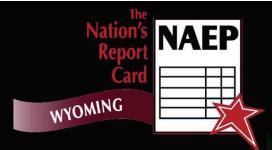


# Wyoming Science 2009



## Grade 4 Report

### Item Map and Performance Snapshot

The National Assessment of Educational Progress (NAEP) uses both multiple choice and constructed-response test items to assess fourth graders' skills in three science areas: Physical Science, Life Science, Earth and Space Science. Scale scores range from 0 to 300, wherein a 131 denotes NAEP's *Basic* achievement benchmark (i.e., approximately a "grade level" performance); 167 reflects *Proficient* results which means competency on challenging material, and 224 is considered to be *Advanced*.

### Wyoming and the Nation — Performance on Test Items

<b>Advanced</b> 300 // 293 285 278 264 <a href="#">Explain differences between related individuals</a> 264 253 233 <b>224</b> 222 220 212 210 <a href="#">Design an investigation to determine the volume of a container</a> 205
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	Complete Answer	Partial Credit	Incorrect	Omitted	Off Task
<b>WY</b>	9	15	72	3	#
<b>US</b>	7	15	73	5	1

<b>Proficient</b> 204 194 190 186 175 173 <b>169</b> <b>167</b> 165 164 161 <a href="#">Explain the choice of material based on protection of the environment</a> 157 153 146 143 138 133
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	Choice A	Choice B	Choice C	Choice D	Omitted
<b>WY</b>	15	18	39	26	2
<b>US</b>	17	25	35	21	2

<b>Basic</b> 128 118 113 106 94 77 56 // 0
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	Complete Answer	Incorrect	Omitted	Off Task
<b>WY</b>	56	44	#	#
<b>US</b>	54	45	1	#

- ▶ Note: The position of a question on the scale represents the scale score 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.
- ▶ *Italic* type denotes a multiple-choice question. Regular type denotes a constructed-response question.  
# Rounds to zero. ‡ Reporting standards not met.
- ▶ SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Results are based on statistical tests which account for standard errors related to NAEP's sampling procedures.

For additional results and more information about Wyoming NAEP, please visit:

[http://edu.wyoming.gov/Programs/statewide\\_assessment\\_system/naep.aspx](http://edu.wyoming.gov/Programs/statewide_assessment_system/naep.aspx)

**Grade 4 Report**

**Released Test Item Snapshot**

The National Assessment of Educational Progress (NAEP) uses both multiple choice and constructed-response test items to assess fourth graders' skills in three science areas: Physical Science, Life Science, Earth and Space Science. Scale scores range from 0 to 300, wherein a 131 denotes NAEP's *Basic* achievement benchmark (i.e., approximately a "grade level" performance); 167 reflects *Proficient* results which means competency on challenging material, and 224 is considered to be *Advanced*.

**Explain the differences between related individuals**

This test item measures fourth-graders' performance in the life science content area. It requires students to explain differences between related individuals.

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:

*The male tigers can be brothers.  
Even brothers can't look exactly alike.  
I have seen twin brothers—  
one with blonde hair and blue eyes;  
one with brown hair and black eyes.*

Complete response #2:

*I have very light skin, my sister has  
very much darker skin. But we're still brother  
+ sister.*

Student responses to this question were rated using three scoring levels—Complete, Partial, and Unsatisfactory/Incorrect.

Scoring criteria for Complete and Partial responses are shown below.

**Explain the differences between related individuals: Scoring guide**

	<b>Explain the differences between related individuals: Scoring guide</b>
<b>Complete answer</b>	Indicated that people or animals that are related can look different, and provided a comparison of a specific characteristic of individuals.
<b>Partial credit</b>	Indicated that people or animals that are related can look different, and but did not provide a specific characteristic of individuals.

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

**Released Test Item Snapshot**

The National Assessment of Educational Progress (NAEP) uses both multiple choice and constructed-response test items to assess fourth graders' skills in three science areas: Physical Science, Life Science, Earth and Space Science. Scale scores range from 0 to 300, wherein a 131 denotes NAEP's *Basic* achievement benchmark (i.e., approximately a "grade level" performance); 167 reflects *Proficient* results which means competency on challenging material, and 224 is considered to be *Advanced*.

**Design an investigation to determine the volume of a container**

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



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

This test item measures eighth-graders' performance in the physical science content area. The question asks students to design an investigation to determine the volume of a container.

	Choice A	Choice B	Choice C	Choice D	Omitted
<b>WY</b>	15	18	39	26	2
<b>US</b>	17	25	35	21	2

A common incorrect answer (Choice B), which was selected by almost one-in-five or 18 percent of grade 4 students in Wyoming, represents a conceptual misunderstanding that both containers have the same masses (weights).

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

**Released Test Item Snapshot**

The National Assessment of Educational Progress (NAEP) uses both multiple choice and constructed-response test items to assess fourth graders' skills in three science areas: Physical Science, Life Science, Earth and Space Science. Scale scores range from 0 to 300, wherein a 131 denotes NAEP's *Basic* achievement benchmark (i.e., approximately a "grade level" performance); 167 reflects *Proficient* results which means competency on challenging material, and 224 is considered to be *Advanced*.

**Explain the choice of material based on protection of the environment**

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?

- (A) Plastic
- (B) Paper
- (C) Cloth

Explain why your choice helps protect the environment.

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

Complete response #2:

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

- (A) Plastic
- (B) Paper
- (C) 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 throw away we save them for our groceries

- This test item 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, and Unsatisfactory/ Incorrect.
- Scoring criteria for Complete responses are shown below:

**Explain the choice of material based on protection of the environment:  
Scoring guide**

<b>Complete answer</b>	Either:
	<ul style="list-style-type: none"> <li>► Indicated one type of grocery bag and correctly explained why using this type of bag helps the environment by indicating reusing, recycling, or biodegradation of the bags, as appropriate</li> <li>or,</li> <li>► Indicated one type of grocery bag and correctly explained why not using bags made of one of the other materials helps protect the environment.</li> </ul>

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