



**NATIONAL ASSESSMENT  
OF EDUCATIONAL  
PROGRESS**

Science

Grade 4 Released Items

# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Identify the organism with a change in habitat from young to adult</i>	Type	Grade	Difficulty
	MC	4	Easy

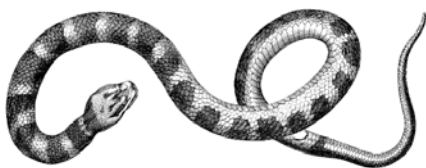
1. Which animal lives in water when very young and then lives on land as an adult?

A.



Shark

B.



Snake

C.



Frog

D.



Penguin

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C*	Choice D	Omitted
National	7	4	80	9	1
Delaware	5	4	79	12	#

## NAEP 2009 Science - Grade 4 Released Items

Description: <i>Investigate the range of bird population</i>	Type	Grade	Difficulty
	MC	4	Easy

The following question refers to a bird called a warbler shown below.



Scientists study warblers by placing small metal bands on the birds' legs. A number is stamped on the band. This number lets scientists know when and where the birds are banded.

2. A scientist studying warblers captures six of them in a net. Two of the birds have bands on their legs.

What could the scientist learn from the information on the bands?

- A. How much food the birds eat
- B. Where the birds travel
- C. Which birds are related
- D. What kinds of nests the birds build

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B*	Choice C	Choice D	Omitted
National	6	66	19	8	1
Delaware	5	66	20	8	#

## NAEP 2009 Science - Grade 4 Released Items

Description: <i>Explain the benefit of an adaptation</i>	Type	Grade	Difficulty
	MC	4	Easy

*The following question refers to a bird called a warbler shown below.*



Scientists study warblers by placing small metal bands on the birds' legs. A number is stamped on the band. This number lets scientists know when and where the birds are banded.

3. There are many kinds of warblers throughout the world. One kind of warbler with black-and-white feathers is often seen on tree trunks. Another kind with golden-colored feathers is often seen in fields.

Which statement best explains how the color of these warblers helps them survive?

- A. The color of the feathers helps the birds locate nests.
- B. The color of the feathers helps to control the amount of body heat the birds lose.
- C. The color of the feathers blends into the birds' surroundings and helps the birds avoid predators.
- D. The color of the feathers attracts the kinds of insects the birds like to eat.

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C*	Choice D	Omitted
National	7	8	72	11	2
Delaware	7	7	75	11	1

## NAEP 2009 Science - Grade 4 Released Items

Description: <i>Identify the organism with the type of life cycle</i>	Type	Grade	Difficulty
	MC	4	Easy

4. Which animal develops inside its mother before it is born alive?

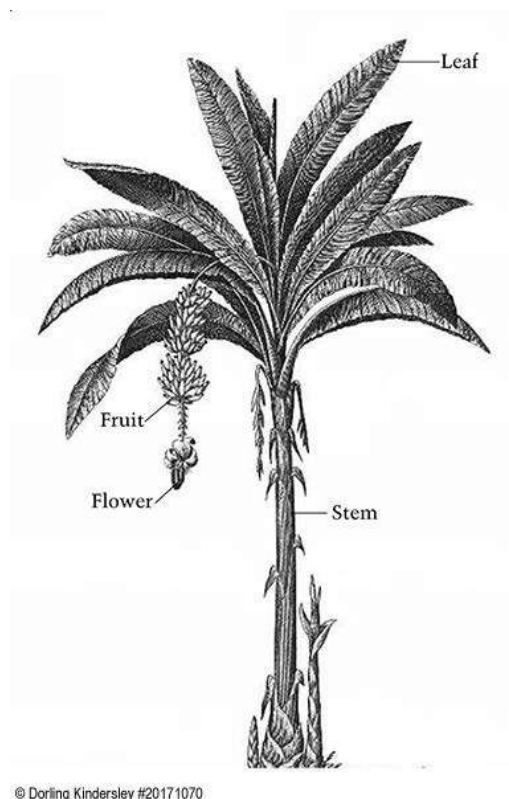
- A. Butterfly
- B. Cat
- C. Duck
- D. Frog

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B*	Choice C	Choice D	Omitted
National	8	72	9	10	1
Delaware	9	68	9	12	2

# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Identify an essential characteristic of a plant</i>	Type	Grade	Difficulty
	MC	4	Easy

5. Look at the banana plant shown below.



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What part of this plant helps it get the most light?

- A. Green fruit
- B. A peeling, thick stem
- C. Wide, long leaves
- D. Brightly colored flowers

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C*	Choice D	Omitted
National	4	16	68	11	#
Delaware	4	15	67	13	#

# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Identify the best tool to measure rainfall</i>	Type	Grade	Difficulty
	MC	4	Easy

6. Which tool is used to measure how much rain falls during a storm?

A.



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B.



© Karen Harrison/iStockphoto  
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C.



© Solymosi Tamas/iStockphoto #4139567

D.



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2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B*	Choice C	Choice D	Omitted
National	6	87	1	5	1
Delaware	6	88	1	4	#

# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Explain example of heat (thermal energy) transfer</i>	Type	Grade	Difficulty
	MC	4	Easy

7. A thermometer shows that the outside air temperature is colder than the temperature at which water turns to ice. However, ice on the sidewalk melts.

What probably caused this?

- A. The air heating the sidewalk
- B. The sidewalk reflecting sunlight into the air
- C. The wind causing the ice on the sidewalk to melt
- D. The sunlight making the sidewalk warmer than the air

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C	Choice D*	Omitted
National	16	12	8	64	1
Delaware	14	13	4	68	1



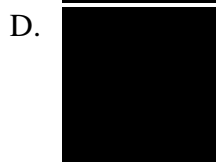
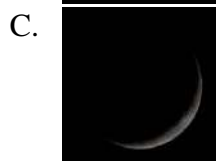
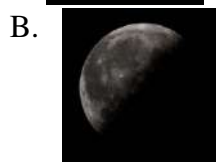
# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Predict the shape of the moon</i>	Type	Grade	Difficulty
	MC	4	Medium

8. Jane sees the Moon in the sky one clear night. It looks like the following picture.



What will the Moon look like three nights later if there are no clouds in the sky?

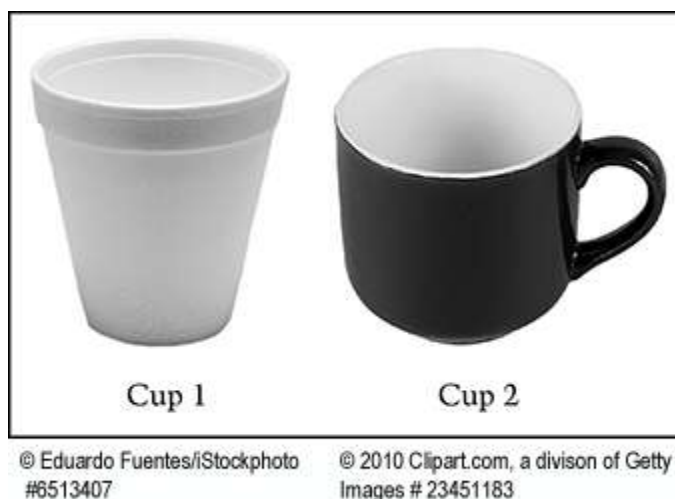


2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A*	Choice B	Choice C	Choice D	Omitted
National	42	21	26	9	2
Delaware	39	20	28	10	2

# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Design an investigation to find the volume of a container</i>	Type	Grade	Difficulty
	MC	4	Hard

9. A student wants to know whether two cups hold the same volume of water. The two cups have different weights (masses).



The student completely fills Cup 1 with water. The student wants to measure if Cup 2 holds the same volume of water.

What should the student do next to complete the measurements?

- A. Completely fill Cup 2 with water and then look at the cups side by side
- B. Pour half of the water from Cup 1 into Cup 2, weigh each cup and then compare their weights
- C. Pour all of the water from Cup 1 into Cup 2 to see if the water completely fills Cup 2 without spilling over
- D. Completely fill Cup 2 with water, weigh each filled cup, and then compare the weights

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C*	Choice D	Omitted
National	17	25	35	21	2
Delaware	13	25	34	23	5

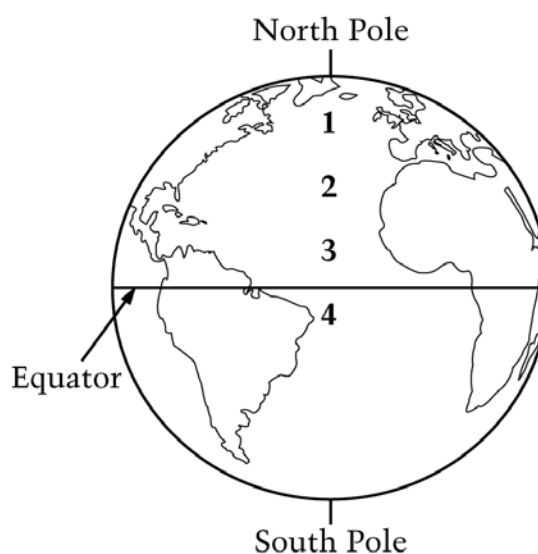
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Assessment.

# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Identify coldest location based on diagram of Earth</i>	Type	Grade	Difficulty
	MC	4	Easy

10. The diagram below shows four places on Earth. Places 1, 2, 3, and 4 are all at sea level.

## PLACES ON EARTH



Which place has the coldest winters?

- A. 1
- B. 2
- C. 3
- D. 4

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A*	Choice B	Choice C	Choice D	Omitted
National	73	2	3	22	1
Delaware	77	1	3	16	2

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Assessment.

# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Predict the location of the Moon in the sky</i>	Type	Grade	Difficulty
	MC	4	Medium

11. Jane sees the Moon in the sky one night.



Look at the four diagrams below.



Jane stands in the same spot to observe the Moon two hours later. Which diagram shows what she will most likely see?

- A. A
- B. B
- C. C
- D. D

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B*	Choice C	Choice D	Omitted
National	24	47	16	13	#
Delaware	21	46	15	18	#

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Assessment.

## NAEP 2009 Science - Grade 4 Released Items

Description: <i>Recognize the best conductor of electricity</i>	Type	Grade	Difficulty
	MC	4	Easy

12. Which material is the best conductor of electricity?

- A. Wood
- B. Metal
- C. Stone
- D. Plastic

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B*	Choice C	Choice D	Omitted
National	7	81	4	8	1
Delaware	2	89	1	6	1

## NAEP 2009 Science - Grade 4 Released Items

Description: <i>Classify an observation as an example of erosion</i>	Type	Grade	Difficulty
	MC	4	Hard

13. Roger poured water over a pile of sand. Some of the sand washed away. This process is similar to which of the following?

- A. The eruption of a volcano
- B. The erosion of the walls of a canyon
- C. The uplifting of mountain ranges
- D. The forming of dunes or mounds in a desert

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B*	Choice C	Choice D	Omitted
National	24	26	11	37	1
Delaware	22	27	10	39	2

## NAEP 2009 Science - Grade 4 Released Items

Description: <i>Recognize that light is a form of energy</i>	Type	Grade	Difficulty
	MC	4	Medium

14. Which statement explains why light from the Sun can warm up water in a glass?

- A. Light travels very fast.
- B. Light travels in straight lines.
- C. Water reflects light energy.
- D. Water absorbs light energy.

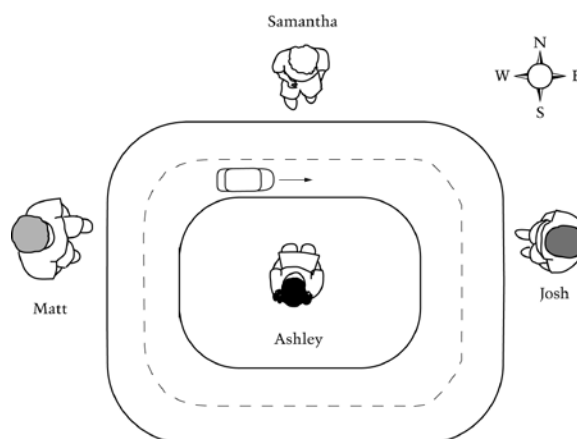
2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C	Choice D*	Omitted
National	12	6	25	56	1
Delaware	12	4	26	57	2

## NAEP 2009 Science - Grade 4 Released Items

Description: <i>Predict the relative motion of an object based on a diagram</i>	Type	Grade	Difficulty
	MC	4	Easy

The following question refers to the diagram below.

The diagram below shows the top of a toy car as it travels on a curved track. Four students, Matt, Samantha, Josh, and Ashley stand in the positions shown and watch the toy car move.



15. When the toy car is in the position shown in the diagram, which student sees the car as moving away from him or her?

- A. Ashley
- B. Josh
- C. Matt
- D. Samantha

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C*	Choice D	Omitted
National	15	7	63	14	1
Delaware	16	6	61	17	1

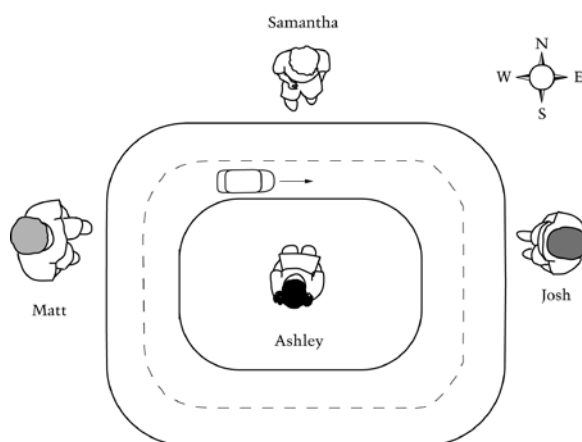


# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Interpret a diagram about the relative motion of an object</i>	Type	Grade	Difficulty
	MC	4	Medium

The following question refers to the diagram below.

The diagram below shows the top of a toy car as it travels on a curved track. Four students, Matt, Samantha, Josh, and Ashley, stand in the positions shown and watch the toy car move.



16. When the toy car is in the position shown in the diagram, what can all four students correctly conclude about the direction in which the car is moving?
- A. The car is moving left to right.
  - B. The car is moving right to left.
  - C. The car is moving east to west.
  - D. The car is moving west to east.

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C	Choice D*	Omitted
National	17	15	20	46	1
Delaware	15	15	22	47	1

## NAEP 2009 Science - Grade 4 Released Items

Description: <i>Design a setup to test soil runoff</i>	Type	Grade	Difficulty
	MC	4	Medium

The following question refers to the following information.

Rafael lives near a road at the bottom of a hill. His parents are concerned that soil will wash off the hill and rocks will fall onto the road.

Rafael conducts an investigation to find out if grass growing on a hillside will help stop soil erosion.

He collects two samples of the same size and type of soil. One sample of soil has grass growing on it and the other does not. He places each sample of soil in a small tray.

17. For his investigation, Rafael pours the same amount of water onto both samples of soil. He uses a large tray to collect water that may flow through the soil.

Which practice shows the best way for Rafael to set up this investigation?

A.

Soil with Grass      Soil without Grass

C.

Soil with Grass      Soil without Grass

B.

Soil with Grass      Soil without Grass

D.

Soil with Grass      Soil without Grass

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A*	Choice B	Choice C	Choice D	Omitted
National	51	7	7	28	7
Delaware	54	7	7	26	6

## NAEP 2009 Science - Grade 4 Released Items

Description: <i>Draw conclusion from observations of soil runoff</i>	Type	Grade	Difficulty
	MC	4	Medium

*The following question refers to the following information.*

Rafael lives near a road at the bottom of a hill. His parents are concerned that soil will wash off the hill and rocks will fall onto the road.

Rafael conducts an investigation to find out if grass growing on a hillside will help stop soil erosion.

He collects two samples of the same size and type of soil. One sample of soil has grass growing on it and the other does not. He places each sample of soil in a small tray.

18. After pouring the water onto both pieces of soil, Rafael makes an observation. The water collected in the tray under the soil with grass looks clearer than the water collected in the tray under the soil without grass.

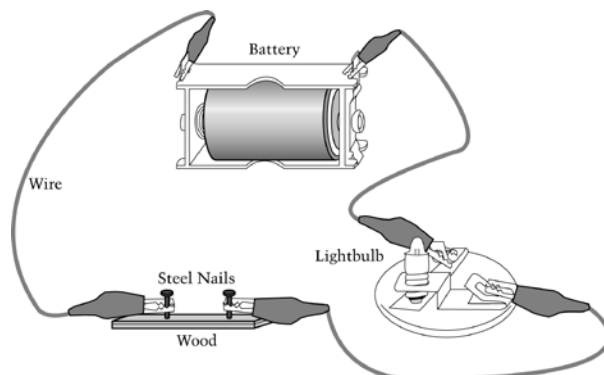
What conclusion can Rafael make from his observation?

- A. The grass helped to hold the soil in place.
- B. The grass helped to move the water through the soil.
- C. The soil without grass was sticky, so more water stayed in the soil.
- D. The soil without grass was loose, so more water stayed in the soil.

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A*	Choice B	Choice C	Choice D	Omitted
National	55	21	10	11	3
Delaware	58	18	9	10	5

# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Decide how to make a closed electrical circuit</i>	Type	Grade	Difficulty
	MC	4	Hard



19. A student tried to connect an electrical circuit as shown above.

The lightbulb did not light up. What can the student do to make the lightbulb light up?

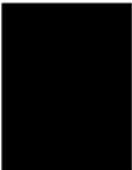



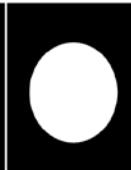
- A. Connect a second battery to the first battery.
- B. Replace the wires with thicker wires.
- C. Replace the steel nails with aluminum nails.
- D. Connect the steel nails with a short piece of wire.

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C	Choice D*	Omitted
National	28	12	25	34	1
Delaware	21	10	22	45	2

# NAEP 2009 Science - Grade 4 Released Items

Description: <i>Interpret the pattern of moon shapes</i>	Type	Grade	Difficulty
	MC	4	Easy

20. Jennifer drew what the Moon looked like just after sunset every third or fourth night. Her drawings for the nights she observed the Moon are shown below.

				
Night 1	Night 4	Night 7	Night 11	Night 14

On Night 11 the clouds were so thick that Jennifer could not see the Moon.

Based on the drawings for the other nights, what would Jennifer have seen on Night 11 if the sky were clear?



2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C	Choice D*	Omitted
National	7	13	12	67	1
Delaware	5	12	15	68	1

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Assessment.

Description: <i>Recognize an example of a change of state</i>	Type	Grade	Difficulty
	MC	4	Easy

21. Which is an example of melting?

- A. Flowing water making a rock smooth
- B. A carrot becoming soft when cooked
- C. Sugar mixed into tea making the tea sweet
- D. Butter changing into liquid in a warm pan

2009 Percentage of 4 <sup>th</sup> Grade Students in Each Response Category					
Public Schools	Choice A	Choice B	Choice C	Choice D*	Omitted
National	8	8	8	76	#
Delaware	9	4	8	79	#

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Assessment.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Assessment.

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March 5, 2011