

# Idaho Science Sample Test Answer Key

SCIENCE AT ELEMENTARY SCHOOL

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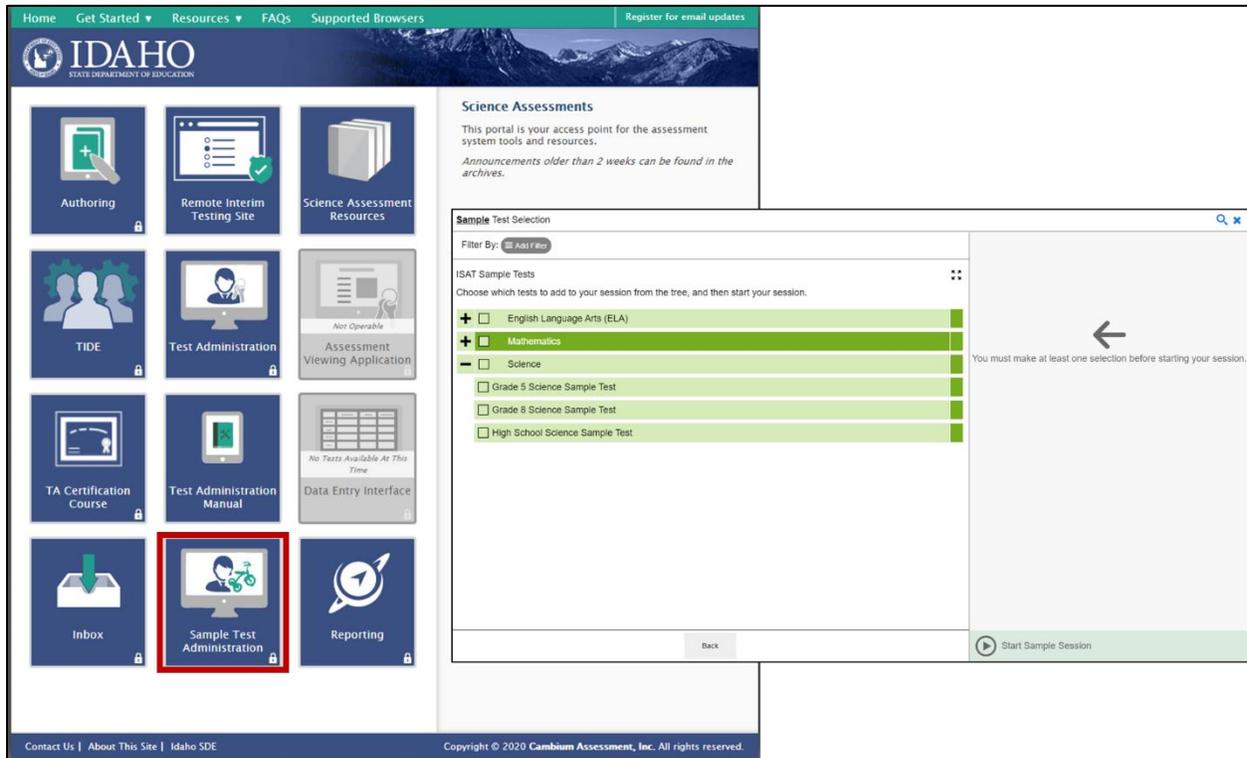
# Accessing the Idaho Science Sample Test

The Science Sample Tests are available via the [ISAT Portal](#).

The Science Sample Tests can be administered with the Sample Test Administration panel. A Test Administrator clicks on the Sample Test Administration panel and starts a Sample Test Session. Students can use the Idaho Secure Browser to log in and take a Science Sample Test using their first name, EDUID, and the Sample Test Session number.

Figure 1 shows the Sample Test Administration panel and the Sample Test Selection window.

**Figure 1: Sample Test Administration App and the Sample Test Selection Window**



A Guest User can also log into with a Guest Session and take a Science Sample Test as many times as he/she would like to take a grade 5, grade 8 or high school science sample test.

To access the Science Sample Tests as a Guest User, click on the Practice & Training Tests panel on the ISAT Portal homepage. From there, click on the Take the Sample/Training Tests panel. A new tab will open, and you can login as a Guest User.

Figure 2 shows the Practice & Training Tests panel.

Figure 2: Practice & Training Tests

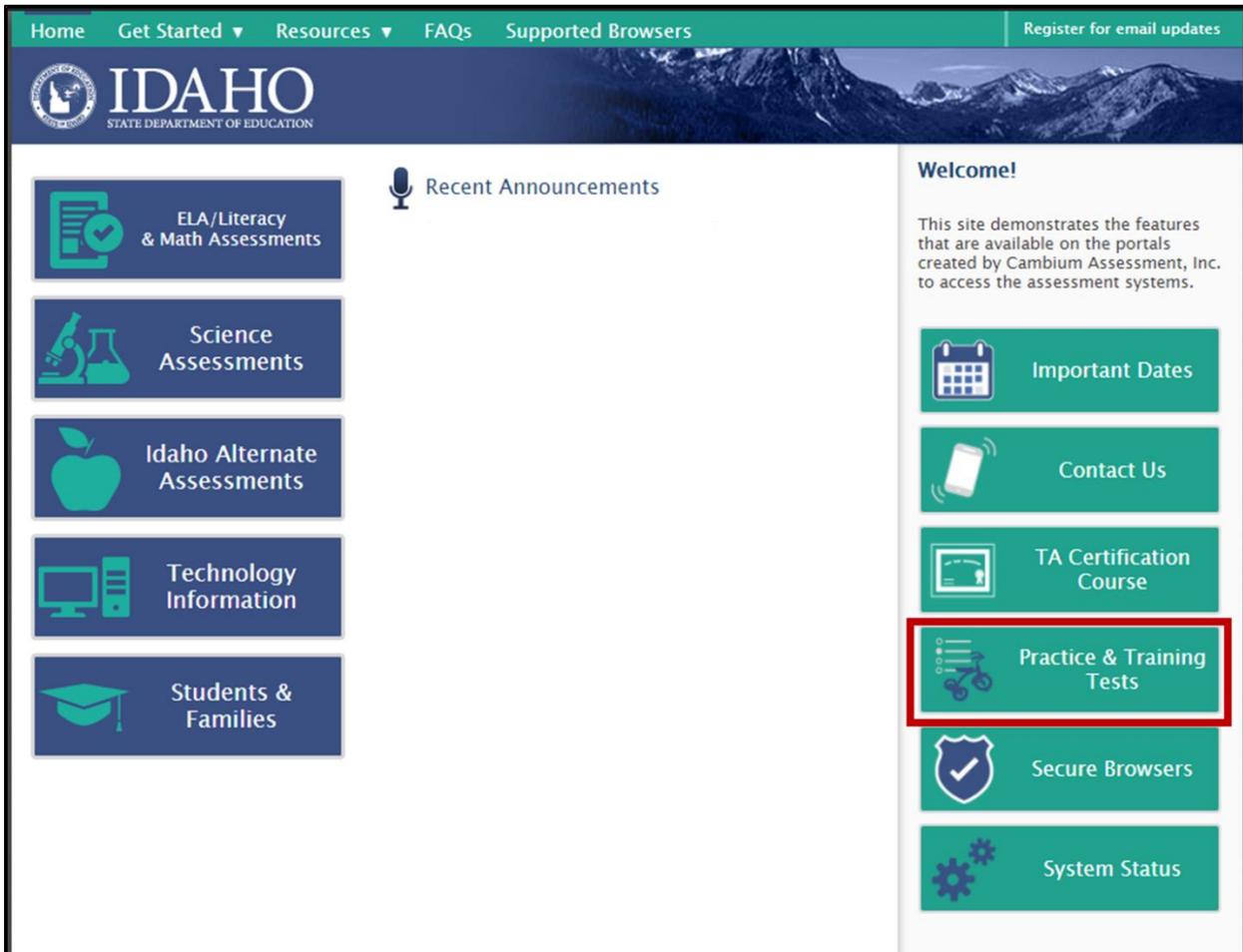


Figure 3 shows the Take the Sample/Training Tests panel.

Figure 3: Take the Sample/Training Tests Panel



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### Sample Tests

Take the Sample/Training Tests

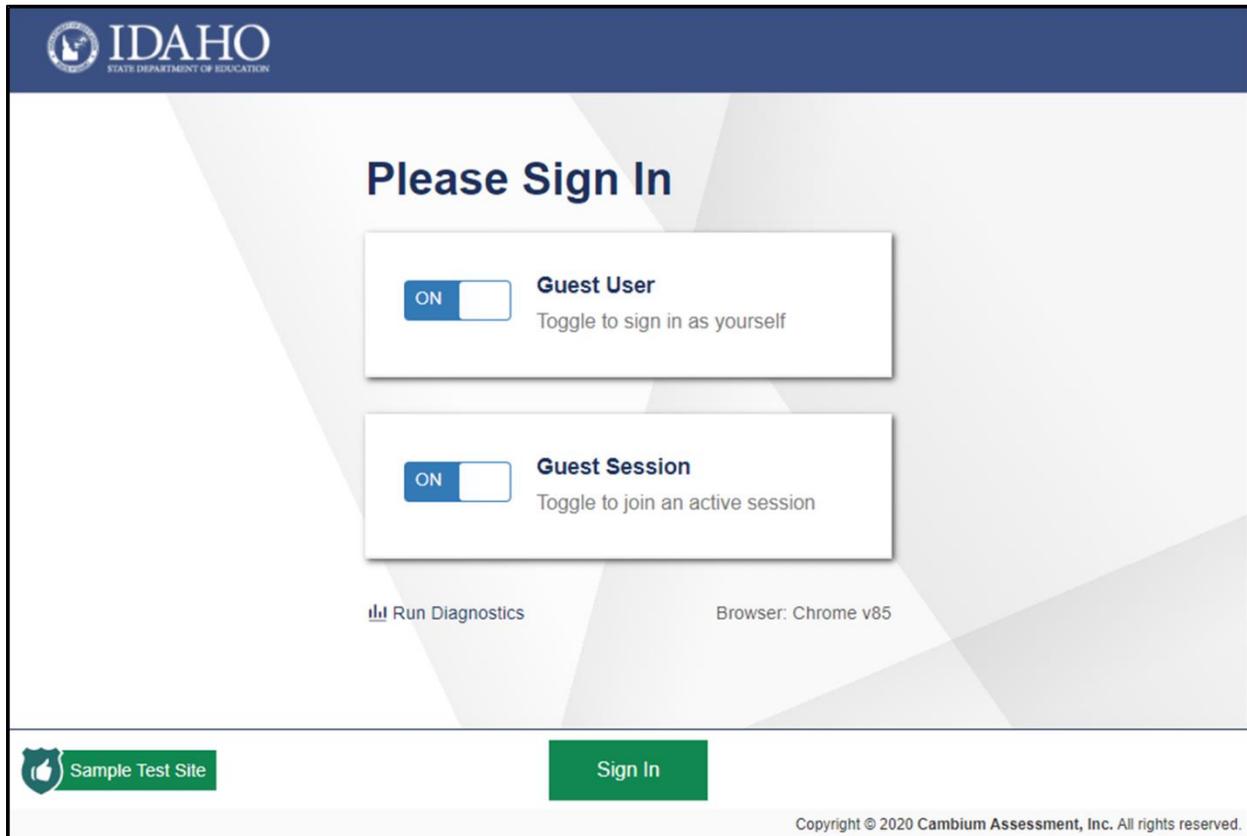
IDAA Practice Tests

The sample tests combine sample items for different grade levels and subject areas. The following tests are available:

- ISAT Sample Tests
  - Grades 3-8 English Language Arts/Literacy
  - Grades 3-8 Math
  - Grade 11 English Language Arts/Literacy
  - Grade 11 Math
- ISAT Training Tests (grade bands)
  - Grades 3-5 English Language Arts/Literacy

Figure 4 shows the Guest User and Guest Session login page.

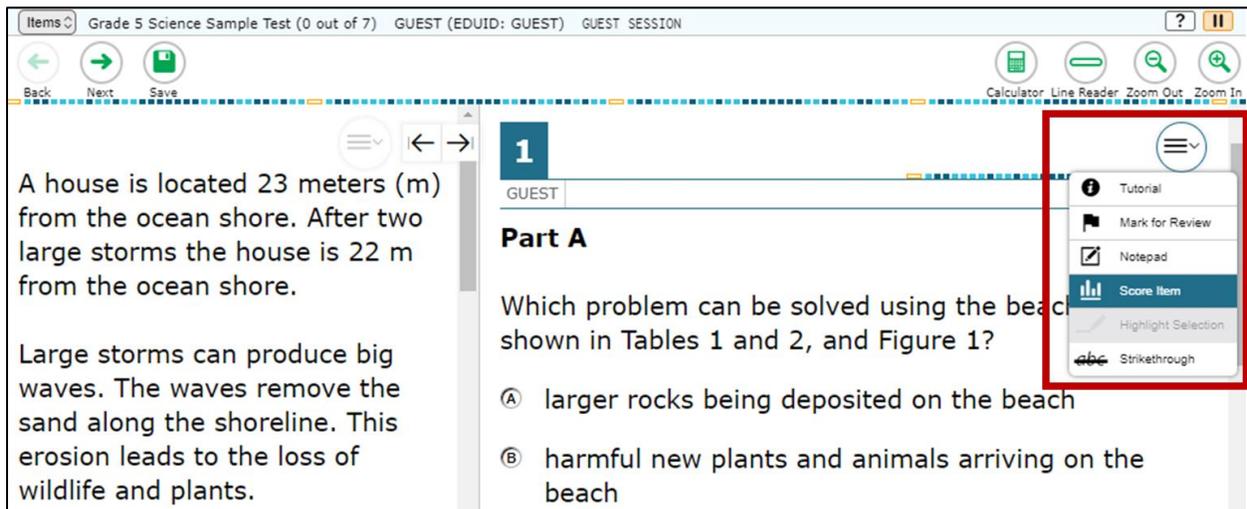
Figure 4: Guest User and Guest Session Login Page



As a Guest User is taking a Science Sample test, he/she can check their score. After answering a few or all of the questions, click on the Context Menu in the upper right corner, and then click on Score Item.

Figure 5 shows the location of the Context Menu and Score Item.

Figure 5: Context Menu and Score Item



## Question #1: Elementary School Sample Test

**Alignment:** ESS2-3-1: Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

- **SEP:** Engaging in Argument from Evidence
- **Science Content:** ESS3.B Natural Hazards
- **CCC:** Cause and Effect

### Part A

Which problem can be solved using the beach solutions shown in Tables 1 and 2, and Figure 1?

- Ⓐ larger rocks being deposited on the beach
- Ⓑ harmful new plants and animals arriving on the beach
- Ⓒ waves growing smaller over time, which increases erosion
- Ⓓ future storms causing erosion and decreasing the shoreline

Answer: D

### Part B

The homeowner wants to select a solution that will help protect the house. The owner has four goals the solution must meet. Click on the boxes to select which solution(s) meet each goal.

- You may select more than one box per row.
- You do not have to select a box for every row.

Goal	Plants	Sea Wall	Stone Wall
Cost is less than \$100 per meter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Least amount of work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Can last for more than 30 years	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helps wildlife the most	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Answer:

Goal	Plants	Sea Wall	Stone Wall
Cost is less than \$100 per meter	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Least amount of work	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Can last for more than 30 years	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Helps wildlife the most	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Part C

Click on the blank box and select the solution that should be used for the house based on the goals met in part B.

<b>Solution</b>	<input type="text"/>
-----------------	----------------------

Options:

- Plants
- Sea wall
- Stone wall

Answer: Answer will vary based on the student's response to Part B.

## Part D

Select **two** additional pieces of information that would help the homeowner decide which solution to use.

- the type of materials needed to build the solution
- the height of the waves that typically hit the beach
- the types of animals that use the beach for shelter
- the necessary length of beach between the house and the ocean
- whether the solution is damaged during heavy rain or strong waves

Answer:

- the type of materials needed to build the solution
- the height of the waves that typically hit the beach
- the types of animals that use the beach for shelter
- the necessary length of beach between the house and the ocean
- whether the solution is damaged during heavy rain or strong waves

## Scoring Assertions

Q#	Part	Scoring Assertions
1	A	When asked to choose a problem that can be solved using the beach solutions, the student selected "future storms causing erosion and decreasing the shoreline." This provides some evidence that the student can identify relevant aspects of the hazard that a given design solution resolves/improves.
1	B	When asked to select which solution would meet each goal for the house, the student indicated that plants cost less than 100 \$/m, can last for more than 30 years, and helps wildlife the most. This provides some evidence that the student can evaluate different design solutions that would help reduce the impact of erosion.
1	B	When asked to select which solution would meet each goal for the house, the student did not select the sea wall as meeting any of the goals. This provides some evidence that the student can evaluate different design solutions that would help reduce the impact of erosion.
1	B	When asked to select which solution would meet each goal for the house, the student indicated that a stone wall takes the least amount of work and can last for more than 30 years. This provides some evidence that the student can evaluate different design solutions that would help reduce the impact of erosion.
1	C	When asked which solution the homeowner should build, the student selected the solution that met the most goals, as identified in part B. This provides some evidence of an ability to make a claim about the merit of a design solution based on how well it meets given criteria.
1	D	When asked what additional evidence could help the homeowner decide which solution to use, the student selected "the necessary length of beach needed between the house and the ocean", providing some evidence of an ability to identify additional evidence that could be used to support the claim about the merit of the design solution.
1	D	When asked what additional evidence could help the homeowner decide which solution to use, the student selected "whether the solution is damaged during heavy rain or strong waves", providing some evidence of an ability to identify additional evidence that could be used to support the claim about the merit of the design solution.

## Question #2: Elementary School Sample Test

**Alignment:** ESS3-4-2: Generate and compare multiple solutions to reduce the impact of natural Earth processes on humans.

- **SEP:** Constructing Explanations and Designing Solutions
- **Science Content:** ESS3.B Natural Hazards & ETS1.B Designing Solutions to Engineering Problems
- **CCC:** Cause and Effect

The tsunami warning system that should be used is the

- It has many parts.
- It has a low total cost.
- It has a low continued cost.
- It can be moved to different locations.
- The data can be shared with other systems.
- It keeps working if one part of the system breaks.

**Options:**

- DART system
- Cable system
- GPS system

**Answer:**

The tsunami warning system that should be used is the

- It has many parts.
- It has a low total cost.
- It has a low continued cost.
- It can be moved to different locations.
- The data can be shared with other systems.
- It keeps working if one part of the system breaks.

### Scoring Assertions

Q#	Scoring Assertion
2	The student selected the DART system with the reasons being that: "It can be moved to different locations," "The data can be shared with other systems," and "It keeps working if one part of the system breaks." This provides some evidence that the student can explain how well a solution meets the criteria and constraints of a design solution.

### Question #3: Elementary School Sample Test

**Alignment:** LS2-4-1: Develop a model to describe the movement of matter among plants, animals, decomposers and the environment.

- **SEP:** Developing and Using Models
- **Science Content:** LS2.A: Interdependent Relationships in Ecosystems & LS2.B Cycles of Matter and Energy Transfer in Ecosystems
- **CCC:** Systems and System Models

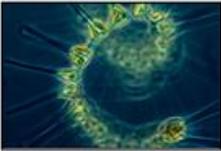
#### Part A

Use the Add Arrow tool to draw arrows showing the flow of matter in the Chesapeake Bay.

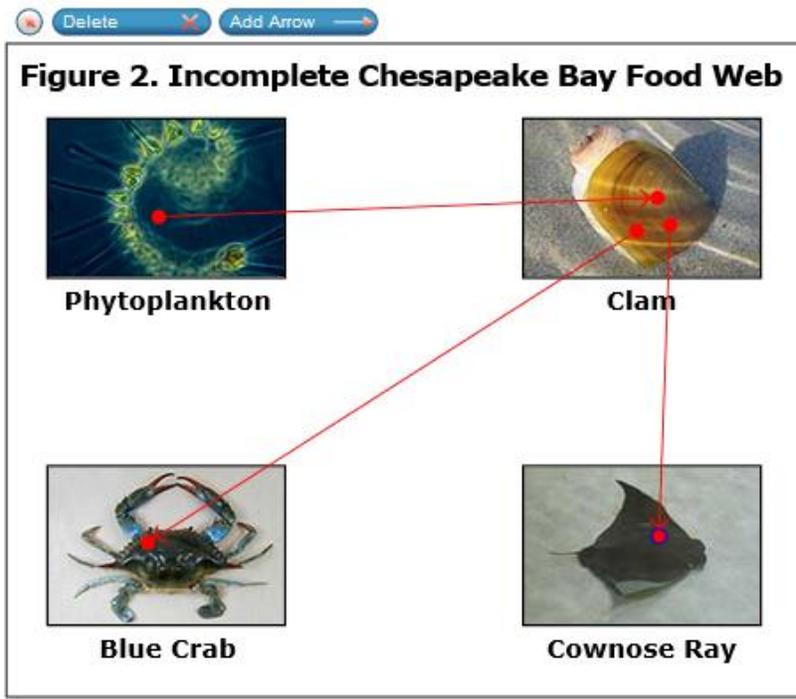
- Each arrow must begin and end on a picture of an organism.

Delete Add Arrow

**Figure 2. Incomplete Chesapeake Bay Food Web**

	
<b>Phytoplankton</b>	<b>Clam</b>
	
<b>Blue Crab</b>	<b>Cownose Ray</b>

Answer:



**Part B**

Select **two** statements that describe how matter flows among phytoplankton, blue crabs, and cownose rays.

- Matter flows from consumer to producer.
- Matter flows from producer to consumer.
- Matter flows from consumer to consumer.
- Matter flows from consumer to decomposer.
- Matter flows from decomposer to consumer.

Answer:

- Matter flows from consumer to producer.
- Matter flows from producer to consumer.
- Matter flows from consumer to consumer.
- Matter flows from consumer to decomposer.
- Matter flows from decomposer to consumer.

### Part C

Using the information in Table 1, click on the blank boxes and first select the organism that completes the flow of matter in part A. Then, select the process by which this occurs.

Organism

Process

#### Options:

- Organism:
  - Oysters
  - Bacteria
  - Bull sharks
  - Laughing gulls
- Process:
  - They prey on cownose rays.
  - They compete with clams for food.
  - Their diet includes matter from land and sea.
  - They break down matter and return it to the environment.

#### Answer:

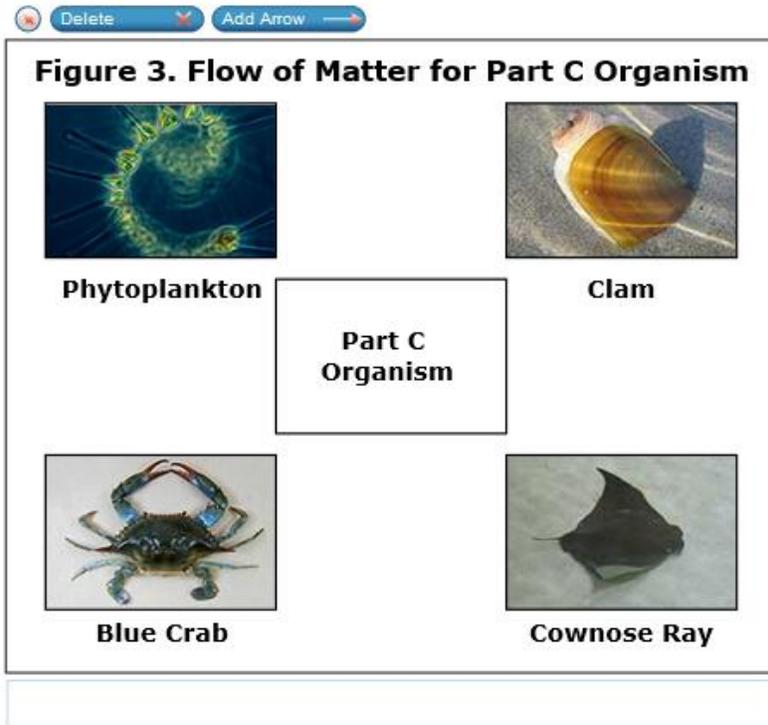
Organism
Bacteria

Process
They break down matter and return it to the environment.

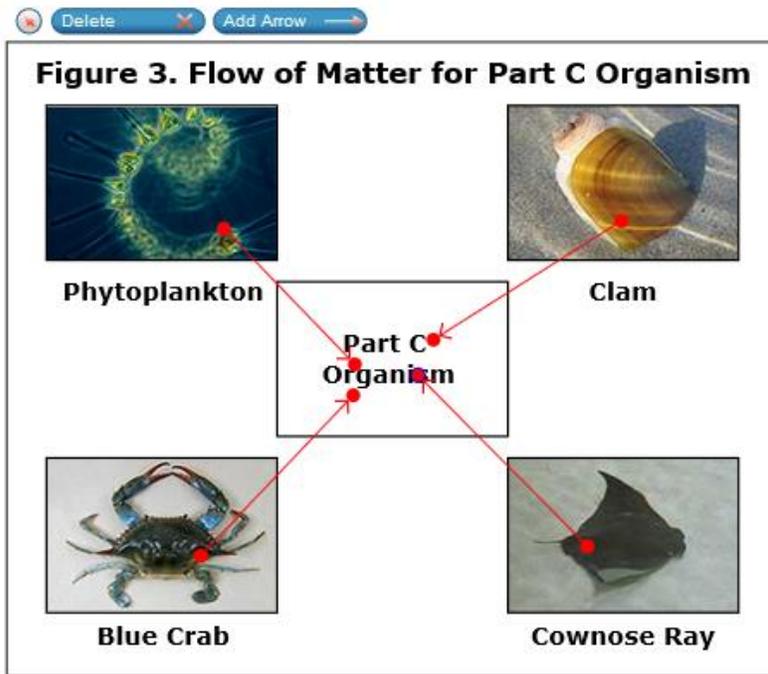
### Part D

Use the Add Arrow tool to draw arrows showing the flow of matter only among the organism you chose in part C and the other organisms.

- Each arrow must begin and end on a picture of an organism or part C organism.



Answer:



## Scoring Assertions

Q#	Part	Scoring Assertions
3	A	When asked to draw arrows showing the flow of matter in the Chesapeake Bay, the student drew an arrow from the phytoplankton to clam and drew no more than three arrows in the model. This provides some evidence of an ability to construct a model to show the movement of matter through an ecosystem.
3	A	When asked to draw arrows showing the flow of matter in the Chesapeake Bay, the student drew an arrow from the clam to blue crab and an arrow from the clam to cownose ray and drew no more than three arrows in the model. This provides some evidence of an ability to construct a model to show the movement of matter through an ecosystem.
3	B	When asked to select two statements that describe how matter flows among phytoplankton, blue crabs, and cownose rays, the student selected "matter flows from producer to consumer." This provides some evidence of an ability to describe the relationships among model components that show the flow of matter.
3	B	When asked to select two statements that describe how matter flows among phytoplankton, blue crabs, and cownose rays, the student selected "matter flows from consumer to consumer." This provides some evidence of an ability to describe the relationships among model components that show the flow of matter.
3	C	When asked to select the organism that completes the flow of matter in the original food web, the student selected "bacteria." This provides some evidence of an ability to identify missing relationships from a model of the flow of matter through an ecosystem.
3	C	When asked to select how the missing organism completes the flow of matter in this ecosystem, the student selected "they break down matter and return it to the environment" (OR an answer that corresponds to her selection of organism) for the process. This provides some evidence of an understanding of how decomposers contribute to the flow of matter in an ecosystem.
3	D	When asked to draw one or more arrows showing the flow of matter between the organism from Part C and the other organisms, the student drew four arrows, one from the Part C organism to each of the other organisms (OR arrows that correspond to their selection of organism). This provides some evidence of an ability to manipulate a model to demonstrate the flow of matter through an ecosystem.

## Question #4: Elementary School Sample Test

**Alignment:** LS2-5-4: Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

- **SEP:** Engaging in Argument from Evidence
- **Science Content:** LS2.C Ecosystem Dynamics, Functioning, and Resilience & LS4.D Biodiversity and Humans
- **CCC:** Systems and System Models

Select **two** outcomes that could result if the dams were removed and the scientists' claim is valid.

- The habitat rating index would decrease.
- The water flow within the sites would increase.
- The number of smaller fish released would decrease.
- The amount of pollution in the river would decrease.
- The number of species found in the river would increase.

**Answer:**

- The habitat rating index would decrease.
- The water flow within the sites would increase.
- The number of smaller fish released would decrease.
- The amount of pollution in the river would decrease.
- The number of species found in the river would increase.

### Scoring Assertions

Q#	Scoring Assertions
4	When asked to select an outcome that would occur if the dams were removed and would support the scientists' claim, the student selected that water flow within the sites would increase. This provides some evidence that the student is able to evaluate a solution to a problem, including how the solution may affect animals and other aspects of the ecosystem.
4	When asked to select an outcome that would occur if the dams were removed and would support the scientists' claim, the student selected that the number of species found in the river would increase. This provides some evidence that the student is able to evaluate a solution to a problem, including how the solution may affect animals and other aspects of the ecosystem.

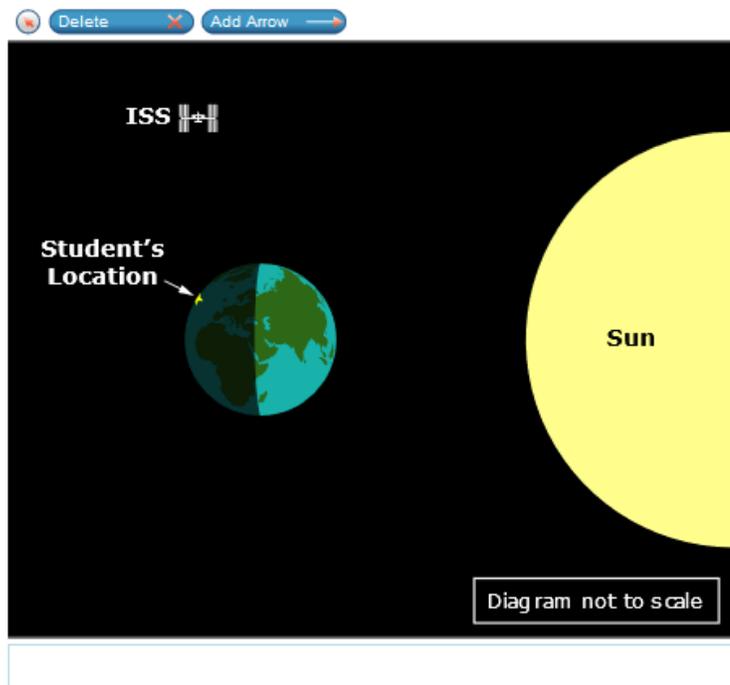
## Question #5: Elementary School Sample Test

**Alignment:** PS2-4-2: Develop a model to describe that light reflecting from objects and entering the eyes allows objects to be seen.

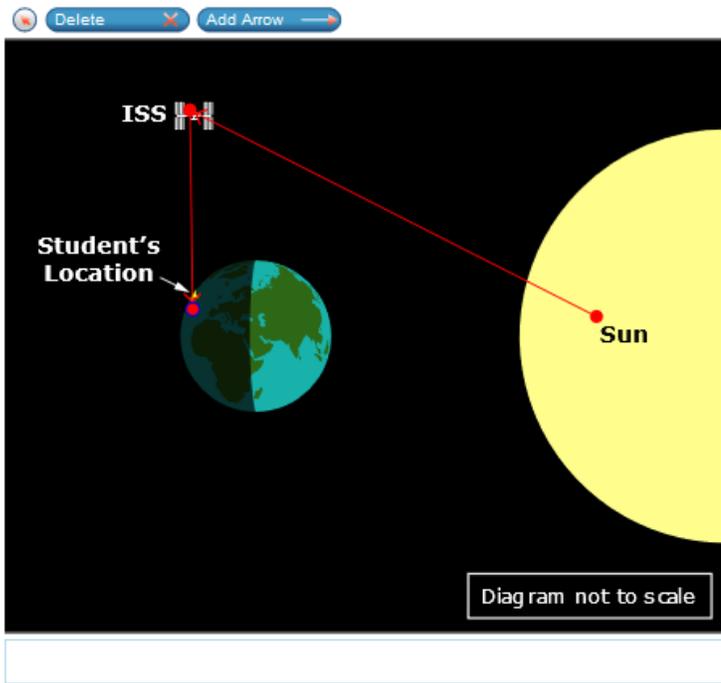
- **SEP:** Developing and Using Models
- **Science Content:** PS4.B Electromagnetic Radiation
- **CCC:** Cause and Effect

A student sees the International Space Station, or ISS, in the night sky.

Use the Add Arrow tool to draw **two** arrows showing the path of light that allows the student to see the ISS.



Answer:



### Scoring Assertions

Q#	Scoring Assertion
5	The student drew one arrow from the sun to the ISS and another arrow from the ISS to the student's position. This provides some evidence of an ability to develop a model showing that the ISS is visible to an observer at night because light from the sun is reflected into the observer's eyes.

## Question #6: Elementary School Sample Test

**Alignment:** PS1-4-4: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

- **SEP:** Constructing Explanations and Designing Solutions
- **Science Content:** PS3.B Conservation of Energy and Energy Transfer & PS3.D Energy in Chemical Processes and Everyday Life & ETS1.A Defining Engineering Problems
- **CCC:** Energy and Matter

### Part A

Click on each blank box and select a phrase to describe what is happening to the energy at each part of the circuit when the doorbell is turned on.

<b>Parts</b>	<b>Energy Pathway when Doorbell Is on</b>
Battery	<input type="text"/>
Wires	<input type="text"/>
Speaker	<input type="text"/>

#### Options:

- Energy is stored.
- Energy is destroyed.
- Energy is transferred.
- Electrical energy is converted to sound energy.
- Sound energy is converted to electrical energy.

Answer:

Parts	Energy Pathway when Doorbell Is on
Battery	Energy is stored. ⚡
Wires	Energy is transferred. ⚡
Speaker	Electrical energy is converted to sound energy. ⚡

### Part B

Use the simulation to select the materials necessary to conduct fair experiments and create a doorbell that can be heard from upstairs and costs less than \$40. The student can only hear a doorbell from upstairs if it is loud or very loud.

- Select the speaker, battery, and switch to determine the overall cost and loudness of the doorbell.
- Then click Run Trial.
- The cost of wire has already been included in the total cost.
- You must complete **two** trials.
- You may run up to **five** trials.
- Click the trash can icon if you want to delete a trial and generate new data.

Trial	Speaker	Battery (V)	Switch	Loudness	Cost (\$)

**Answer:** Answers will vary. The student earns the point for completing a trial that produced a 'loud' or 'very loud' sound and the components cost less than \$40. At least two trials need to be run to earn the point.

In this example table, Trial 2 would give the student the point.

Trial	Speaker	Battery (V)	Switch	Loudness	Cost (\$)
1	Bell	12.0	Rectangular	Very Loud	42
2	Bell	9.0	Rectangular	Loud	18

### Part C

Select **all** of the trials that meet the criteria for being heard upstairs and cost less than \$40.

- Trial 1
- Trial 2
- Trial 3
- Trial 4
- Trial 5
- None

**Answer:** Answers for this interaction will vary based on the student's output table in Part B.

### Part D

Click on the blank boxes and select words or phrases to predict what will happen to the loudness of the doorbell when the battery power increases.

The loudness of the doorbell will  because

**Options:**

- The loudness of the doorbell will
  - Increase
  - Decrease
  - Stay the same
- Because
  - Less energy is stored in the battery.
  - More energy is stored in the battery.
  - Less energy is transferred to the battery.
  - More energy is transferred to the battery.
  - The same amount of energy is stored in the battery.
  - The same amount of energy is transferred to the battery.

**Answer:**

The loudness of the doorbell will  increase  because  more energy is stored in the battery.

## Part E

Select **two** trials that support the relationship between the loudness of the doorbell and the power of the battery.

- Trial 1
- Trial 2
- Trial 3
- Trial 4
- Trial 5
- Cannot be determined

**Answer:** Answers for this interaction will vary based on the student's output table in Part B.

## Scoring Assertions

Q#	Part	Scoring Assertion
6	A	When asked to describe what is happening to the energy for the battery when the doorbell is turned on, the student selected "energy is stored" or "energy is transferred." This provides some evidence of an ability to complete a causal chain explaining how energy can be transferred via electric current to produce light, sound, heat, and /or motion.
6	A	When asked to describe what is happening to the energy of the wires when the doorbell is turned on, the student selected "energy is transferred." This provides some evidence of an ability to complete a causal chain explaining how energy can be transferred via electric current to produce light, sound, heat, and /or motion.
6	A	When asked to describe what is happening to the energy of the speaker when the doorbell is turned on, the student selected "electrical energy is converted to sound energy." This provides some evidence of an ability to complete a causal chain explaining how energy can be transferred via electric current to produce light, sound, heat, and /or motion.
6	B	The student ran at least two trials and ran at least one trial in which they selected components of a doorbell that produced "Loud" or "Very Loud" sound and that included components that cost less than \$40. This provides some evidence of an ability to select characteristics to be manipulated while gathering information to determine the loudest, cost-effective doorbell.
6	C	When asked to select the trial that met the criteria for being heard upstairs and cost less than \$40, the student selected all trials from their simulation that produced "Loud" or "Very Loud" sound and cost less than \$40. This provides some evidence of an ability to use given information to design and test a device that converts energy from one form to another.
6	D	When asked to predict what will happen to the sound of the doorbell if the battery power increases, the student selected "The loudness of the doorbell will increase because more energy is stored in the battery." This provides some evidence of an ability to use an explanation to predict how the sound of an object changes, given a change in the conversion of stored energy.
6	E	When asked to select the trials that support the relationship between the loudness of the doorbell and the power of the battery, the student selected two trials from the simulation in which the loudness was higher for the trial with a battery with more power. This provides some evidence of an ability to use evidence to support an inference.

## Question #7: Elementary School Sample Test

**Alignment:** PS1-4-1: Use evidence to construct an explanation relating the speed of an object to the energy of that object.

- **SEP:** Constructing Explanations and Designing Solutions
- **Science Content:** PS3.A Definitions of Energy
- **CCC:** Energy and Matter

### Part A

Click on the blank box and select a phrase to determine the relationship between the speed of the object and the energy within the ball.

As the force of the throw increases, the speed of the ball  and the energy of the ball .

#### Options:

- As the force of the throw increases, the speed of the ball
  - Increases
  - Decreases
  - Remains the same
- And the energy of the ball
  - Increases
  - Decreases
  - Remains the same

#### Answer:

As the force of the throw increases, the speed of the ball  and the energy of the ball .

### Part B

Select **two different** trials that support the relationship in part A.

- Click on the pencil icon.
- Then, select the trials that support the relationship.
- Click on the circular arrow to the right of any selection you would like to change.



**Answer:** Responses may vary. The student can select any combination of Trials 1, 2, and 3 for their support of the correct relationship. This is an example of a correct response:

Trial 2 

Trial 1 

### Scoring Assertions

Q#	Parts	Scoring Assertion
7	A & B	The student selected that as the force of the throw increases, the speed of the ball increases and the energy of the ball increases. The student also selected either Trials 1 and 2 OR Trials 2 and 3 OR Trials 1 and 3. This provides some evidence that the student is able to select information needed to support an explanation of the phenomenon.