The Nation's Report Card: Science Achievement Levels

The National Assessment of Educational Progress (NAEP), or The Nation's Report Card, measures eighth graders' understanding of science.

The science assessment measures the knowledge and skills that students should be able to demonstrate in Physical Science, Life Science, and Earth and Space Sciences.

NAEP Achievement Levels

- Students performing at the ***NAEP Basic*** level have partial mastery of prerequisite knowledge and skills that are fundamental for performance at the *NAEP Proficient* level.
- Students performing at the ***NAEP Proficient***[1] level have demonstrated competency over challenging material, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills.
- Students performing at the ***NAEP Advanced*** level have shown superior performance.

[1]NAEP achievement levels are distinct from those used on state assessments. *NAEP Proficient* does not signify meeting grade level expectations, which are set through state assessments.

Examples of skills and knowledge most eighth-grade students performing at each achievement level demonstrate in ***science***.[2]

Physical Science

NAEP Basic
Identify that matter has unique chemical and physical properties.

NAEP Proficient
Understand that the chemical or physical properties of a substance make it suitable for use in certain applications.

NAEP Advanced
Identify the appropriate material to perform a function based on the material's chemical or physical properties.

Life Science

NAEP Basic
Know that plants need sunlight to grow and reproduce.

NAEP Proficient
Identify the foundational process and components of photosynthesis.

NAEP Advanced
Understand the interaction between organisms and environmental factors in nutrient cycling.

Earth and Space Sciences

NAEP Basic
Know that sedimentary rock relates to fossil formation; and that fossils are evidence of past environments.

NAEP Proficient
Interpret evidence from fossils and rock layers to determine information about past environments.

NAEP Advanced
Explain how earth materials are made and broken down using knowledge of geologic processes.

NAEP PROFICIENT EXAMPLE

A 20-gram (g) sample of substance A and a 10 g sample of substance B react completely to form substance C. No other products are formed.[3]

Which statement must be true?

A. Substance A reacts faster than substance B does.

B. Substance A is less dense than substance C is.

C. 30 g of substance C is formed.

D. 20 g of substance C is formed with 10g of substance A left over.

NAEP BASIC EXAMPLE

Pakicetus is an ancient ancestor of whales. It lived on land near shallow seawater about 50 million years ago. Fossils of Pakicetus were recently found in rock layers in a desert far from any body of water.

Which conclusion is best supported by these observations?

A. Pakicetus migrated with whale populations along the ocean shore.

B. Pakicetus changed itself into a whale to escape the desert conditions.

C. Storms moved the rock layers containing Pakicetus fossils from near the ocean to the desert.

D. The environment where the Pakicetus fossils were found has changed from shallow sea to desert.

[2] The knowledge and skills are taken from previously used items that most students performing at the associated achievement level answered correctly.
[3] Questions included are released questions from previous assessments and are available at www.nationsreportcard.gov.