



DEPARTMENT OF EDUCATION

# **PAWS Science Grade 8**

## **Released Items With Data**

**Earth and Space Systems**

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Portions of this work were previously published.

Printed in the United States of America.

## Science Released Items with Data Introduction Page / Data Definitions

This Released Items with Data document provides a subset of items from the 2015 administration of the PAWS test. The data for an item is on the page that follows that item. The following provides definitions for the data fields on the data page.

### Item Information

**Title:** Title of the passage/stimulus the item belongs to

**Domain:** The reporting category of the state content standards

**Benchmark:** State content standard

**Context:** Main idea from subject matter

**Item Code:** Identification code assigned to the item

**Admin:** The year an item is administered

**Item Type:** The mode in which a student responds (MC means multiple-choice)

**Correct Answer:** The option letter (A, B, C, or D) that corresponds to the correct answer

**Item Dok:** The item's Depth of Knowledge designation, also called Cognitive Complexity;

- 1 - Recall and reproduction
- 2 - Skills and concepts
- 3 - Strategic and extended thinking

**Total N-count:** Number of students counted as taking the test in which the item appears during the listed administration (Includes item omissions)

**Pvalue/Mean Score:** For a multiple-choice item, the percent of students choosing the correct answer

### Score Analysis

**MC Row:** Answer options available for students to choose from (including those who do not choose any option); an asterisk designates the correct answer

**%Choosing Row:** Percent of students choosing an option (or omitting)

**Item Notes:** Area where user can make notes

## Nutria

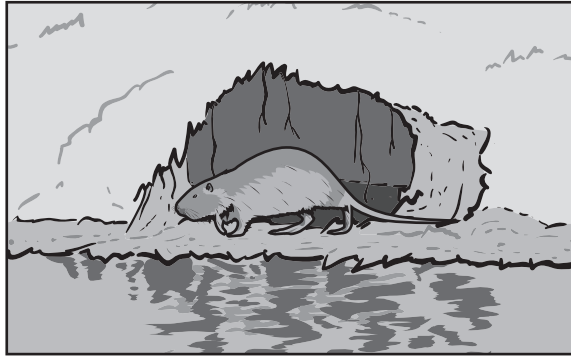
Science students researched information about animals called nutria. The students discovered that nutria are large, semiaquatic rodents. Then the students placed the physical characteristics of nutria in the chart shown.

### Physical Characteristics of Nutria

- Weigh between 5–7 kilograms
- Thick fur
- Long, thin tails
- Webbed feet
- Clawed toes
- Large front teeth used for gnawing

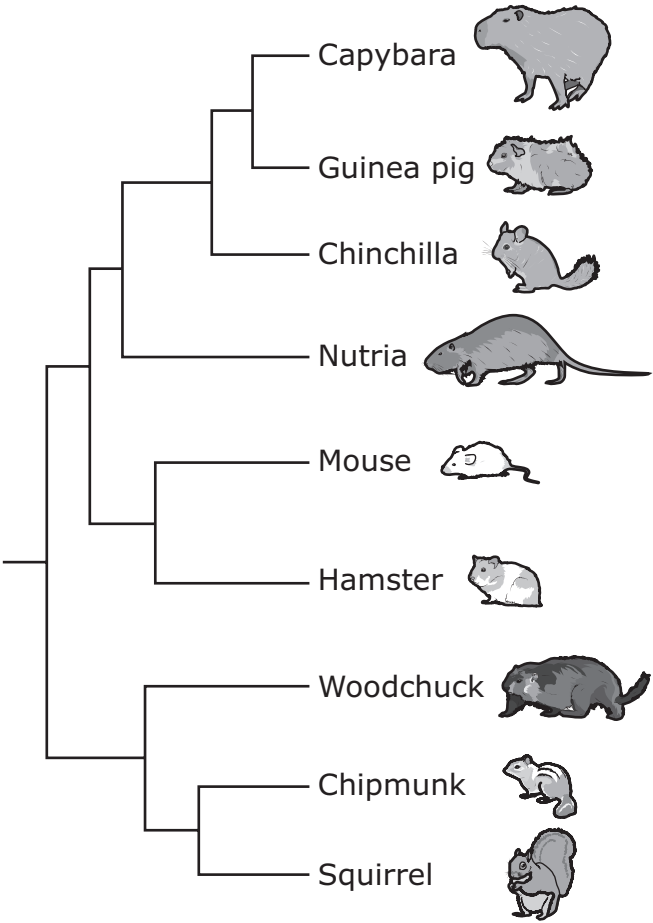
Nutria are herbivores that eat many types of aquatic plants. They build their nests, called burrows, by carving out areas along the banks of a body of water.

### Nutria in Burrow



Nutria have many characteristics that are similar to other rodents. The evolutionary relationship among rodents is shown in the phylogenetic tree.

**Evolutionary Relationship Among Rodents**



**00** Scientists find a fossil of a nutria and a fossil of an unidentified rodent. The nutria fossil is found in a different rock layer 20 meters above the unidentified rodent fossil. How does the nutria fossil most likely compare to the unidentified rodent fossil?

- A) The nutria fossil has less mass.
- B) The nutria fossil formed more recently.
- C) The nutria fossil was preserved in softer rock.
- D) The nutria fossil was formed by a juvenile animal.

Item Information	
<b>Title:</b>	Nutria
<b>Domain:</b>	Earth and Space Systems
<b>Benchmark:</b>	SC8.1.9 The Earth's History: Students systematize the Earth's history in terms of geologic evidence, comparing past and present Earth processes and identifying catastrophic events and fossil evidence.
<b>Context:</b>	G Earth's Processes and Features
<b>Item Code:</b>	VH103003

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	B	2	674	0.682

Score Analysis					
MC	A	B*	C	D	Omit
%Choosing	9.05	68.249	16.32	6.38	0

Item Notes

## Glaciers Study

Students were studying Wyoming glaciers. They wanted to determine if the sizes of the glaciers have changed over time. In order to measure any changes, students looked at photographs of three glaciers in the same mountain range. They found photographs of the glaciers that were taken several years apart. By making careful measurements, they were able to determine the approximate areas of the three glaciers from each photograph. The table shows their data.

### Area Results for Three Glaciers

Year of Photograph	Area (km <sup>2</sup> )		
	Glacier 1	Glacier 2	Glacier 3
1967	0.26	0.21	0.06
1994	0.21	0.16	0.03
2006	0.21	0.16	0.02
Change in Area (1967–2006)	-19%	-23%	-67%



**00** Which statement best explains why glaciers can become a destructive force on Earth's surface?

- A) Glaciers are very thick layers of ice that often last for many years.
- B) Glaciers remove layers of rock and sediment that took years to form.
- C) Glaciers lower the air temperature of a mountain for years at a time.
- D) Glaciers prevent water molecules from moving through the water cycle for years.

Item Information	
<b>Title:</b>	Glaciers Study
<b>Domain:</b>	Earth and Space Systems
<b>Benchmark:</b>	SC8.1.8 The Structure of the Earth System: Students examine the structure of the Earth, identifying layers of the Earth, considering plate movement and its effect, and recognizing landforms resulting from constructive and destructive forces.
<b>Context:</b>	G Earth's Processes and Features
<b>Item Code:</b>	VF407159

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2014	MC	B	2	782	0.442

Score Analysis					
MC	A	B*	C	D	Omit
%Choosing	20.205	44.246	13.811	21.355	0.384

Dif Summary	
Group	Dif Category
Gender	A
Hispanic	A
Native American	
Asian	

Item Notes

**00** If glaciers are no longer present on a mountain range, which evidence should scientists use to identify mountains that have been eroded by moving glaciers?

- A) The mountains have broad U-shaped valleys.
- B) The mountains have steep cone-shaped peaks.
- C) The rocks that make up the mountains have frozen.
- D) The plants on the mountains have adapted to living near ice.

Item Information	
<b>Title:</b>	Glaciers Study
<b>Domain:</b>	Earth and Space Systems
<b>Benchmark:</b>	SC8.1.9 The Earth's History: Students systematize the Earth's history in terms of geologic evidence, comparing past and present Earth processes and identifying catastrophic events and fossil evidence.
<b>Context:</b>	G Earth's Processes and Features
<b>Item Code:</b>	VF407160

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2014	MC	A	2	782	0.41

Score Analysis					
MC	A*	B	C	D	Omit
%Choosing	41.049	21.1	15.473	22.123	0.256

Dif Summary	
Group	Dif Category
Gender	A
Hispanic	B-
Native American	
Asian	

Item Notes

**00** Based on the data in the table, which statement best explains why the three glaciers changed at different rates?

- A) The rate of change in area is averaged over time.
- B) The rate of change in area is related to the initial glacier size.
- C) The rate of change in area is measured using old photographs.
- D) The rate of change in area is controlled by the age of the glacier.

Item Information	
<b>Title:</b>	Glaciers Study
<b>Domain:</b>	Earth and Space Systems
<b>Benchmark:</b>	SC8.1.8 The Structure of the Earth System: Students examine the structure of the Earth, identifying layers of the Earth, considering plate movement and its effect, and recognizing landforms resulting from constructive and destructive forces.
<b>Context:</b>	G Earth's Processes and Features
<b>Item Code:</b>	VF407165

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2013	MC	B	2	658	0.445

Score Analysis					
MC	A	B*	C	D	Omit
%Choosing	20.213	44.529	11.55	23.556	0.152

Dif Summary	
Group	Dif Category
Gender	A
Hispanic	
Native American	
Asian	

Item Notes

**00** Which statement best describes the data collected for the three glaciers over time?

- A) The largest glacier had the greatest increase in area.
- B) The smallest glacier lost the greatest percentage of area.
- C) The glaciers first increased in area before they decreased in area.
- D) The glaciers completely disappeared after the last year of this investigation.

Item Information	
<b>Title:</b>	Glaciers Study
<b>Domain:</b>	Earth and Space Systems
<b>Benchmark:</b>	SC8.1.8 The Structure of the Earth System: Students examine the structure of the Earth, identifying layers of the Earth, considering plate movement and its effect, and recognizing landforms resulting from constructive and destructive forces.
<b>Context:</b>	G Earth's Processes and Features
<b>Item Code:</b>	VF407166

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2013	MC	B	2	782	0.604

Score Analysis					
MC	A	B*	C	D	Omit
%Choosing	13.043	60.358	19.565	6.777	0.256

Dif Summary	
Group	Dif Category
Gender	A
Hispanic	A
Native American	
Asian	

Item Notes



**00** Scientists try to limit the amount of error in their investigations of natural systems. Which of these is the most likely source of error in the glacier investigation?

- A) Calculating the time between each photograph
- B) Studying glaciers from the same mountain range
- C) Determining the year the photographs were taken
- D) Measuring the area of the glaciers from the photographs

Item Information	
<b>Title:</b>	Glaciers Study
<b>Domain:</b>	Earth and Space Systems
<b>Benchmark:</b>	SC8.1.9 The Earth's History: Students systematize the Earth's history in terms of geologic evidence, comparing past and present Earth processes and identifying catastrophic events and fossil evidence.
<b>Context:</b>	G Earth's Processes and Features
<b>Item Code:</b>	VF407167

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2013	MC	D	2	782	0.569

Score Analysis					
MC	A	B	C	D*	Omit
%Choosing	12.66	17.136	13.043	56.905	0.256

Dif Summary	
Group	Dif Category
Gender	A
Hispanic	A
Native American	
Asian	

Item Notes