

FEATURES OF THE 2009 SCIENCE ASSESSMENT

Nationally representative student samples

- 156,500 4th-graders
- 151,100 8th-graders
- 11,100 12th-graders

Students assessed in three science content areas

- Physical science
- Life science
- Earth and space
sciences

Results available for

- Nation
- 46 states
- Department of Defense
Schools



The 
Nation's
Report Card

Science 2009

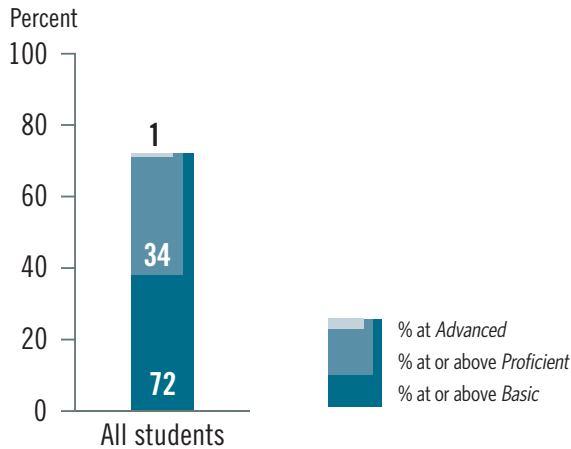
NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS AT GRADES 4, 8, AND 12

Highlights

ies NATIONAL CENTER FOR
EDUCATION STATISTICS
Institute of Education Sciences
U.S. Department of Education



Thirty-four percent of fourth-graders perform at or above *Proficient* in 2009



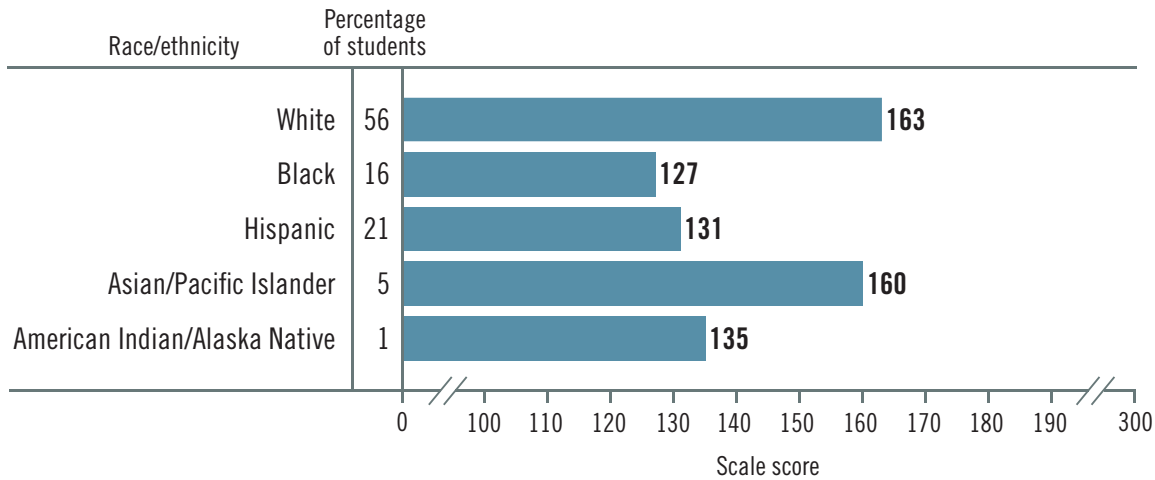
– **72%** perform at or above *Basic*
 – **1%** perform at *Advanced*

What fourth-graders know and can do in science

	Scale score	Content area	Question description
<i>Advanced</i>	300 //		
	264	Physical science	Determine the source of sound during an investigation about the pitch of sounds
	264	Life science	Explain differences between related individuals
	233	Earth and space sciences	Draw a conclusion about differences in air temperatures based on data
	224		
<i>Proficient</i>	222	Life science	Describe the different stages of the life cycle of an organism
	190	Earth and space sciences	Relate the calendar to amount of daylight
	169	Physical science	Explain an example of heat (thermal energy) transfer
	167		
<i>Basic</i>	161	Earth and space sciences	Explain the choice of material based on protection of the environment
	146	Life science	Explain the benefit of an adaptation for an organism
	138	Physical science	Recognize an example of a change of state
	131		
	// 0		

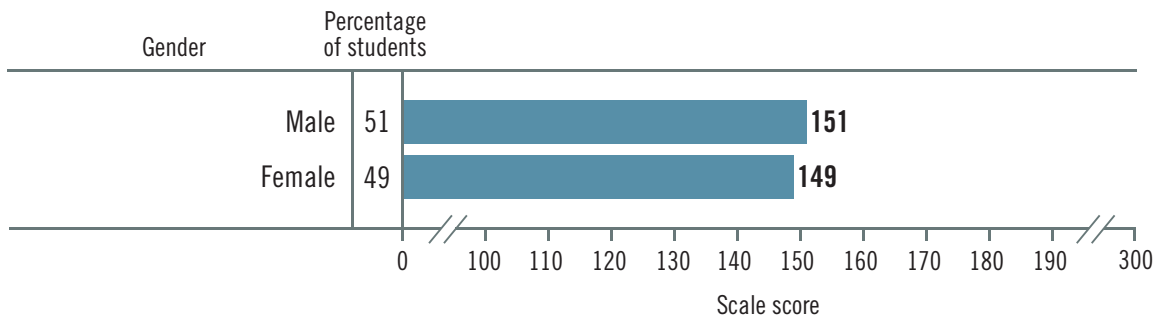
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

White students score higher than other racial/ethnic groups



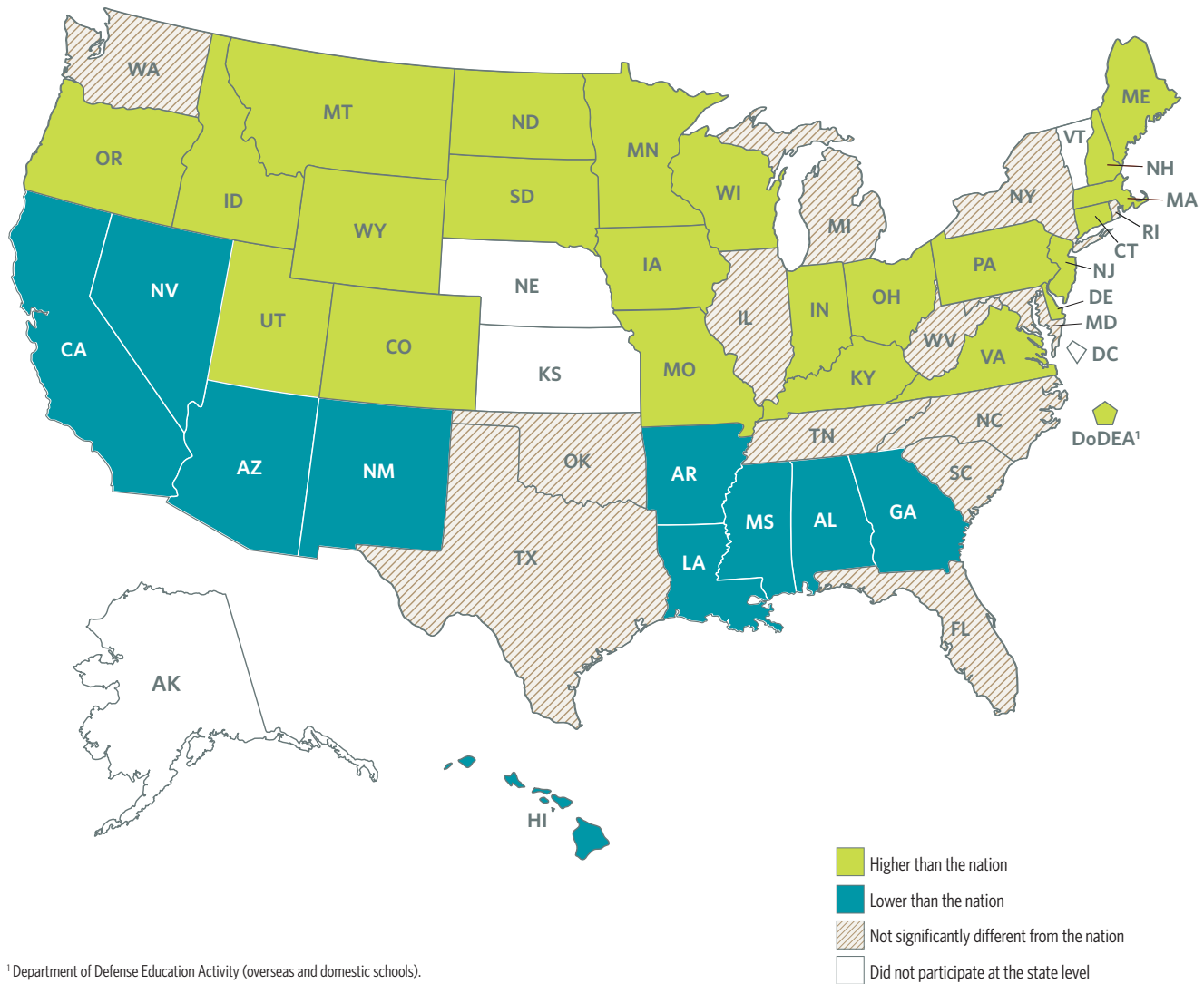
NOTE: Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin. Detail may not sum to totals because results are not shown for students whose race/ethnicity was unclassified.

Male students score higher than female students



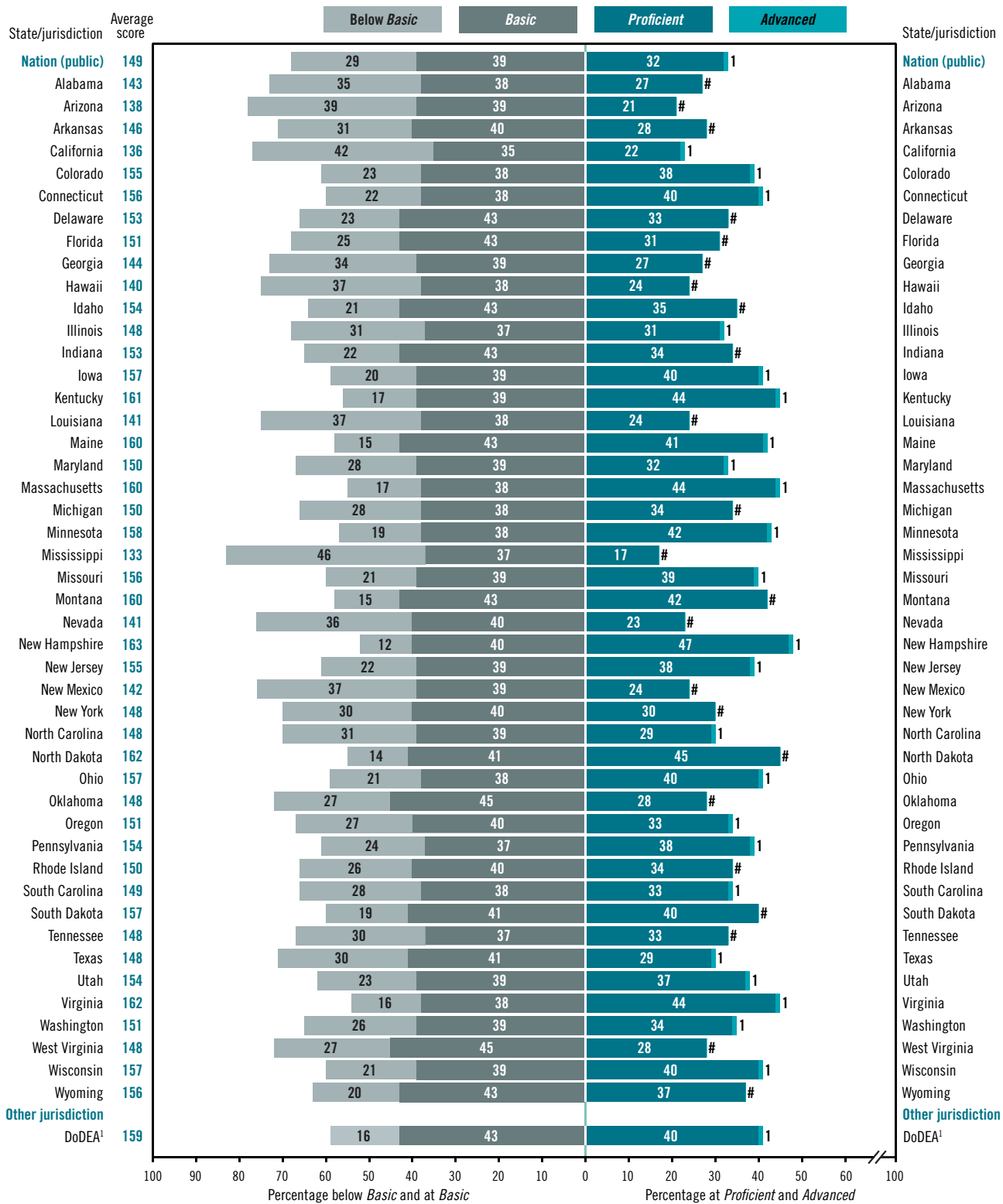
NOTE: Detail may not sum to totals because of rounding.

Scores higher than the national average in 24 out of 47 states/jurisdictions



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

State Scores and Achievement-Level Results



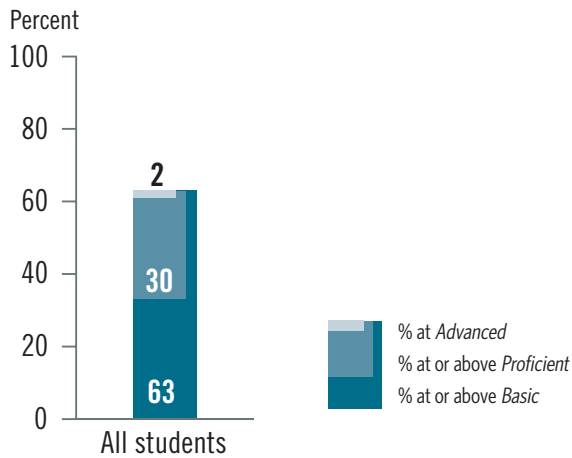
Rounds to zero.

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

NOTE: Alaska, the District of Columbia, Kansas, Nebraska, and Vermont did not participate in the 2009 science assessment at the state level. The shaded bars are graphed using unrounded numbers. 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.

Thirty percent of eighth-graders perform at or above *Proficient*



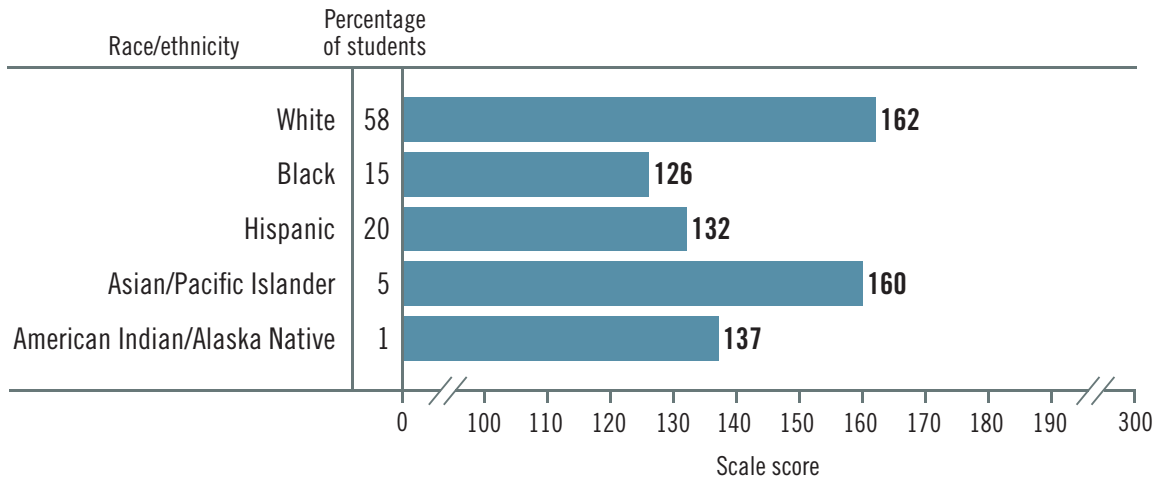
– **63%** perform at or above *Basic*
 – **2%** perform at *Advanced*

What eighth-graders know and can do in science

	Scale score	Content area	Question description
<i>Advanced</i>	300		
	//		
	266	Physical science	Describe the evidence for chemical change
	246	Life science	Form a conclusion based on data about the behavior of an organism
	223	Earth and space sciences	Predict the Sun's position in the sky
	215		
<i>Proficient</i>	201	Earth and space sciences	List soils in order of permeability
	194	Physical science	Determine a controlled variable of a chemistry investigation
	186	Life science	Recognize that plants produce their own food
	170		
<i>Basic</i>	163	Life science	Recognize the role of decomposers
	152	Physical science	Critique and improve an investigation about forces
	148	Earth and space sciences	Identify the mechanism of a weather pattern
	141		
	//		
	0		

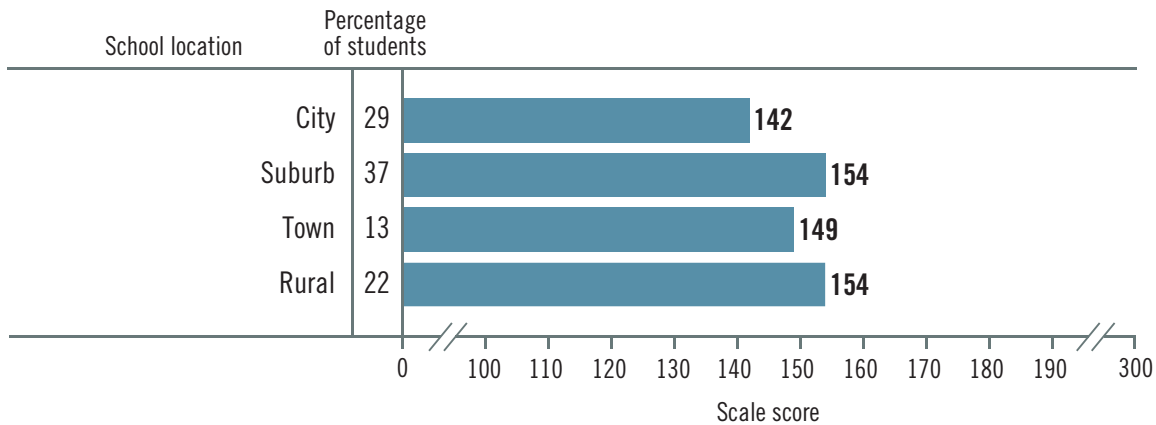
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

White students score higher than other racial/ethnic groups



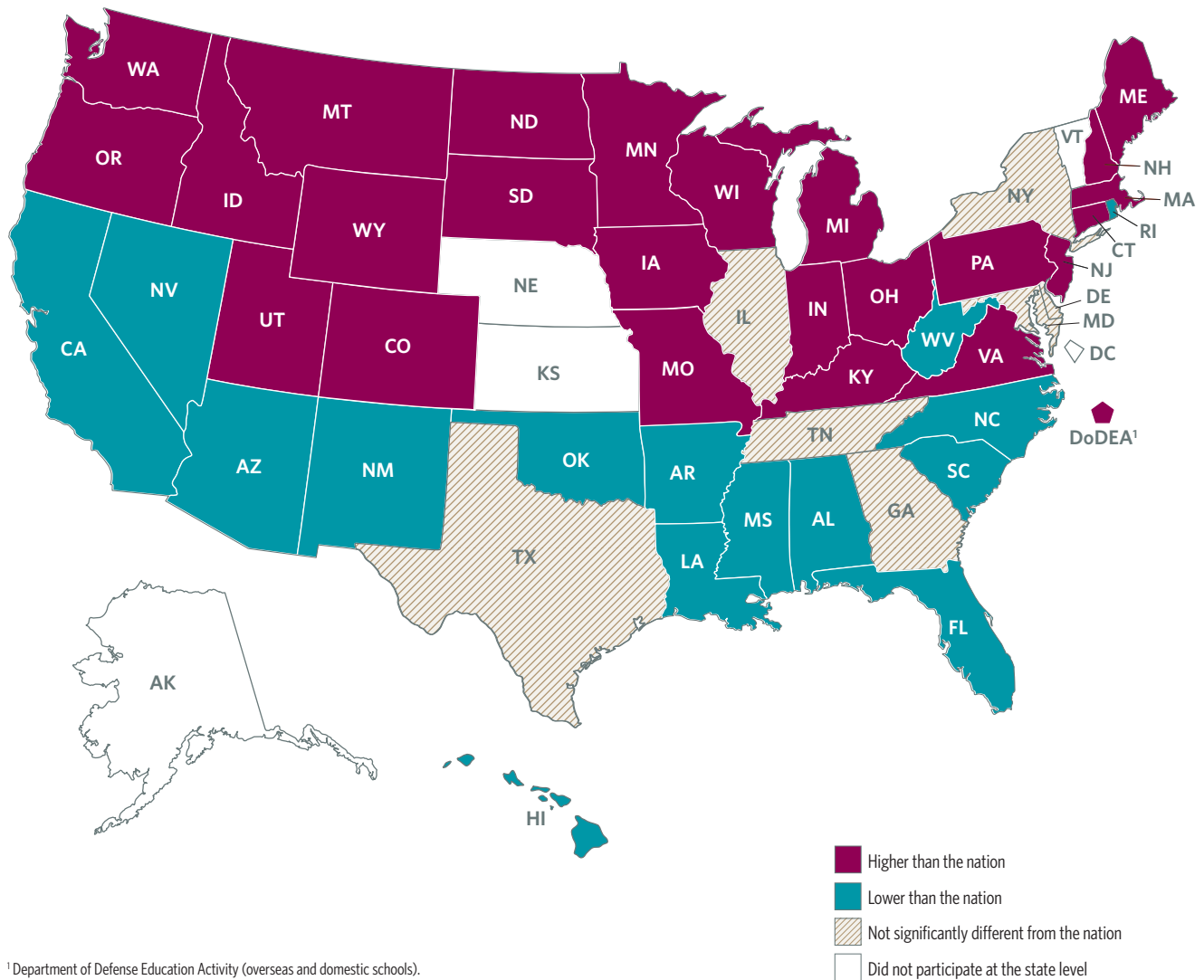
NOTE: Black includes African American, Hispanic includes Latino, and Pacific Islander includes Native Hawaiian. Race categories exclude Hispanic origin. Detail may not sum to totals because results are not shown for students whose race/ethnicity was unclassified.

Students in city schools score lower than students in other locations



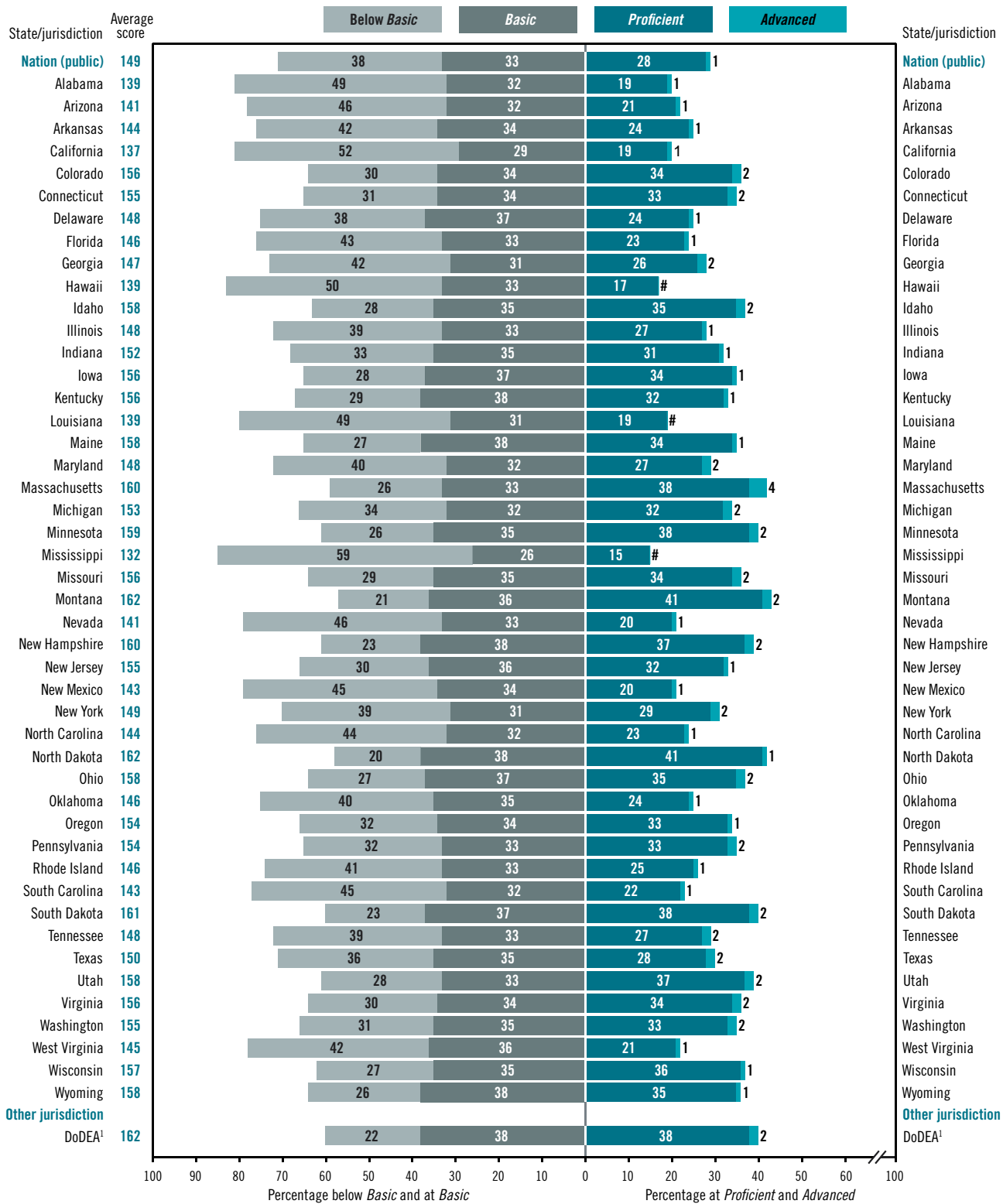
NOTE: Detail may not sum to totals because of rounding.

Scores higher than the national average in 25 out of 47 states/jurisdictions



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State Scores and Achievement-Level Results



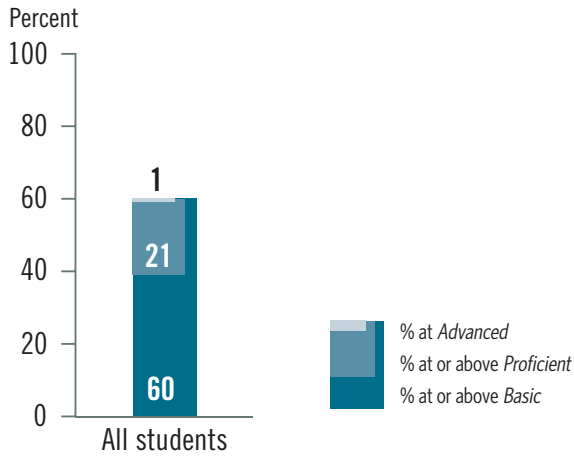
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Twenty-one percent of twelfth-graders perform at or above *Proficient*



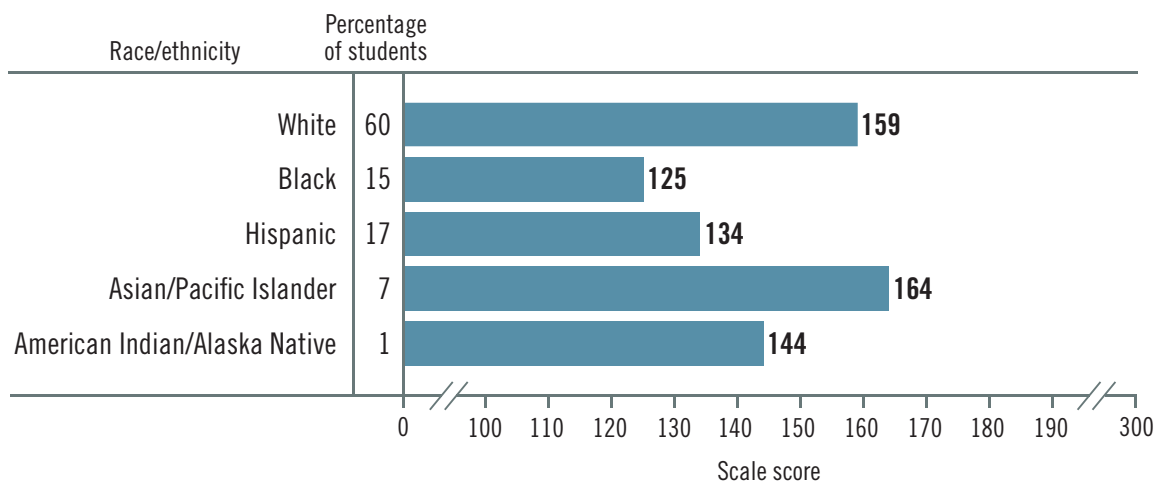
- **60%** perform at or above *Basic*
- **1%** perform at *Advanced*

What twelfth-graders know and can do in science

	Scale score	Content area	Question description
<i>Advanced</i>	300	//	
	269	Life science	Critique a conclusion about photosynthesis based on observations
	244	Physical science	Recognize a nuclear fission reaction
	232	Earth and space sciences	Compare methods for determining the age of the Earth
	222		
<i>Proficient</i>	212	Earth and space sciences	Identify a characteristic that distinguishes stars from planets
	198	Physical science	Relate motion to conversion of kinetic energy to potential energy
	186	Life science	Evaluate two methods to help control an invasive species
	179		
<i>Basic</i>	177	Physical science	Recognize atomic particles in an ion
	155	Earth and space sciences	Indicate a geologic event that explains a rock formation
	143	Life science	Determine relationships between species based on an evolutionary tree
	142		
	//		
	0		

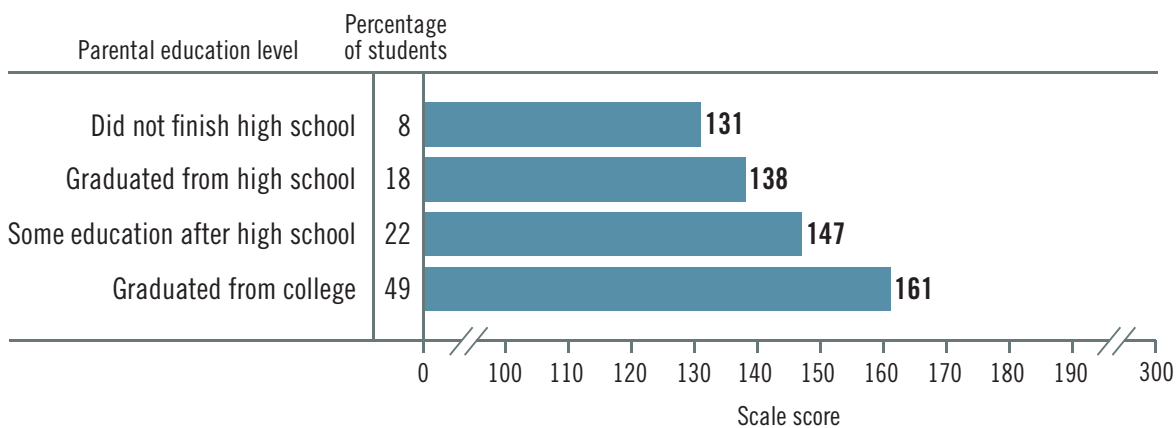
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

White and Asian/Pacific Islander students score comparably



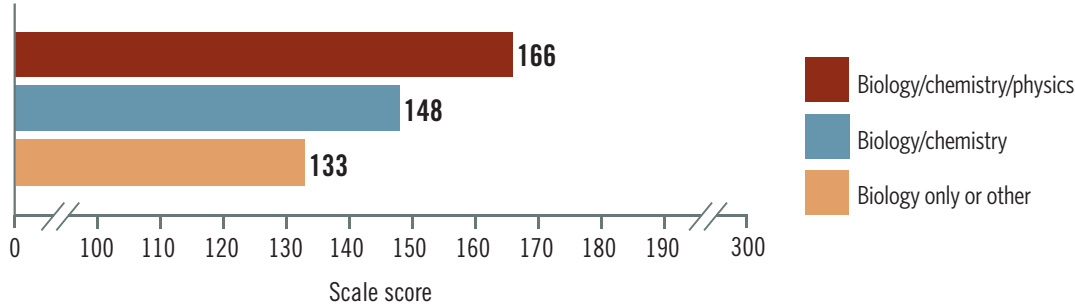
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Higher levels of parental education associated with higher scores

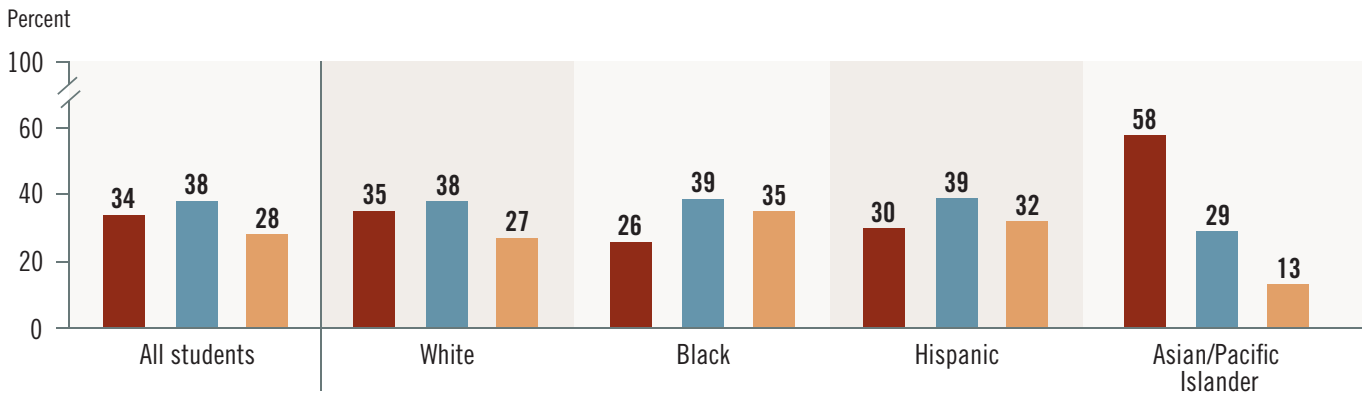


NOTE: Detail may not sum to totals because results are not shown for students who reported that they did not know the highest education level for either of their parents.

Rigorous science coursework associated with higher scores

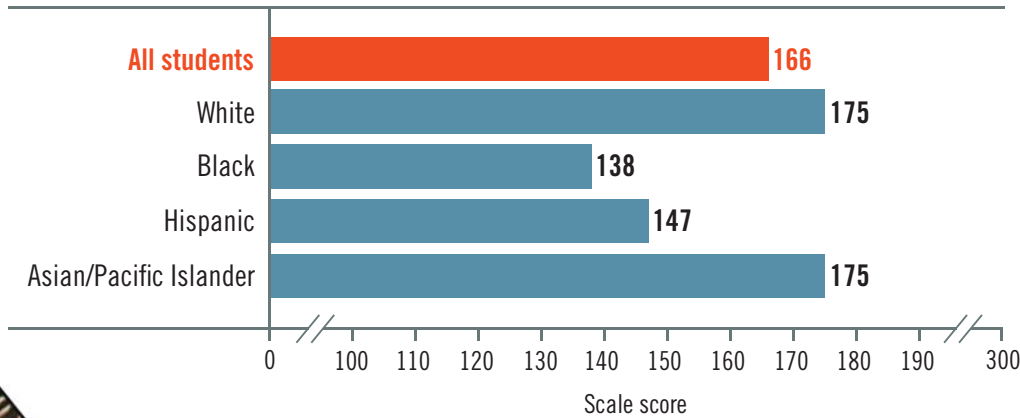


Higher percentage of Asian/Pacific Islander students report taking biology/chemistry/physics



Performance varies for racial/ethnic groups taking biology/chemistry/physics

Students who report taking biology/chemistry/physics



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

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