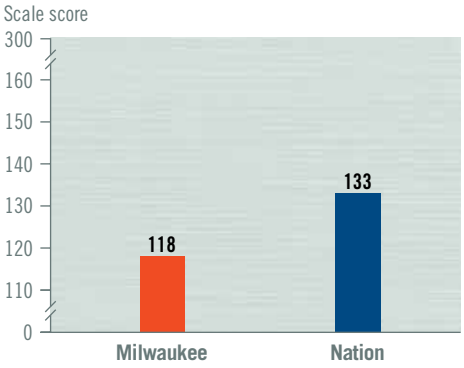


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

Average scores in NAEP science for eighth-graders in Milwaukee and Wisconsin: 2009

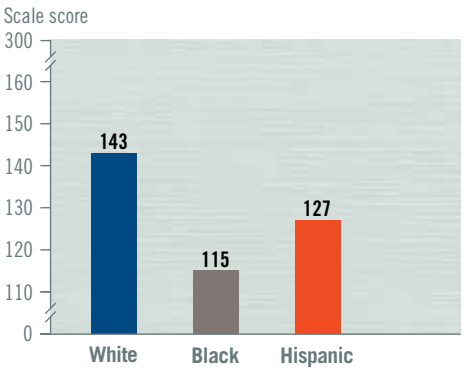


Average scores in NAEP science for lower-income eighth-graders in Milwaukee and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Milwaukee, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

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

New York City, Grade 4

For New York City fourth-graders in 2009,

- the overall average score was 135.
- the average score of 135 was at the 33rd percentile for the nation.
- the average score was not significantly different from the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for New York.

Results for lower-income students showed

- no significant difference in the average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

- a White – Black score gap of 34 points.
- a White – Hispanic score gap of 31 points.[12]

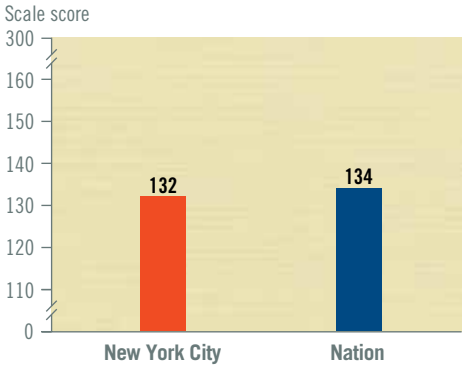
Achievement-level results showed

- no significant difference in the percentage at or above *Basic* compared to large cities.
- no significant difference in the percentage at or above *Proficient* compared to large cities.

[12] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

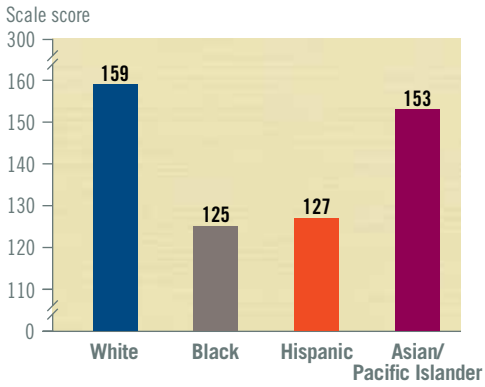
Average scores in NAEP science for fourth-graders in New York City and New York: 2009

Average scores in NAEP science for lower-income fourth-graders in New York City and the nation: 2009



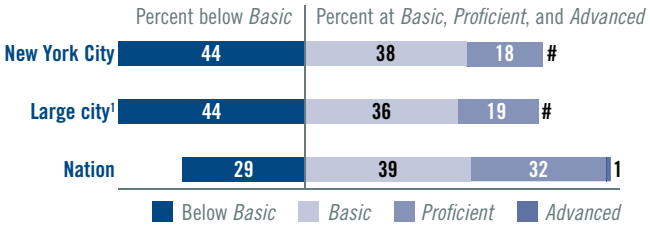
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in New York City, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in New York City: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

New York City, Grade 8

For New York City eighth-graders in 2009,

- the overall average score was 129.
- the average score of 129 was at the 27th percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for New York.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

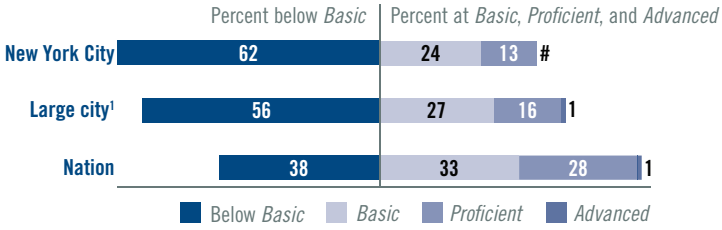
Results for racial/ethnic groups showed

- a White – Black score gap of 32 points.
- a White – Hispanic score gap of 31 points.

Achievement-level results showed

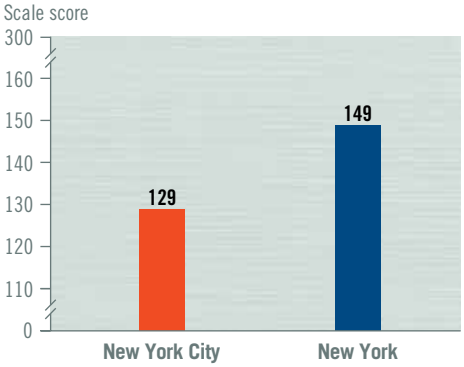
- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in New York City: 2009

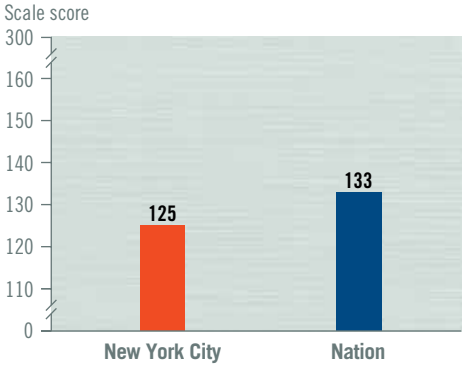


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

Average scores in NAEP science for eighth-graders in New York City and New York: 2009

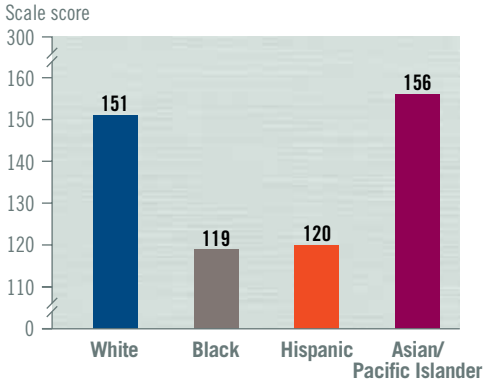


Average scores in NAEP science for lower-income eighth-graders in New York City and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in New York City, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

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

Philadelphia, Grade 4

For Philadelphia fourth-graders in 2009,

- the overall average score was 121.
- the average score of 121 was at the 21st percentile for the nation.
- the average score was lower than the average score for large cities (135).

The district-to-state comparison showed

- a lower overall score than for Pennsylvania.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

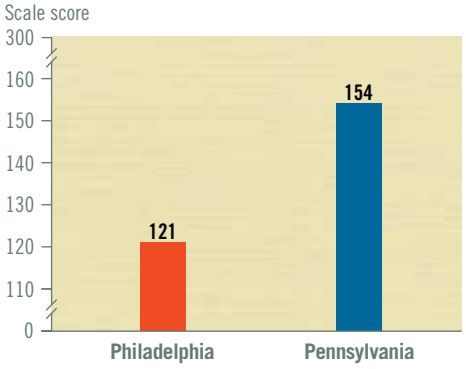
Results for racial/ethnic groups showed

- a White – Black score gap of 26 points.
- a White – Hispanic score gap of 21 points.

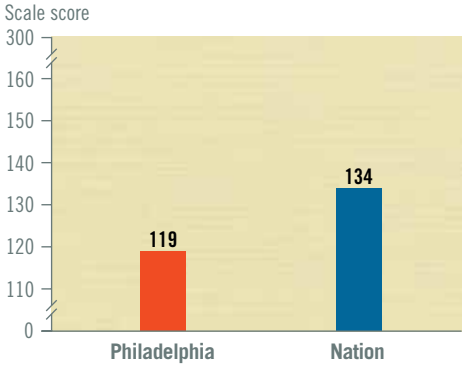
Achievement-level results showed

- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

Average scores in NAEP science for fourth-graders in Philadelphia and Pennsylvania: 2009

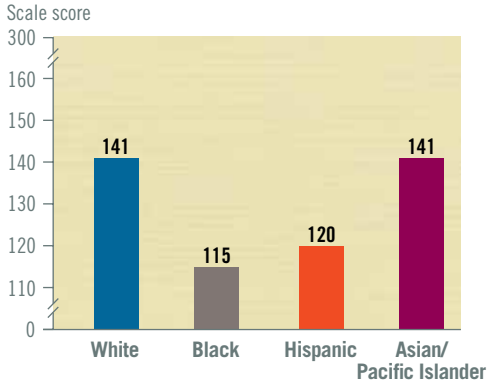


Average scores in NAEP science for lower-income fourth-graders in Philadelphia and the nation: 2009



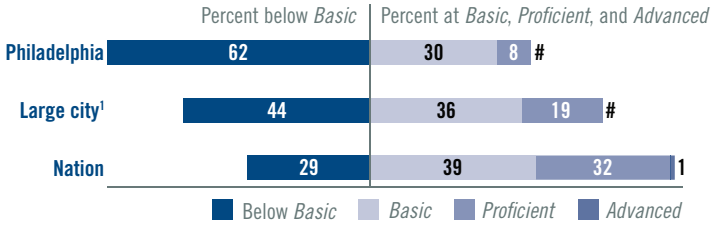
NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in Philadelphia, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

Achievement-level results in NAEP science for fourth-graders in Philadelphia: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

Philadelphia, Grade 8

For Philadelphia eighth-graders in 2009,

- the overall average score was 119.
- the average score of 119 was at the 19th percentile for the nation.
- the average score was lower than the average score for large cities (134).

The district-to-state comparison showed

- a lower overall score than for Pennsylvania.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

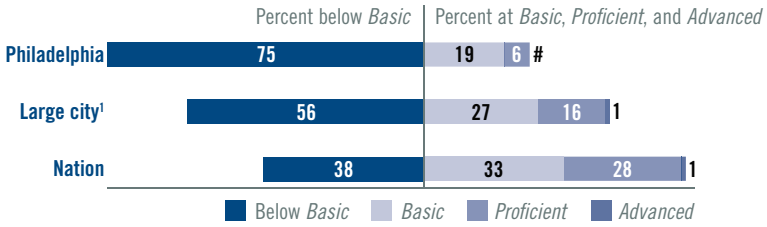
- a White – Black score gap of 27 points.
- a White – Hispanic score gap of 23 points.[13]

Achievement-level results showed

- a lower percentage at or above *Basic* compared to large cities.
- a lower percentage at or above *Proficient* compared to large cities.

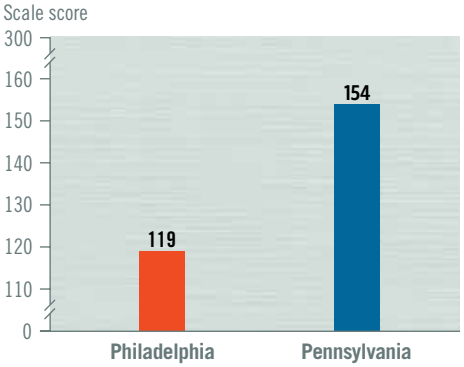
[13] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

Achievement-level results in NAEP science for eighth-graders in Philadelphia: 2009

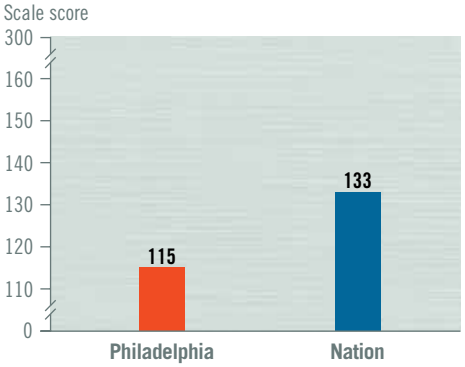


Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

Average scores in NAEP science for eighth-graders in Philadelphia and Pennsylvania: 2009

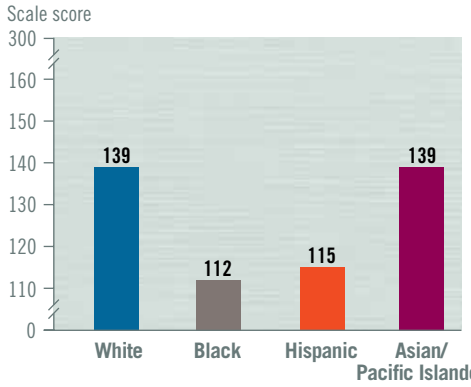


Average scores in NAEP science for lower-income eighth-graders in Philadelphia and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in Philadelphia, by race/ethnicity: 2009

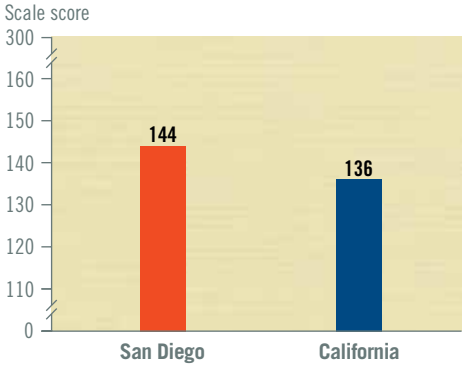


NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

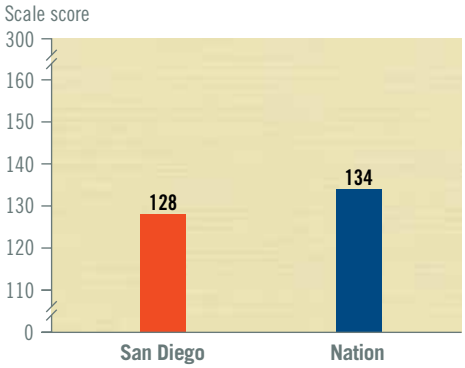
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

San Diego, Grade 4

Average scores in NAEP science for fourth-graders in San Diego and California: 2009

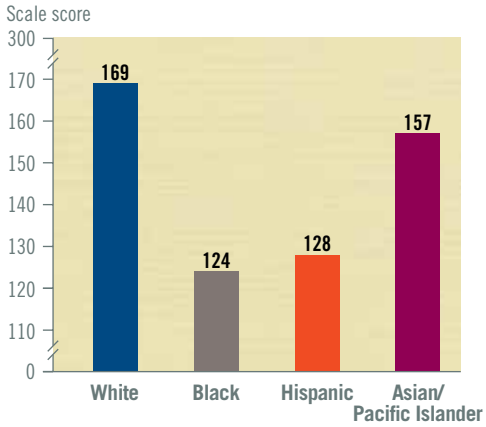


Average scores in NAEP science for lower-income fourth-graders in San Diego and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for fourth-graders in San Diego, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

For San Diego fourth-graders in 2009,

- the overall average score was 144.
- the average score of 144 was at the 41st percentile for the nation.
- the average score was higher than the average score for large cities (135).

The district-to-state comparison showed

- a higher overall score than for California.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

Results for racial/ethnic groups showed

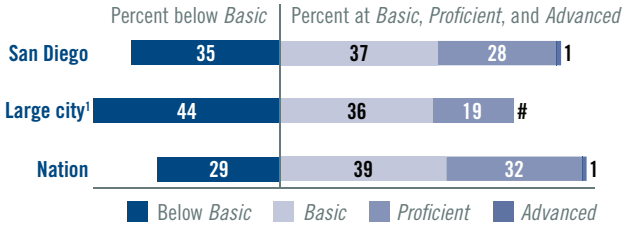
- a White – Black score gap of 45 points.
- a White – Hispanic score gap of 40 points.[14]

Achievement-level results showed

- a higher percentage at or above *Basic* compared to large cities.
- a higher percentage at or above *Proficient* compared to large cities.

[14] The score gap is based on the difference between the unrounded scores as opposed to the rounded scores shown in the figure.

Achievement-level results in NAEP science for fourth-graders in San Diego: 2009



Rounds to zero.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Detail may not sum to totals because of rounding.

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

San Diego, Grade 8

For San Diego eighth-graders in 2009,

- the overall average score was 138.
- the average score of 138 was at the 35th percentile for the nation.
- the average score was not significantly different from the average score for large cities (134).

The district-to-state comparison showed

- no significant difference from the overall score for California.

Results for lower-income students showed

- a lower average score compared to lower-income students in the nation.

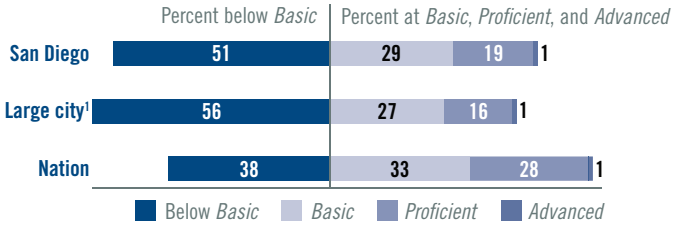
Results for racial/ethnic groups showed

- a White – Black score gap of 33 points.
- a White – Hispanic score gap of 35 points.

Achievement-level results showed

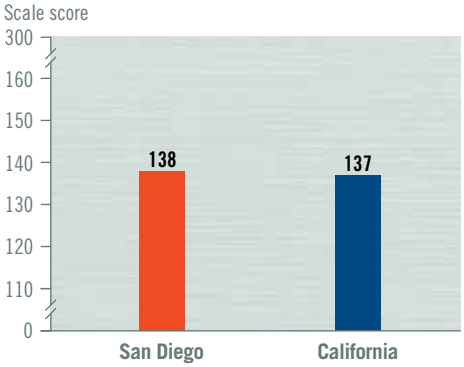
- no significant difference in the percentage at or above *Basic* compared to large cities.
- a higher percentage at or above *Proficient* compared to large cities.

Achievement-level results in NAEP science for eighth-graders in San Diego: 2009

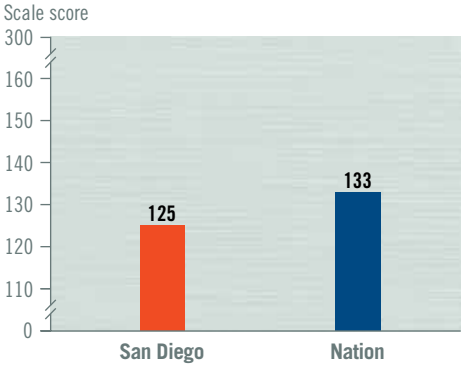


[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

Average scores in NAEP science for eighth-graders in San Diego and California: 2009

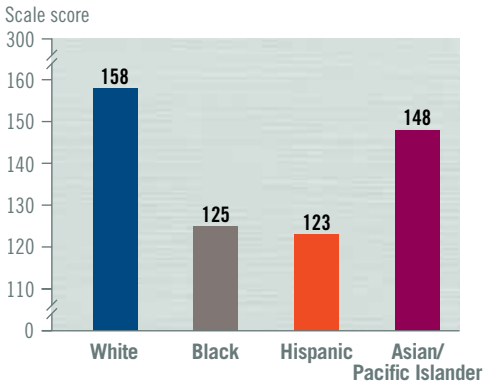


Average scores in NAEP science for lower-income eighth-graders in San Diego and the nation: 2009



NOTE: In NAEP, lower-income students are students identified as eligible for the National School Lunch Program.

Average scores in NAEP science for eighth-graders in San Diego, by race/ethnicity: 2009



NOTE: Results are not shown for all race/ethnicity categories because of insufficient sample sizes. Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.

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

Technical Notes

Sampling and Weighting

The sample of students in the participating TUDA school districts is an extension of the sample of students who would usually be selected by NAEP as part of state and national samples. These extended samples allow reliable reporting of student groups within these districts. Results for students in the TUDA samples are also included in state and national samples with appropriate weighting.

In the same way that schools and students participating in NAEP assessments are chosen to be nationally representative, the schools and students participating in TUDA assessments are selected to be representative of their districts. The results from the assessed students are combined to provide accurate estimates of overall district performance. Results are weighted to take into account the fact that schools and students represent different proportions of the overall district population.

Some charter schools that operate within the geographic boundaries of a school district are independent of the district and are not included in the district's Adequate Yearly Progress (AYP) report to the U.S. Department of Education under the Elementary and Secondary Education Act. Charter schools are included in TUDA results if they contribute to the district's AYP results as part of the Elementary and Secondary Education Act.

Results are reported for groups of students defined by shared characteristics such as gender, race/ethnicity, and eligibility for free/reduced-price school lunch only when sufficient numbers of students and adequate school representation are present. The minimum requirement is at least 62 students in a particular student group from at least five primary geographic sampling units. However, the data for all students, regardless of whether their student group was reported separately, were included in computing overall results.

School and Student Participation

To ensure that reported results are based on a sample that is representative of the target population, NAEP statistical standards require that school participation rates for the original district samples be at least 85 percent for results to be reported. In the 2009 science assessment, all participating urban districts met school participation rate standards at both grades 4 and 8 (see appendix table **A-1**).

Accommodations and Exclusions in NAEP

It is important to assess all selected students from the target population, including students with disabilities (SD) and English language learners (ELL). To accomplish this goal, students who receive accommodations in their state's assessments, such as extra testing time or individual rather than group administration, are offered most of the same accommodations in NAEP.

Some students identified as SD or ELL who are sampled for NAEP participation may be excluded from the assessment if NAEP does not offer the accommodations given on the student's state assessment. School personnel, guided by the student's Individualized Education Program (IEP) as well as by Section 504 eligibility, decide whether to exclude students with disabilities from the assessment. Based on NAEP's guidelines, they also decide whether to exclude students identified as ELL. The percentages of students excluded from NAEP may vary considerably across districts. Comparisons of achievement results across districts should be interpreted with caution if the exclusion rates vary widely. See appendix tables **A-2** and **A-3** for the exclusion rates in the urban districts.

Interpreting Statistical Significance

Comparisons between groups are based on statistical tests that consider both the size of the differences and the standard errors of the two statistics being compared. Standard errors are margins of error, and estimates based on smaller groups are likely to have larger margins of error. The size of the standard errors may also be influenced by other factors such as how representative the assessed students are of the entire population.

When an estimate has a large standard error, a numerical difference that seems large may not be statistically significant. Differences of the same magnitude may or may not be statistically significant depending upon the size of the standard errors of the estimates. For instance, the 4-point difference between scores for eighth-graders in Houston and large cities was statistically significant, while the 4-point difference between San Diego and large cities was not. Standard errors for the estimates presented in this report are available at http://nces.ed.gov/nationsreportcard/naepdata/.

To ensure that significant differences in NAEP data reflect actual differences and not mere chance, error rates need to be controlled when making multiple simultaneous comparisons. The more comparisons that are made (e.g., comparing the performance of White, Black, Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native students), the higher the probability of finding significant differences by chance. In NAEP, the Benjamini-Hochberg False Discovery Rate (FDR) procedure is used to control the expected proportion of falsely rejected hypotheses relative to the number of comparisons that are conducted. A detailed explanation of this procedure can be found at http://nces.ed.gov/nationsreportcard/tdw/analysis/infer.asp.

A part-whole relationship exists between the district samples and the state and national samples because each district is part of its home state and the national public school samples. Therefore, when individual district results are compared to results for a state or the nation, the significance tests appropriately reflect this dependency.

When estimates of percentages are close to 0 or 100, reliable standard errors cannot be estimated. As a result, significance tests are not conducted when the comparison involves an extreme percentage. Refer to http://nces.ed.gov/nationsreportcard/tdw/analysis/infer_guidelines_extreme.asp for more information about how extreme percentages are defined in NAEP.

National School Lunch Program

NAEP collects data on student eligibility for the National School Lunch Program (NSLP) as an indicator of low income. Under the guidelines of NSLP, children from families with incomes below 130 percent of the poverty level are eligible for free meals. Those from families with incomes between 130 and 185 percent of the poverty level are eligible for reduced-price meals. (For the period July 1, 2008, through June 30, 2009, for a family of four, 130 percent of the poverty level was $27,560, and 185 percent was $39,220.)

Some schools provide free meals to all students irrespective of individual eligibility, using their own funds to cover the costs of non-eligible students. Under special provisions of the National School Lunch Act intended to reduce the administrative burden of determining student eligibility every year, schools can be reimbursed based on eligibility data for a single base year. Based on these provisions, participating schools with high percentages of eligible students can report all students as eligible for free lunch. This procedure was followed in Cleveland in 2009. For more information on NSLP, visit http://www.fns.usda.gov/cnd/lunch/.

Large City

Just as the national public sample is used as a benchmark for comparing results for states, results for urban districts are compared to results from large cities nationwide. Referred to as "large central cities" in previous TUDA reports, results for large cities are for public schools located in the urbanized areas of cities with populations of 250,000 or more. Large city is not synonymous with "inner city." Schools in participating TUDA districts are also included in the results for large cities, even though some districts (Atlanta, Austin, Charlotte, Cleveland, Fresno, Houston, Jefferson County, Los Angeles, and Miami-Dade) include some schools not classified as large city schools.

Further comparisons of urban district data with large city data are available from the online Data Explorer on the NAEP website (http://nces.ed.gov/nationsreportcard/naepdata/). By selecting "Large city" as a jurisdiction in the NAEP Data Explorer, users will be able to replicate the results in this report and explore additional comparisons.

Appendix Tables

Table **A-1.** Public school and student participation rates for Trial Urban District Assessment in science, by grade and district: 2009

Grade and district	School participation		Student participation	
	Student-weighted percent	Number of schools participating	Student-weighted percent	Number of students assessed
Grade 4				
Atlanta	100	60	97	1,200
Austin	100	70	95	1,500
Baltimore City	100	80	94	1,200
Boston	100	80	94	1,100
Charlotte	100	60	96	1,600
Chicago	100	110	95	1,900
Cleveland	100	80	90	900
Detroit	100	60	91	900
Fresno	100	50	95	1,400
Houston	100	90	96	2,200
Jefferson County (KY)	100	70	95	1,400
Los Angeles	100	80	95	2,100
Miami-Dade	100	90	96	2,200
Milwaukee	100	90	94	1,300
New York City	100	90	93	2,200
Philadelphia	100	70	91	1,300
San Diego	100	60	95	1,300
Grade 8				
Atlanta	100	20	91	900
Austin	100	20	88	1,400
Baltimore City	100	40	90	900
Boston	100	30	91	1,100
Charlotte	100	30	91	1,400
Chicago	100	110	94	1,900
Cleveland	100	80	89	900
Detroit	100	50	84	1,000
Fresno	100	20	92	1,300
Houston	100	40	92	2,000
Jefferson County (KY)	100	30	91	1,400
Los Angeles	100	70	91	2,000
Miami-Dade	100	60	93	2,000
Milwaukee	100	60	87	1,000
New York City	100	90	88	2,100
Philadelphia	100	60	92	1,200
San Diego	100	30	93	1,000

NOTE: The number of schools is rounded to the nearest ten. The number of students is rounded to the nearest hundred.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Table **A-2.** Percentage of public school students with disabilities (SD) and/or English language learners (ELL) identified, excluded, and assessed in NAEP science, as a percentage of all students, by grade and jurisdiction: 2009

Grade and jurisdiction	SD and/or ELL				SD				ELL			
	Identified	Excluded	Assessed without accommodations	Assessed with accommodations	Identified	Excluded	Assessed without accommodations	Assessed with accommodations	Identified	Excluded	Assessed without accommodations	Assessed with accommodations
Grade 4												
Nation	23	2	9	12	13	2	3	9	10	1	6	4
Large city[1]	31	3	14	14	13	2	2	9	21	1	12	7
Atlanta	12	1	4	7	10	1	4	6	2	#	1	2
Austin	44	5	20	19	16	3	2	10	32	2	18	11
Baltimore City	19	3	1	14	18	3	1	14	1	#	#	1
Boston	35	5	12	18	22	4	3	15	18	3	10	5
Charlotte	19	2	6	11	12	2	3	8	8	1	3	4
Chicago	24	3	8	13	14	2	4	9	12	2	4	6
Cleveland	25	9	1	15	20	8	1	10	6	1	#	5
Detroit	20	2	9	10	15	2	4	9	7	1	5	2
Fresno	38	3	30	5	11	3	3	5	30	1	28	2
Houston	43	3	22	18	7	2	1	4	38	2	20	15
Jefferson County (KY)	19	3	5	11	15	2	5	9	4	1	1	2
Los Angeles	46	2	36	8	10	1	2	7	41	1	35	5
Miami-Dade	21	3	2	16	13	2	1	10	9	2	1	7
Milwaukee	30	6	2	22	19	5	1	13	13	2	1	10
New York City	31	2	1	28	19	1	1	17	16	1	#	14
Philadelphia	22	3	3	16	15	3	2	10	8	1	1	6
San Diego	43	3	33	7	13	2	5	6	35	2	30	4
Grade 8												
Nation	18	2	5	10	13	2	2	9	6	1	3	2
Large city[1]	23	3	9	11	13	2	2	9	12	1	7	4
Atlanta	12	1	2	9	10	1	1	8	2	#	#	1
Austin	29	5	15	10	17	4	5	8	16	2	10	3
Baltimore City	19	3	2	14	18	3	2	13	1	#	#	1
Boston	30	7	4	19	22	5	2	15	11	3	2	5
Charlotte	17	3	4	10	11	2	1	7	7	1	3	3
Chicago	21	3	4	15	16	2	2	13	6	1	2	3
Cleveland	28	9	2	17	23	9	#	14	6	1	1	4
Detroit	23	4	7	12	17	4	3	11	7	#	5	1
Fresno	29	2	20	7	11	2	2	6	22	1	19	2
Houston	22	4	9	8	12	4	3	6	12	1	7	4
Jefferson County (KY)	15	3	3	9	12	2	2	8	3	1	1	1
Los Angeles	29	2	20	7	11	2	3	6	23	2	18	4
Miami-Dade	20	3	1	16	12	2	#	10	8	1	#	7
Milwaukee	26	5	2	19	21	4	1	15	7	1	1	4
New York City	23	2	1	20	15	1	#	14	10	2	1	8
Philadelphia	22	3	2	18	17	2	1	13	7	#	1	5
San Diego	25	3	16	6	12	3	3	6	16	1	13	2

Rounds to zero.

[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

NOTE: Students identified as both SD and ELL were counted only once under the combined SD and/or ELL category, but were counted separately under the SD and ELL categories. Detail may not sum to totals because of rounding.

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

Table **A-3.** Percentage of public school students identified as students with disabilities (SD) and/or English language learners (ELL) excluded and assessed in NAEP science, as a percentage of identified SD and/or ELL students, by grade and jurisdiction: 2009

Grade and jurisdiction	Percentage of identified SD and/or ELL students											
	SD and/or ELL				SD				ELL			
	Excluded	Assessed	Assessed without accom-modations	Assessed with accom-modations	Excluded	Assessed	Assessed without accom-modations	Assessed with accom-modations	Excluded	Assessed	Assessed without accom-modations	Assessed with accom-modations
Grade 4												
Nation	9	91	39	52	13	87	23	64	7	93	57	37
Large city[1]	9	91	45	46	15	85	18	67	6	94	59	35
Atlanta	6	94	36	58	6	94	37	57	3	97	28	68
Austin	10	90	46	44	22	78	13	65	8	92	57	35
Baltimore City	17	83	7	75	18	82	6	76	14	86	25	61
Boston	15	85	34	51	17	83	13	70	15	85	55	30
Charlotte	12	88	30	58	13	87	25	62	11	89	34	55
Chicago	14	86	32	54	15	85	26	59	15	85	34	51
Cleveland	36	64	4	59	43	57	4	53	23	77	5	73
Detroit	9	91	43	47	12	88	30	58	8	92	68	24
Fresno	7	93	80	13	24	76	31	45	2	98	92	6
Houston	7	93	51	43	24	76	20	56	5	95	54	41
Jefferson County (KY)	14	86	28	58	11	89	29	60	34	66	24	41
Los Angeles	3	97	79	18	8	92	24	68	3	97	85	12
Miami-Dade	14	86	9	76	12	88	11	77	19	81	6	75
Milwaukee	19	81	8	73	25	75	7	68	15	85	8	77
New York City	6	94	4	90	5	95	4	91	7	93	3	90
Philadelphia	14	86	12	73	17	83	13	70	7	93	10	83
San Diego	7	93	77	16	17	83	37	45	4	96	85	11
Grade 8												
Nation	11	89	30	58	14	86	17	70	9	91	56	35
Large city[1]	12	88	38	49	16	84	15	69	10	90	59	32
Atlanta	6	94	13	80	6	94	13	82	11	89	24	65
Austin	16	84	50	34	24	76	27	48	14	86	65	21
Baltimore City	16	84	10	74	16	84	10	74	31	69	#	69
Boston	23	77	12	65	24	76	7	69	30	70	20	50
Charlotte	17	83	26	56	20	80	13	67	17	83	43	40
Chicago	13	87	18	69	11	89	12	78	23	77	30	48
Cleveland	32	68	6	62	38	62	1	61	20	80	20	60
Detroit	18	82	31	51	23	77	15	63	2	98	78	19
Fresno	8	92	70	22	21	79	18	60	3	97	86	11
Houston	19	81	42	39	29	71	21	50	10	90	60	30
Jefferson County (KY)	18	82	23	59	17	83	20	63	29	71	32	39
Los Angeles	8	92	68	24	15	85	30	56	7	93	77	16
Miami-Dade	13	87	4	83	13	87	3	84	16	84	5	79
Milwaukee	19	81	9	72	19	81	7	74	20	80	15	64
New York City	9	91	4	86	6	94	2	92	16	84	7	77
Philadelphia	11	89	9	80	15	85	5	80	7	93	16	77
San Diego	13	87	64	23	28	72	26	46	6	94	82	12

Rounds to zero.

[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.

NOTE: Students identified as both SD and ELL were counted only once under the combined SD and/or ELL category, but were counted separately under the SD and ELL categories. Detail may not sum to totals because of rounding.

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

Table **A-4.** Selected percentile scores in NAEP science for public school students, by grade and jurisdiction: 2009

Grade and jurisdiction	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile
Grade 4					
Nation	102*	126*	152*	174*	192*
Large city[1]	88**	111**	136**	161**	182**
Atlanta	88**	109**	133**	158**	182**
Austin	98*	120*,**	146*,**	174*	197*
Baltimore City	79*,**	97*,**	117*,**	136*,**	156*,**
Boston	101*	119*,**	139*,**	159**	177*,**
Charlotte	105*	126*	150*	175*	194*
Chicago	78*,**	101*,**	125*,**	150*,**	170*,**
Cleveland	77*,**	94*,**	114*,**	135*,**	152*,**
Detroit	71*,**	90*,**	111*,**	132*,**	151*,**
Fresno	80**	100*,**	122*,**	143*,**	163*,**
Houston	94*,**	114**	135**	157**	177**
Jefferson County (KY)	103*	125*	151*	175*	194*
Los Angeles	76*,**	101*,**	126*,**	149*,**	168*,**
Miami-Dade	101*	123*	145*,**	167*,**	185**
Milwaukee	81**	103*,**	126*,**	150*,**	171*,**
New York City	90**	112**	137**	160**	179**
Philadelphia	78*,**	99*,**	121*,**	143*,**	164*,**
San Diego	94**	119*,**	146*,**	171*	191
Grade 8					
Nation	102*	127*	152*	174*	191*
Large city[1]	85**	109**	135**	160**	180**
Atlanta	84**	104**	126*,**	149*,**	170*,**
Austin	96*,**	123*	152*	178*,**	199*,**
Baltimore City	71*,**	91*,**	114*,**	136*,**	154*,**
Boston	83**	106**	131**	156*,**	178**
Charlotte	92**	117*,**	143*,**	167*,**	186*,**
Chicago	77*,**	99*,**	122*,**	145*,**	165*,**
Cleveland	82**	102*,**	122*,**	142*,**	161*,**
Detroit	71*,**	92*,**	114*,**	136*,**	154*,**
Fresno	79**	101*,**	125*,**	149*,**	168*,**
Houston	93**	116*,**	141*,**	162**	180**
Jefferson County (KY)	102*	123*	147*,**	169*,**	187*,**
Los Angeles	75*,**	100*,**	125*,**	149*,**	169*,**
Miami-Dade	91**	115*,**	140*,**	162**	181**
Milwaukee	82**	101*,**	123*,**	144*,**	162*,**
New York City	83**	106**	130*,**	153*,**	176*,**
Philadelphia	76**	97*,**	119*,**	141*,**	162*,**
San Diego	89	114**	140*,**	164*,**	184*,**

* Significantly different ($p < .05$) from large city.
** Significantly different ($p < .05$) from the nation.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Table **A-5.** Achievement-level results in NAEP science for fourth- and eighth-grade public school students, by jurisdiction: 2009

Jurisdiction	Grade 4			Grade 8		
	Percentage of students			Percentage of students		
	At or above *Basic*	At or above *Proficient*	At *Advanced*	At or above *Basic*	At or above *Proficient*	At *Advanced*
Nation	71*	32*	1	62*	29*	1*
Large city[1]	56**	20**	#	44**	17**	1**
Atlanta	52*,**	19**	1	33*,**	10*,**	#
Austin	65*,**	31*	1	61*	33*,**	3*,**
Baltimore City	31*,**	6*,**	#**	20*,**	4*,**	#**
Boston	62*,**	18**	#	39*,**	15**	#**
Charlotte	70*	33*	1	52*,**	22*,**	1
Chicago	44*,**	12*,**	#	29*,**	7*,**	#
Cleveland	30*,**	4*,**	#	26*,**	6*,**	#
Detroit	26*,**	4*,**	#	20*,**	3*,**	#
Fresno	38*,**	8*,**	#	34*,**	9*,**	#
Houston	55**	16*,**	#	49*,**	17**	1
Jefferson County (KY)	70*	33*	1	57*,**	24*,**	1
Los Angeles	45*,**	11*,**	#	33*,**	10*,**	#**
Miami-Dade	66*,**	25*,**	#	49*,**	18**	1**
Milwaukee	44*,**	12*,**	#	28*,**	6*,**	#
New York City	56**	18**	#**	38*,**	13*,**	#**
Philadelphia	38*,**	8*,**	#**	25*,**	6*,**	#
San Diego	65*,**	29*	1	49**	20*,**	1

Rounds to zero.
* Significantly different ($p < .05$) from large city.
** Significantly different ($p < .05$) from the nation.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Table **A-6.** Average scores and achievement-level results in NAEP science for public school students, by selected race/ethnicity categories, grade, and jurisdiction: 2009

Grade and jurisdiction	White			Black		
		Percentage of students			Percentage of students	
	Average scale score	At or above *Basic*	At or above *Proficient*	Average scale score	At or above *Basic*	At or above *Proficient*
Grade 4						
Nation	162	86	46	127*	46*	10*
Large city[1]	163	85	48	122**	41**	8**
Atlanta	181*,**	96*,**	75*,**	126*	44	9
Austin	183*,**	96*,**	77*,**	129	46	10
Baltimore City	143*,**	60*,**	26*,**	115*,**	28*,**	3*,**
Boston	161	85	43	133*,**	54*,**	10
Charlotte	174*,**	94*,**	62*,**	131*,**	50*	10
Chicago	154	78	38	113*,**	29*,**	5**
Cleveland	136*,**	61*,**	15*,**	109*,**	22*,**	2*,**
Detroit	‡	‡	‡	109*,**	24*,**	3*,**
Fresno	144*,**	66*,**	25*,**	110*,**	25*,**	4**
Houston	174*,**	91	64**	128*	48*	8
Jefferson County (KY)	163	85	48	129*	48*	11
Los Angeles	152*,**	76	36	117**	36**	6
Miami-Dade	169*,**	92*	57**	125	44	7
Milwaukee	158	81	39	115*,**	31*,**	5**
New York City	159	83	41	125	43	9
Philadelphia	141*,**	61*,**	25*,**	115*,**	30*,**	3*,**
San Diego	169**	89	56**	124	43	10
Grade 8						
Nation	161	77*	41	125*	32*	8*
Large city[1]	159	73**	40	120**	27**	6**
Atlanta	‡	‡	‡	123	28**	6
Austin	178*,**	90*,**	65*,**	138*,**	47*,**	16*,**
Baltimore City	‡	‡	‡	110*,**	17*,**	2*,**
Boston	160	74	44	120**	26**	6
Charlotte	167*,**	83*,**	49*,**	126*	34*	7
Chicago	150*,**	67**	28*,**	110*,**	17*,**	3*,**
Cleveland	144*,**	56*,**	18*,**	117**	20*,**	3**
Detroit	‡	‡	‡	113*,**	19**	3**
Fresno	151*,**	66**	27*,**	117	28	4
Houston	172*,**	86*,**	57*,**	128*	38*	9
Jefferson County (KY)	157**	71**	35**	128*	35	8
Los Angeles	152*,**	64*,**	30**	113*,**	20**	4
Miami-Dade	159	73	38	123	30	6
Milwaukee	143*,**	53*,**	19*,**	115*,**	19*,**	2*,**
New York City	151*,**	63*,**	29*,**	119**	24**	5**
Philadelphia	139*,**	49*,**	18*,**	112*,**	17*,**	3**
San Diego	158	74	36	125	30	8

See notes at end of table.

Table **A-6.** Average scores and achievement-level results in NAEP science for public school students, by selected race/ethnicity categories, grade, and jurisdiction: 2009—Continued

Grade and jurisdiction	Hispanic			Asian/Pacific Islander		
		Percentage of students			Percentage of students	
	Average scale score	At or above *Basic*	At or above *Proficient*	Average scale score	At or above *Basic*	At or above *Proficient*
Grade 4						
Nation	130*	52*	13	160*	80*	45*
Large city[1]	127**	48**	12	152**	76**	35**
Atlanta	‡	‡	‡	‡	‡	‡
Austin	133*	54	15	‡	‡	‡
Baltimore City	‡	‡	‡	‡	‡	‡
Boston	134*	58*	12	154	80	34
Charlotte	136*	58	15	163	86	49
Chicago	128	48	11	159	80	40
Cleveland	113*,**	26*,**	4*,**	‡	‡	‡
Detroit	122	38	8	‡	‡	‡
Fresno	118*,**	34*,**	5*,**	123*,**	38*,**	8*,**
Houston	133*	53	12	160	80	47
Jefferson County (KY)	138	58	21	‡	‡	‡
Los Angeles	119*,**	39*,**	7*,**	151	74	31**
Miami-Dade	146*,**	70*,**	25*,**	‡	‡	‡
Milwaukee	132	52	13	‡	‡	‡
New York City	127	47	10	153	78	34**
Philadelphia	120*,**	40**	10	141*,**	63	23**
San Diego	128	50	12	157	80	39
Grade 8						
Nation	131*	41*	12*	159*	72*	40*
Large city[1]	127**	37**	10**	152**	66**	32**
Atlanta	‡	‡	‡	‡	‡	‡
Austin	134*,**	46*	16*,**	‡	‡	‡
Baltimore City	‡	‡	‡	‡	‡	‡
Boston	123**	31**	8	157	74	35
Charlotte	131	40	11	‡	‡	‡
Chicago	125**	32**	6	‡	‡	‡
Cleveland	122**	24*,**	4*,**	‡	‡	‡
Detroit	117	27**	6	‡	‡	‡
Fresno	119*,**	27*,**	6*,**	125*,**	34*,**	7*,**
Houston	137*,**	48*,**	14*	166	76	51
Jefferson County (KY)	‡	‡	‡	‡	‡	‡
Los Angeles	118*,**	27*,**	6*,**	156	71	35
Miami-Dade	138*,**	50*,**	18*,**	‡	‡	‡
Milwaukee	127	36	7	‡	‡	‡
New York City	120*,**	26*,**	6*,**	156	71	36
Philadelphia	115*,**	21*,**	3*,**	139**	48*,**	18*,**
San Diego	123**	32**	8	148**	61**	26**

‡ Reporting standards not met.
* Significantly different ($p < .05$) from large city.
** Significantly different ($p < .05$) from the nation.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Table **A-7.** Average score gaps in NAEP science for fourth- and eighth-grade public school students, by selected racial/ethnic comparison groups and jurisdiction: 2009

Jurisdiction	Grade 4		Grade 8	
	White – Black	White – Hispanic	White – Black	White – Hispanic
Nation	35*	32	36	30
Large city[1]	40**	36	39	33
Atlanta	56*,**	‡	‡	‡
Austin	54*,**	49*,**	40	43*,**
Baltimore City	29	‡	‡	‡
Boston	28*,**	26*	40	37
Charlotte	43**	38	41	36
Chicago	41	26	40	25
Cleveland	27*	23*	27	22
Detroit	‡	‡	‡	‡
Fresno	34	26	34	32
Houston	46	41	43	35
Jefferson County (KY)	34	25	29*,**	‡
Los Angeles	35	33	39	34
Miami-Dade	44**	23*,**	36	21*,**
Milwaukee	42	25	28	15*
New York City	34	31	32	31
Philadelphia	26*	21*	27	23
San Diego	45	40	33	35

‡ Reporting standards not met.
* Significantly different ($p < .05$) from large city.
** Significantly different ($p < .05$) from the nation.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin. Score gaps are calculated based on differences between unrounded average scores.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Table **A-8.** Average scores and achievement-level results in NAEP science for public school students, by eligibility for National School Lunch Program, grade, and jurisdiction: 2009

Grade and jurisdiction	Eligible			Not eligible		
		Percentage of students			Percentage of students	
	Average scale score	At or above *Basic*	At or above *Proficient*	Average scale score	At or above *Basic*	At or above *Proficient*
Grade 4						
Nation	134*	56*	16*	163*	86*	48*
Large city[1]	126**	47**	11**	157**	78**	42**
Atlanta	123*,**	40*,**	7*,**	166*	86*	54*
Austin	130*	50**	12**	176*,**	92*,**	67*,**
Baltimore City	114*,**	27*,**	3*,**	136*,**	54*,**	20*,**
Boston	134*	57*	12**	156**	79	37**
Charlotte	132*	52*	12**	166*	87*	52*
Chicago	120*,**	38*,**	8*,**	154**	79	36**
Cleveland	114*,**	30*,**	4*,**	†	†	†
Detroit	108*,**	23*,**	3*,**	122*,**	39*,**	6*,**
Fresno	118*,**	34*,**	5*,**	151**	76	32**
Houston	130*,**	50**	11**	159	81	43
Jefferson County (KY)	136*	57*	17*	171*,**	91*,**	58*,**
Los Angeles	120*,**	40*,**	8*,**	146*,**	69**	30*,**
Miami-Dade	135*	58*	14*	161	84*	46
Milwaukee	120*,**	37*,**	7*,**	148*,**	71**	31*,**
New York City	132*	53*	15*	158	80	41
Philadelphia	119*,**	35*,**	6*,**	137*,**	56*,**	21*,**
San Diego	128**	49**	13	167*	89*	53*
Grade 8						
Nation	133*	43*	14*	161*	76*	41*
Large city[1]	125**	34**	9**	152**	65**	33**
Atlanta	120*,**	25*,**	5*,**	151**	63**	31**
Austin	130*	41*	11	173*,**	86*,**	59*,**
Baltimore City	110*,**	17*,**	2*,**	128*,**	35*,**	13*,**
Boston	123**	31**	9**	148**	59**	31**
Charlotte	126**	34**	7**	155**	69**	35**
Chicago	118*,**	25*,**	5*,**	142*,**	53*,**	20*,**
Cleveland	121**	26*,**	6*,**	†	†	†
Detroit	110*,**	16*,**	2*,**	121*,**	31*,**	7*,**
Fresno	119*,**	28*,**	5*,**	155**	69	30**
Houston	133*	44*	12*	157	70	36
Jefferson County (KY)	133*	40*	12	161*	77*	40
Los Angeles	119*,**	28*,**	6*,**	143*,**	56**	24*,**
Miami-Dade	130*	40*	11	150**	63**	29**
Milwaukee	118*,**	22*,**	3*,**	139*,**	50*,**	15*,**
New York City	125**	33**	10**	146**	56**	28**
Philadelphia	115*,**	20*,**	4*,**	143**	52**	19**
San Diego	125**	33**	8**	154	68	35**

† Not applicable. In Cleveland, all students were categorized as eligible for the National School Lunch Program.
* Significantly different ($p < .05$) from large city.
** Significantly different ($p < .05$) from the nation.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Table **A-9.** Average scores and achievement-level results in NAEP science for public school students, by status as students with disabilities (SD), grade, and jurisdiction: 2009

Grade and jurisdiction	SD			Not SD		
		Percentage of students			Percentage of students	
	Average scale score	At or above *Basic*	At or above *Proficient*	Average scale score	At or above *Basic*	At or above *Proficient*
Grade 4						
Nation	129*	50*	16*	151*	74*	35*
Large city[1]	112**	33**	9**	138**	59**	21**
Atlanta	110**	30**	11	137**	54*,**	20**
Austin	130*	49*	17	149*	67*,**	33*
Baltimore City	111**	23**	4**	119*,**	33*,**	6*,**
Boston	121*,**	37**	6**	143*,**	68*,**	20**
Charlotte	130*	48*	18*	152*	73*	34*
Chicago	102*,**	20*,**	6**	128*,**	47*,**	12*,**
Cleveland	93*,**	12*,**	#	117*,**	32*,**	5*,**
Detroit	88*,**	7*,**	1*,**	114*,**	29*,**	4*,**
Fresno	98*,**	20*,**	3	124*,**	40*,**	8*,**
Houston	109**	24**	6**	137**	57**	17*,**
Jefferson County (KY)	126*	43	15	154*	75*	36*
Los Angeles	89*,**	15*,**	3**	128*,**	48*,**	11*,**
Miami-Dade	118**	36**	6**	147*,**	70*	27*,**
Milwaukee	102*,**	19*,**	4*,**	130*,**	49*,**	14*,**
New York City	117**	35**	8**	140**	61**	21**
Philadelphia	94*,**	11*,**	1	125*,**	42*,**	9*,**
San Diego	115**	35**	14	148*	69*,**	31*
Grade 8						
Nation	122*	33*	11*	152*	66*	31*
Large city[1]	103**	17**	4**	138**	48**	18**
Atlanta	98**	12**	3	130*,**	35*,**	11*,**
Austin	124*	34*	16*	153*	65*	36*,**
Baltimore City	90*,**	6**	1	118*,**	23*,**	5*,**
Boston	99**	8*,**	1*,**	137**	46**	18**
Charlotte	112**	21**	6	144*,**	55*,**	23*,**
Chicago	96*,**	11*,**	3**	126*,**	33*,**	8*,**
Cleveland	97**	8**	1	126*,**	30*,**	6*,**
Detroit	83*,**	5*,**	#	118*,**	23*,**	4*,**
Fresno	91*,**	9**	3**	127*,**	36*,**	9*,**
Houston	97**	10**	2**	142*,**	53*,**	19**
Jefferson County (KY)	120*	27	6	148*,**	60*,**	26*,**
Los Angeles	88*,**	10*,**	2**	127*,**	36*,**	10*,**
Miami-Dade	112*,**	17**	3**	141*,**	53*,**	19**
Milwaukee	99**	12**	3**	127*,**	32*,**	6*,**
New York City	105**	12**	2**	133*,**	42*,**	15*,**
Philadelphia	92*,**	6*,**	#	124*,**	29*,**	8*,**
San Diego	109**	19**	7	141**	52**	21**

Rounds to zero.
* Significantly different ($p < .05$) from large city.
** Significantly different ($p < .05$) from the nation.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: The results for students with disabilities are based on students who were assessed and cannot be generalized to the total population of such students.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Table **A-10.** Average scores and achievement-level results in NAEP science for public school students, by status as English language learners (ELL), grade, and jurisdiction: 2009

Grade and jurisdiction	ELL			Not ELL		
		Percentage of students			Percentage of students	
	Average scale score	At or above *Basic*	At or above *Proficient*	Average scale score	At or above *Basic*	At or above *Proficient*
Grade 4						
Nation	114*	33*	5	153*	75*	35*
Large city[1]	111**	29**	4	141**	62**	24**
Atlanta	‡	‡	‡	135*,**	52*,**	19*,**
Austin	120*,**	37*	5	159*,**	77*	43*,**
Baltimore City	‡	‡	‡	117*,**	31*,**	6*,**
Boston	119*	38	3	143**	66**	20*,**
Charlotte	127*,**	43	9	152*	72*	34*
Chicago	102*,**	19**	2	127*,**	46*,**	13*,**
Cleveland	‡	‡	‡	115*,**	31*,**	4*,**
Detroit	‡	‡	‡	111*,**	26*,**	4*,**
Fresno	105**	19**	1**	128*,**	47*,**	11*,**
Houston	124*,**	41*,**	6	142**	64**	22**
Jefferson County (KY)	‡	‡	‡	150*	71*,**	34*
Los Angeles	104*,**	21*,**	2**	138*,**	61**	17*,**
Miami-Dade	113	32	4	146*,**	69*,**	26**
Milwaukee	127*,**	47*,**	7	126*,**	44*,**	13*,**
New York City	110	25**	4	140**	62**	21**
Philadelphia	98*,**	13*,**	1	123*,**	40*,**	9*,**
San Diego	117*	36*	5	158*,**	81*,**	42*,**
Grade 8						
Nation	103*	14*	2	151*	65*	31*
Large city[1]	97**	10**	1	138**	48**	19**
Atlanta	‡	‡	‡	127*,**	33*,**	10*,**
Austin	104	16	2	157*,**	68*,**	38*,**
Baltimore City	‡	‡	‡	113*,**	21*,**	4*,**
Boston	88**	6**	#	134*,**	42*,**	16**
Charlotte	111*	23	4	143*,**	54*,**	23*,**
Chicago	99	10	2	123*,**	30*,**	7*,**
Cleveland	‡	‡	‡	122*,**	27*,**	6*,**
Detroit	112	20	4	113*,**	20*,**	3*,**
Fresno	93**	4**	#	133*,**	42*,**	11*,**
Houston	104	12	1	142*,**	54*,**	19**
Jefferson County (KY)	‡	‡	‡	147*,**	58*,**	25*,**
Los Angeles	88*,**	4**	#**	133*,**	41*,**	12*,**
Miami-Dade	92**	8	1	141**	52**	19**
Milwaukee	‡	‡	‡	123*,**	29*,**	6*,**
New York City	95	7**	#	132*,**	41*,**	14*,**
Philadelphia	97	5**	1	121*,**	27*,**	7*,**
San Diego	93**	5**	#	146*,**	57*,**	23*,**

Rounds to zero.
‡ Reporting standards not met.
* Significantly different ($p < .05$) from large city.
** Significantly different ($p < .05$) from the nation.
[1] Large city includes students from all cities in the nation with populations of 250,000 or more including the participating districts.
NOTE: The results for English language learners are based on students who were assessed and cannot be generalized to the total population of such students.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

U.S. Department of Education

The National Assessment of Educational Progress (NAEP) is a congressionally authorized project sponsored by the U.S. Department of Education. The National Center for Education Statistics, within the Institute of Education Sciences, administers NAEP. The Commissioner of Education Statistics is responsible by law for carrying out the NAEP project.

Arne Duncan
Secretary
U.S. Department of Education

John Q. Easton
Director
Institute of Education Sciences

Jack Buckley
Commissioner
National Center for Education Statistics

The National Assessment Governing Board

In 1988, Congress created the National Assessment Governing Board to set policy for the National Assessment of Educational Progress, commonly known as The Nation's Report Card™. The Governing Board is an independent, bipartisan group whose members include governors, state legislators, local and state school officials, educators, business representatives, and members of the general public.

Honorable David P. Driscoll, Chair
Former Commissioner of Education
Melrose, Massachusetts

Mary Frances Taymans, Vice Chair
Sisters of Notre Dame
National Education Office
Bethesda, Maryland

David J. Alukonis
Former Chairman
Hudson School Board
Hudson, New Hampshire

Louis M. Fabrizio
Director, Accountability Policy and Communications
North Carolina Department of Public Instruction
Raleigh, North Carolina

Honorable Anitere Flores
Senator
Florida State Senate
Miami, Florida

Alan J. Friedman
Consultant
Museum Development and Science Communication
New York, New York

Shannon Garrison
Fourth-Grade Teacher
Solano Avenue Elementary School
Los Angeles, California

David W. Gordon
County Superintendent of Schools
Sacramento County Office of Education
Sacramento, California

Doris R. Hicks
Principal and Chief Executive Officer
Dr. Martin Luther King, Jr. Charter School for Science and Technology
New Orleans, Louisiana

Brent Houston
Principal
Shawnee Middle School
Shawnee, Oklahoma

Hector Ibarra
Middle School Science Teacher
Belin-Blank International Center and Talent Development
Iowa City, Iowa

Kathi M. King
Twelfth-Grade Teacher
Messalonskee High School
Oakland, Maine

Henry Kranendonk
Mathematics Consultant
Milwaukee Public Schools
Milwaukee, Wisconsin

Honorable Jack Markell
Governor of Delaware
Wilmington, Delaware

Tonya Miles
General Public Representative
Mitchellville, Maryland

Honorable Steven L. Paine
Former State Superintendent of Schools
West Virginia Department of Education
Charleston, West Virginia

Honorable Sonny Perdue
Former Governor of Georgia
Atlanta, Georgia

Susan Pimentel
Educational Consultant
Hanover, New Hampshire

W. James Popham
Professor Emeritus
Graduate School of Education and Information Studies
University of California, Los Angeles
Los Angeles, California

Andrew C. Porter
Dean
Graduate School of Education
University of Pennsylvania
Philadelphia, Pennsylvania

Warren T. Smith
Vice President
Washington State Board of Education
Olympia, Washington

Blair Taylor
President and CEO
Los Angeles Urban League
Los Angeles, California

Honorable Leticia Van de Putte
Senator
Texas State Senate
San Antonio, Texas

Eileen L. Weiser
General Public Representative
Ann Arbor, Michigan

John Q. Easton (Ex officio)
Director
Institute of Education Sciences
U.S. Department of Education
Washington, D.C.

Cornelia S. Orr
Executive Director
National Assessment Governing Board
Washington, D.C.

"The Department of Education's mission is to promote student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access."

www.ed.gov

MORE INFORMATION

The report release site is http://nationsreportcard.gov. The NCES Publications and Products address is http://nces.ed.gov/pubsearch.

For ordering information, write to
ED Pubs
U.S. Department of Education
P.O. Box 22207
Alexandria, VA 22304

or call toll free 1-877-4-ED-Pubs

or order online at http://www.edpubs.gov.

THE NATION'S REPORT CARD

TRIAL URBAN DISTRICT ASSESSMENT

Science 2009

FEBRUARY 2011

SUGGESTED CITATION

National Center for Education Statistics (2011). *The Nation's Report Card: Trial Urban District Assessment Science 2009* (NCES 2011-452). Institute of Education Sciences, U.S. Department of Education, Washington, D.C.

CONTENT CONTACT

Emmanuel Sikali
202-502-7419
emmanuel.sikali@ed.gov

This report was prepared for the National Center for Education Statistics under Contract No. ED-07-CO-0107 with Educational Testing Service. Mention of trade names, commercial products, or organizations does not imply endorsement by the U.S. Government.