Wyoming

DEPARTMENT OF EDUCATION

PAWS
Science
Grade 4

Released Items
With Data

2015

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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 2014 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

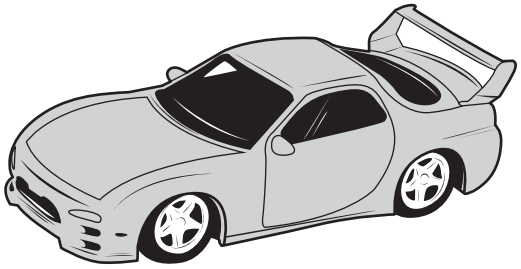
%Choosing Row: Percent of students choosing an option (or omitting)

Item Notes: Area where user can make notes

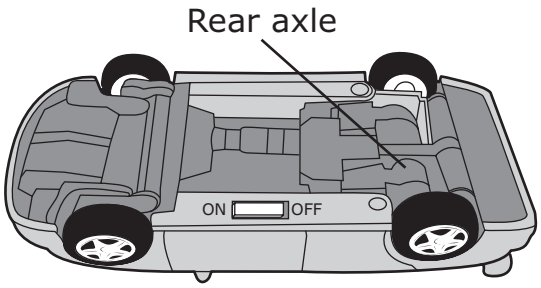
The Toy Car

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 What purpose does the motor of the toy car serve?

Ⓐ Changes electric energy into light

Ⓑ Changes mass into electric energy

Ⓒ Changes sound into electric energy

Ⓓ Changes electric energy into motion

Item Information	
Title:	The Toy Car
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:	VF815662

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2014	MC	D	2	705	0.691

Score Analysis					
MC	**A**	**B**	**C**	**D***	**Omit**
%Choosing	4.965	17.589	7.092	69.078	1.277

Item Notes

00 **The students want to learn how fast the car's rear wheels spin. Which of these is the <u>best</u> way to find out?**

Ⓐ Count the number of spokes in each wheel

Ⓑ Measure the distance the car moves in one minute

Ⓒ Measure the distance between the front and back wheels

Ⓓ Count the number of times the wheels go around in one minute

Item Information	
Title:	The Toy Car
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:	VF815664

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2014	MC	D	2	706	0.514

Score Analysis					
MC	**A**	**B**	**C**	**D***	**Omit**
%Choosing	5.807	31.161	10.623	51.416	0.992

Item Notes

00 **The students' data table is shown.**

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.

Which of these actions would <u>most likely</u> occur if the students attached a 400-gram (g) object to the toy car?

Ⓐ The car would flip over.

Ⓑ The wheels would spin in place.

Ⓒ The batteries would stop working.

Ⓓ The car would move at a normal speed.

Item Information	
Title:	The Toy Car
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:	VF815665

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2014	MC	B	3	703	0.405

Score Analysis					
MC	**A**	**B***	**C**	**D**	**Omit**
%Choosing	22.76	40.541	26.031	10.1	0.569

Item Notes

00 **The students' data table is shown.**

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.

Which change to the data table would be needed for the students to create a graph?

Ⓐ Additional rows in the data table

Ⓑ Additional columns in the data table

Ⓒ Descriptions in the "Mass of Object" column

Ⓓ Measurement numbers in the "Movement of the Toy Car" column

Item Information	
Title:	The Toy Car
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:	VF815666

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2014	MC	D	2	706	0.409

Score Analysis					
MC	**A**	**B**	**C**	**D***	**Omit**
%Choosing	17.28	17.422	22.946	40.935	1.416

Item Notes

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

00 **Which part of a bird's environment functions <u>most</u> like the batteries in the toy car?**

Ⓐ Food

Ⓑ Water

Ⓒ A tree

Ⓓ A nest

Item Information	
Title:	The Toy Car
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:	VF815670

Admin:	Item Type:	Correct Answer:	Item Dok:	Total N-count:	Pvalue/Mean Score:
Spring 2014	MC	A	3	706	0.424

Score Analysis					
MC	**A***	**B**	**C**	**D**	**Omit**
%Choosing	42.351	21.246	13.881	22.238	0.283

Item Notes