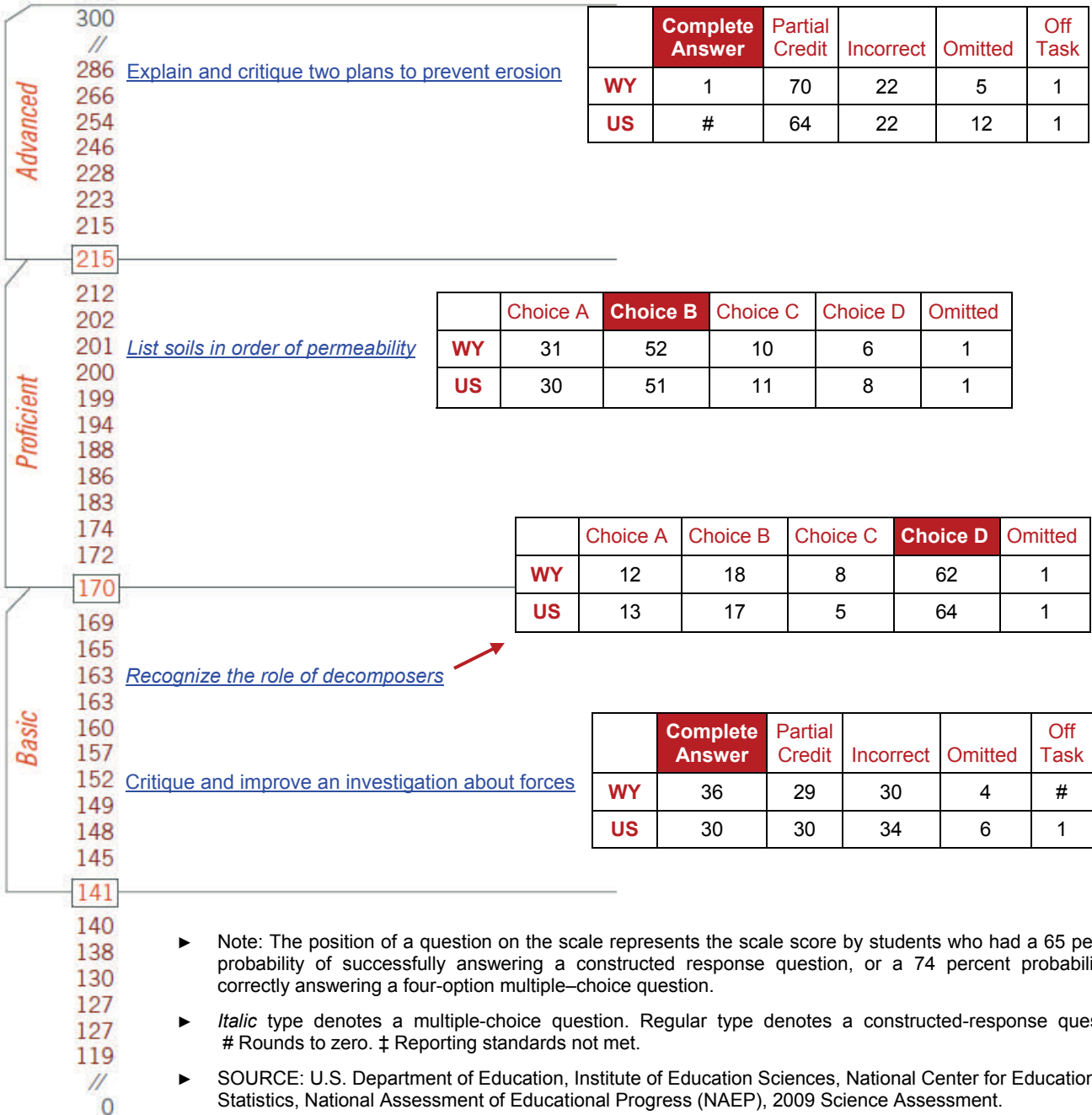


**Grade 8 Report**

**Item Map and Performance Snapshot**

The National Assessment of Educational Progress (NAEP) uses both multiple choice and constructed-response test items to assess eighth graders' skills in three science areas: Physical Science, Life Science, Earth and Space Science. Scale scores range from 0 to 300, wherein a 141 denotes NAEP's *Basic* achievement benchmark (i.e., approximately a "grade level" performance); 170 reflects *Proficient* results which means competency on challenging material, and 215 is considered to be *Advanced*.

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



- ▶ 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.

**Released Test Item Snapshot**

The National Assessment of Educational Progress (NAEP) uses both multiple choice and constructed-response test items to assess eighth graders' skills in three science areas: Physical Science, Life Science, Earth and Space Science. Scale scores range from 0 to 300, wherein a 141 denotes NAEP's *Basic* achievement benchmark (i.e., approximately a "grade level" performance); 170 reflects *Proficient* results which means competency on challenging material, and 215 is considered to be *Advanced*.

**Explain and critique two plans to prevent erosion**

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

Explain how each plan would prevent erosion of the dunes.

The grass roots will keep the sand in place as water goes over it and the sea wall will reduce the amount of water going over the sand.

Give an environmental advantage and disadvantage of each plan.

Environmental advantage of planting grasses:

The air gets cleaner

Environmental disadvantage of planting grasses:

Some animals environments do not include grass

Environmental advantage of building a seawall:

animal homes in the dunes will not be destroyed

Environmental disadvantage of building a seawall:

animals needing to go in and out of the ocean now have more trouble

- ▶ This test item measures eighth-graders' performance in the Earth and space sciences content area. It requires students to evaluate two proposed plans for preventing sand erosion.

	Part A: Explanation of both plans	Part B: Planting grasses	Part C: Building a seawall
Complete answer	Correctly explained how planting grasses and building a seawall would prevent erosion.	Provided a plausible advantage and disadvantage of planting grasses.	Provided a plausible advantage and disadvantage of building a seawall.
Partial credit	Correctly explained either how planting grasses or building a seawall would prevent erosion.	Provided a plausible advantage or a plausible disadvantage of planting grasses.	Provided a plausible advantage or a plausible disadvantage of building a seawall.

- ▶ Student responses to this question were rated in three parts, with scoring levels—Complete, Partial, and Unsatisfactory/Incorrect—for each level. Scoring criteria for Complete and Partial responses are shown above.
- ▶ 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 Report**

**Released Test Item Snapshot**

The National Assessment of Educational Progress (NAEP) uses both multiple choice and constructed-response test items to assess eighth graders' skills in three science areas: Physical Science, Life Science, Earth and Space Science. Scale scores range from 0 to 300, wherein a 141 denotes NAEP's *Basic* achievement benchmark (i.e., approximately a "grade level" performance); 170 reflects *Proficient* results which means competency on challenging material, and 215 is considered to be *Advanced*.

**List soils in order of permeability**

This test item measures eighth-graders' performance in the Earth and space sciences content area. The question asks students to list the soils in order according to the rate at which water would flow through them.

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

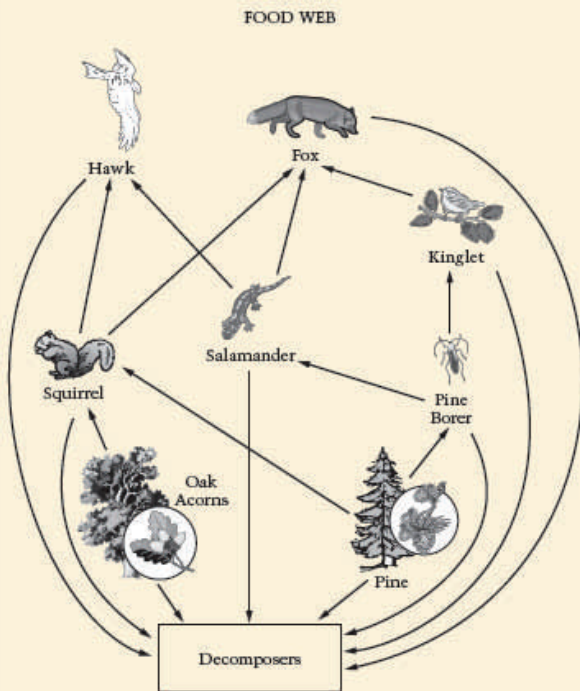
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

Released Test Item Snapshot

The National Assessment of Educational Progress (NAEP) uses both multiple choice and constructed-response test items to assess eighth graders' skills in three science areas: Physical Science, Life Science, Earth and Space Science. Scale scores range from 0 to 300, wherein a 141 denotes NAEP's *Basic* achievement benchmark (i.e., approximately a "grade level" performance); 170 reflects *Proficient* results which means competency on challenging material, and 215 is considered to be *Advanced*.

Recognize the role of decomposers

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.



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 test item measures eighth-graders' 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.

	Choice A	Choice B	Choice C	Choice D	Omitted
<b>WY</b>	12	18	8	62	1
<b>US</b>	13	17	5	64	1

The most common incorrect answer (Choice B), which was selected by almost one-in-five or 18 percent of grade 8 students in Wyoming, represents a conceptual misunderstanding that decomposers are like producers, performing photosynthesis to release oxygen into the air.

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 eighth graders' skills in three science areas: Physical Science, Life Science, Earth and Space Science. Scale scores range from 0 to 300, wherein a 141 denotes NAEP's *Basic* achievement benchmark (i.e., approximately a "grade level" performance); 170 reflects *Proficient* results which means competency on challenging material, and 215 is considered to be *Advanced*.

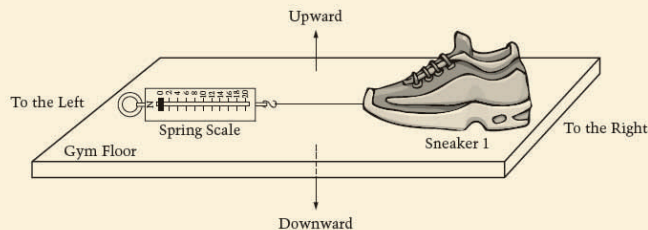
**Critique and improve an investigation about forces**

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

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 different 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 test item 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, Partial, and Unsatisfactory/Incorrect.

Scoring criteria for Complete and Partial responses are shown to the right.

**Critique and improve an investigation about forces**

**Complete answer**

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 credit**

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

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