Wyoming

DEPARTMENT OF EDUCATION

PAWS
Science
Grade 4

Released Items
With Data

2016

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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

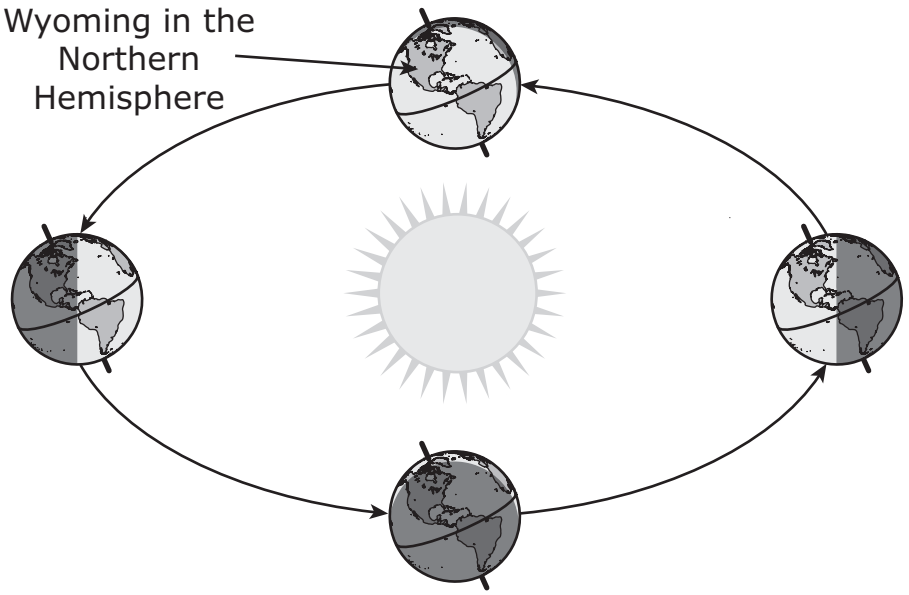
%Choosing Row: Percent of students choosing an option (or omitting)

Item Notes: Area where user can make notes

The Changing Seasons

Students in a science class learn that Earth moves around the Sun in a nearly circular orbit. Earth has different seasons throughout the year. The students want to compare the air temperatures and the number of daylight hours for each season in Cheyenne, Wyoming.

Earth's Positions Around the Sun



Not to scale

Students collect data throughout the year. They record the daily high and low air temperatures during one month for each season. They average the high air temperatures and the low air temperatures for each month. The table shows their data.

Air Temperature Each Season in Cheyenne, WY

Average Air Temperature Fahrenheit (ºF)	Winter (January)	Spring (April)	Summer (July)	Fall (October)
Low	15	29	53	33
High	37	54	82	58

The students also collect data on the length of daylight during the year. They record the average length of daylight for one month in each season. The table shows their data.

Length of Daylight Each Season in Cheyenne, WY

Winter (January)	Spring (April)	Summer (July)	Fall (October)
9 hours 15 minutes	12 hours 41 minutes	15 hours 5 minutes	11 hours 45 minutes

00 Which action causes temperatures on Earth to change daily?

Ⓐ The rotation of Earth on its axis

Ⓑ The gravity of the Sun pulling on Earth

Ⓒ The surface of Earth being weathered by wind

Ⓓ The reflection of sunlight from the Moon to Earth

Item Information	
Title:	The Changing Seasons
Domain:	Earth and Space Systems
Benchmark:	SC4.1.5 Objects in the Sky: Students describe observable objects in the sky and their patterns of movement.
Context:	H Solar System and Universe
Item Code:	VH146846

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	A	2	828	0.576

Score Analysis					
MC	**A***	**B**	**C**	**D**	**Omit**
%Choosing	57.609	12.077	11.111	17.029	2.174

Item Notes

00 Which of these explains the reason why Wyoming receives more direct energy in summer than in the other seasons?

Ⓐ Earth is closer to the Sun in summer than in the other seasons.

Ⓑ Earth is farther away from the Sun in summer than in the other seasons.

Ⓒ The axis of Earth in the Northern Hemisphere points toward the Sun during the summer.

Ⓓ The axis of Earth in the Northern Hemisphere points away from the Sun during the summer.

Item Information	
Title:	The Changing Seasons
Domain:	Physical Systems
Benchmark:	SC4.1.9 Physical Phenomena: Students investigate physical phenomena commonly encountered in daily life, including light, heat, electricity, sound, and magnetism.
Context:	E Energy Types
Item Code:	VH146856

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	C	2	828	0.412

Score Analysis					
MC	**A**	**B**	**C***	**D**	**Omit**
%Choosing	44.203	8.454	41.184	5.556	0.604

Item Notes

00 **Which condition helps plants produce <u>more</u> energy in spring than during winter?**

Ⓐ Nights become warm during spring.

Ⓑ Daylight hours increase during spring.

Ⓒ Air temperatures decrease during spring.

Ⓓ Wind speeds begin to increase during spring.

Item Information	
Title:	The Changing Seasons
Domain:	Earth and Space Systems
Benchmark:	SC4.1.6 Changes in Earth and Sky: Students describe observable changes in earth and sky, including rapid and gradual changes to the earth's surface, and daily and seasonal changes in the weather.
Context:	G Earth's Processes and Features
Item Code:	VH146863

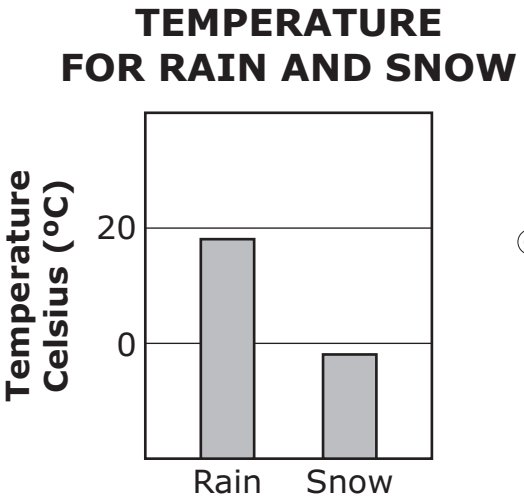
Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	B	2	725	0.589

Score Analysis					
MC	**A**	**B***	**C**	**D**	**Omit**
%Choosing	20.138	58.897	14.897	5.793	0.276

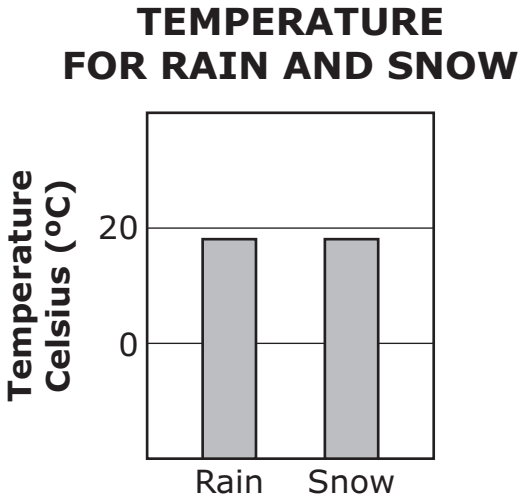
Item Notes

00 **The students learn that rain and snow can form during winter. Which graph shows possible temperatures for rain and snow?**

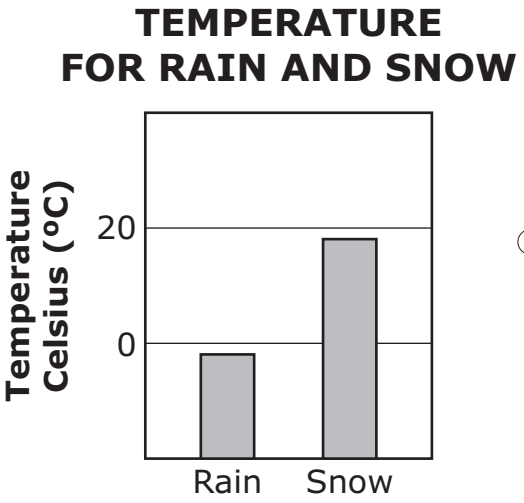
Ⓐ



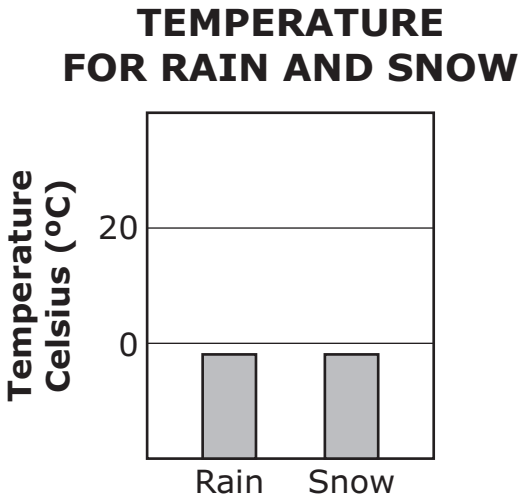
Ⓒ



Ⓑ



Ⓓ



Item Information	
Title:	The Changing Seasons
Domain:	Physical Systems
Benchmark:	SC4.1.8 Changes in States of Matter: Students demonstrate that the processes of heating and cooling can change matter from one state to another.
Context:	D Properties and Changes
Item Code:	VH146865

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	A	2	725	0.345

Score Analysis					
MC	**A***	**B**	**C**	**D**	**Omit**
%Choosing	34.483	35.034	21.793	8.276	0.414

Item Notes

00 What causes Earth to experience nights and days?

Ⓐ Earth rotating on its axis

Ⓑ Earth having different seasons

Ⓒ Earth having an oval-shaped orbit

Ⓓ Earth absorbing energy from the Sun

Item Information	
Title:	The Changing Seasons
Domain:	Earth and Space Systems
Benchmark:	SC4.1.6 Changes in Earth and Sky: Students describe observable changes in earth and sky, including rapid and gradual changes to the earth's surface, and daily and seasonal changes in the weather.
Context:	G Earth's Processes and Features
Item Code:	VH146868

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	A	2	725	0.632

Score Analysis					
MC	**A***	**B**	**C**	**D**	**Omit**
%Choosing	63.172	11.862	7.862	16.414	0.69

Item Notes

00 **Which feature causes Earth to move in an orbit around the Sun?**

Ⓐ The energy of the Sun

Ⓑ The shape of the Sun

Ⓒ The mass of the Sun

Ⓓ The color of the Sun

Item Information	
Title:	The Changing Seasons
Domain:	Physical Systems
Benchmark:	SC4.1.10 Position and Motion of Objects: Students demonstrate that pushing and pulling can change the position and motion of objects.
Context:	F Forces and Motion
Item Code:	VH146869

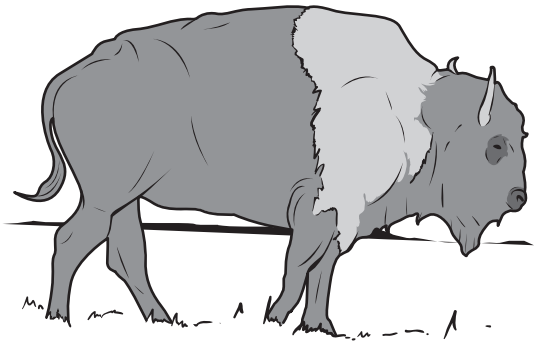
Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	C	3	725	0.321

Score Analysis					
MC	**A**	**B**	**C***	**D**	**Omit**
%Choosing	57.241	6.345	32.138	3.724	0.552

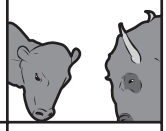
Item Notes

The Bison

Students researched Wyoming's state mammal, commonly called the bison. They learned that the bison are North America's largest animals. Bison have many features that allow them to live on plains, prairies, and in river valleys. They eat many types of plants. Some of the descriptions and features are shown in the chart.



Features of Bison

Part	Description	Picture
Horns	• To protect young from predators • One pair measuring 61 centimeters in length	
Fur	• To keep warm during cold winters • Light to dark-brown color	
Hooves	• To dig for food and run fast for its size • Can run up to 64 kilometers per hour	
Nose	• To easily smell predators • Is made of tough skin so it can brush snow away to get to vegetation	

Bison have masses up to 746 kilograms. They grow up to 2 meters tall. Bison live in small or large groups. The males and females live apart most of the year. Some bison can live up to 20 years.

00 Which of these can help bison escape predators?

Ⓐ Having a large body

Ⓑ Grazing in a small herd

Ⓒ Growing a thick fur coat

Ⓓ Moving quickly for its size

Item Information	
Title:	The Bison
Domain:	Life Systems
Benchmark:	SC4.1.1 Characteristics of Organisms: Students describe observable characteristics of living things, including structures that serve specific functions and everyday behaviors.
Context:	A Cells and Cellular Processes
Item Code:	VH118404

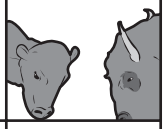
Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	D	2	715	0.766

Score Analysis					
MC	**A**	**B**	**C**	**D***	**Omit**
%Choosing	13.427	6.014	2.517	76.643	1.399

Item Notes

00 **The descriptions and features of bison are shown.**

Features of Bison

Part	Description	Picture
Horns	• To protect young from predators • One pair measuring 61 centimeters in length	
Fur	• To keep warm during cold winters • Light to dark-brown color	
Hooves	• To dig for food and run fast for its size • Can run up to 64 kilometers per hour	
Nose	• To easily smell predators • Is made of tough skin so it can brush snow away to get to vegetation	

Which bison body parts would be <u>most</u> useful in fighting off wolves?

Ⓐ Horns and hooves

Ⓑ Fur and nose

Ⓒ Hooves and fur

Ⓓ Nose and horns

Item Information	
Title:	The Bison
Domain:	Life Systems
Benchmark:	SC4.1.1 Characteristics of Organisms: Students describe observable characteristics of living things, including structures that serve specific functions and everyday behaviors.
Context:	C Interactions and Energy Flow
Item Code:	VH118414

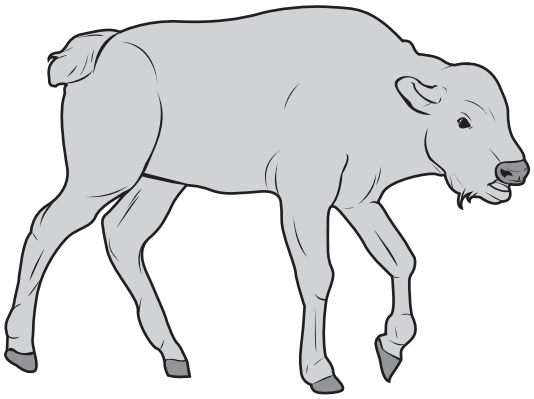
Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	A	2	715	0.759

Score Analysis					
MC	**A***	**B**	**C**	**D**	**Omit**
%Choosing	75.944	2.098	1.538	20.14	0.28

Item Notes

00 **The image shows a young bison.**

Young Bison



What trait did the young bison inherit from its parents?

Ⓐ The amount of water the young bison drinks

Ⓑ The location of the young bison's habitat

Ⓒ The type of food the young bison eats

Ⓓ The color of the young bison's fur

Item Information	
Title:	The Bison
Domain:	Life Systems
Benchmark:	SC4.1.2 Life Cycles of Organisms: Students sequence life cycles of living things, and recognize that plants and animals resemble their parents.
Context:	B Heredity and Biological Evolution
Item Code:	VH118422

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	D	2	720	0.56

Score Analysis					
MC	**A**	**B**	**C**	**D***	**Omit**
%Choosing	3.472	19.583	20.556	55.972	0.417

Item Notes

00 **Scientists record the mass of each member in a bison herd. Which data table has the <u>best</u> setup to organize the data?**

Ⓐ

Location	Mass
1	
2	
3	

Ⓑ

Food Type	Mass
Grass	
Herbs	
Root	

Ⓒ

Month	Mass
June	
July	
August	

Ⓓ

Individual	Mass
Male #1	
Female #1	
Offspring #1	

Item Information	
Title:	The Bison
Domain:	Life Systems
Benchmark:	SC4.1.1 Characteristics of Organisms: Students describe observable characteristics of living things, including structures that serve specific functions and everyday behaviors.
Context:	A Cells and Cellular Processes
Item Code:	VH118429

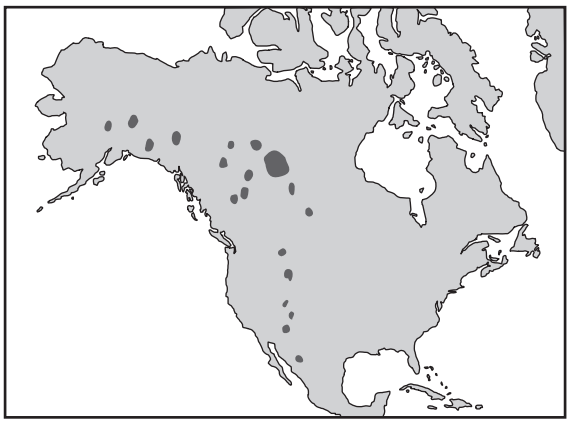
Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	D	2	720	0.514

Score Analysis					
MC	**A**	**B**	**C**	**D***	**Omit**
%Choosing	11.667	24.583	11.389	51.389	0.972

Item Notes

00 **A map of North America with places where bison live is shown.**

Bison Population



Which statement <u>best</u> describes why bison can survive in the dark-gray areas?

Ⓐ The bison have few water sources in the dark-gray areas.

Ⓑ The bison have food sources that grow in the dark-gray areas.

Ⓒ The bison have many predators that live in the dark-gray areas.

Ⓓ The bison have warm winter temperatures that occur in the dark-gray areas.

Item Information	
Title:	The Bison
Domain:	Life Systems
Benchmark:	SC4.1.3 Organisms and Their Environments: Students show connections between living things, their basic needs, and the environments.
Context:	C Interactions and Energy Flow
Item Code:	VH118459

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	B	3	715	0.589

Score Analysis					
MC	**A**	**B***	**C**	**D**	**Omit**
%Choosing	5.594	58.881	11.049	24.056	0.42

Item Notes

00 Which list shows animals that eat the same type of food as bison?

Ⓐ Deer, bears, and foxes

Ⓑ Raccoons, cows, and snakes

Ⓒ Antelope, sheep, and rabbits

Ⓓ Wolves, prairie dogs, and cougars

Item Information	
Title:	The Bison
Domain:	Life Systems
Benchmark:	SC4.1.3 Organisms and Their Environments: Students show connections between living things, their basic needs, and the environments.
Context:	C Interactions and Energy Flow
Item Code:	VH118463

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	C	2	720	0.696

Score Analysis					
MC	**A**	**B**	**C***	**D**	**Omit**
%Choosing	16.806	2.917	69.583	9.722	0.972

Item Notes

00 How can dark-colored fur help bison survive cold weather during winter?

Ⓐ Dark-colored fur makes bison easier to see than light-colored fur.

Ⓑ Dark-colored fur absorbs more heat energy than light-colored fur.

Ⓒ Dark-colored fur adds less mass to bison than light-colored fur.

Ⓓ Dark-colored fur attracts fewer predators than light-colored fur.

Item Information	
Title:	The Bison
Domain:	Life Systems
Benchmark:	SC4.1.1 Characteristics of Organisms: Students describe observable characteristics of living things, including structures that serve specific functions and everyday behaviors.
Context:	A Cells and Cellular Processes
Item Code:	VH118474

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	B	2	715	0.789

Score Analysis					
MC	**A**	**B***	**C**	**D**	**Omit**
%Choosing	6.014	78.881	4.755	9.79	0.559

Item Notes

00 **Bison can make sounds that other bison can hear. Which of these <u>best</u> explains how these sounds travel?**

Ⓐ Sound waves cause air particles to vibrate.

Ⓑ Sound waves are absorbed by the ground.

Ⓒ Sound waves only move through solids.

Ⓓ Sound waves travel in a straight line.

Item Information	
Title:	The Bison
Domain:	Physical Systems
Benchmark:	SC4.1.9 Physical Phenomena: Students investigate physical phenomena commonly encountered in daily life, including light, heat, electricity, sound, and magnetism.
Context:	E Energy Types
Item Code:	VH118479

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	A	2	720	0.66

Score Analysis					
MC	**A***	**B**	**C**	**D**	**Omit**
%Choosing	65.972	8.75	5.417	18.472	1.389

Item Notes