Wyoming

DEPARTMENT OF EDUCATION

PAWS
Science
Grade 4

Released Items With Data

Earth **and Space Systems**

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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

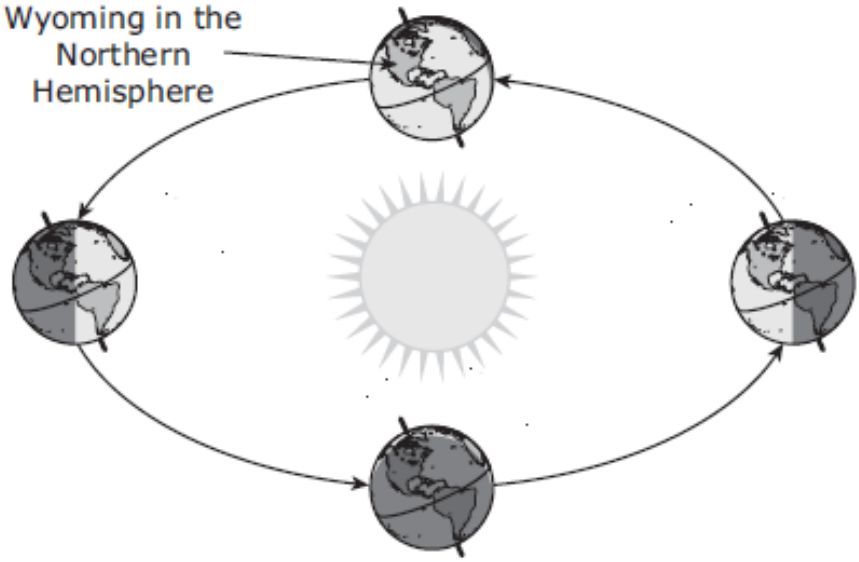
%Choosing Row: Percent of students choosing an option (or omitting)

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

00 **Which condition helps plants produce more 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

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

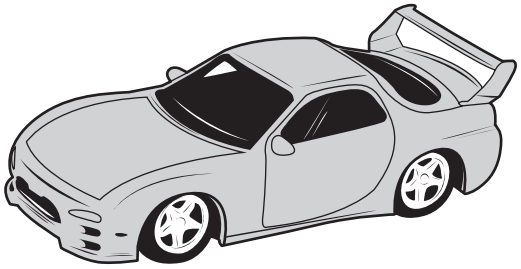
Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2015	MC	A	2	725	0.632

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

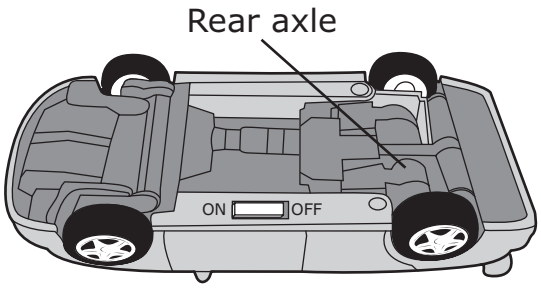
The Toy Car

Students in a science class studied a toy car. The car had an electric motor powered by two small batteries.

Toy Car



Topside of Toy Car



Underside of Toy Car

The students put the car upside down. Then they switched the car on. They listed what they observed:

- The rear wheels spun.
- The car made a buzzing sound.
- The car was warm to the touch over the rear axle.

Then the students turned the car off and turned it upright. They tied objects of different masses to the back of the car with a string. They observed the movement of the car with each object. They recorded their data in a table.

Toy Car Movement

Mass of Object (g)	Movement of the Toy Car
100	Car moved at an observed normal speed.
200	Car moved at a slower speed than the first observed speed.
300	Car did not move. Wheels spun in place.

00 **Which Earth material makes up the metal parts of the toy car?**

Ⓐ Soil

Ⓑ Coal

Ⓒ Wood

Ⓓ Mineral

Item Information	
Title:	The Toy Car
Domain:	Earth and Space Systems
Benchmark:	SC4.1.4 Properties of Earth Materials: Students investigate water, air, rocks, and soils to compare basic properties of earth materials.
Context:	G Earth's Processes and Features
Item Code:	VF815667

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2014	MC	D	1	703	0.697

Score Analysis					
MC	**A**	**B**	**C**	**D***	**Omit**
%Choosing	2.703	17.212	9.673	69.701	0.711

Item Notes