

Sample Body of Evidence

Science

Grade 4 – Third Reporting Period

FOSS California Environments Life Science/Investigation & Experimentation

This sample is intended to demonstrate the essential elements of a body of evidence. The evidence includes:

- Expected Student Responses to Grade Level Prompts (Science Notebook Sheets) identified in the Recommended Body of Evidence
- Additional class work identified in the Plants and Animals module

This sample includes authentic PROFICIENT student work from San Diego Unified School District AND FOSS California Expected Student Responses on Student Notebook Sheets identified in the Recommended Body of Evidence.

Important Note:

For the first two grading periods, students are evaluated based upon their progress toward end-of-year standards. Students who receive a mark of “proficient” for the first and second grading periods are making consistent and adequate progress toward achieving end-of-year expectations. In the final reporting period, the report card marks reflect a student’s actual achievement of the cumulated skills, strategies, and concepts identified in the California frameworks and content standards (SBRC, 2007).

Standards Based Report Card
 Science Marking Worksheet – Third Reporting Period
 Fourth Grade

Student: SAMPLE Body of Evidence

Strand	Evidence	Notes on Quality	Report Card Mark
<p>LIFE SCIENCE</p> <p>All organisms need energy and matter to live and grow.</p> <p>Living organisms depend on one another and on their environment for survival.</p>	<p><i>Prompt # 1</i> No. 2 Science Notebook Response Sheet – Terrestrial Environments</p>	<p><u>Academic Language</u> organism, producers, consumers, environment, energy, living, nonliving, terrarium, isopod, beetle, shelter, pollination, ecosystem, food web, food chain, concentration, salinity, viable, tolerance,</p>	<p>Advanced</p> <p>Proficient</p>
	<p><i>Prompt # 2</i> No. 3 Science Notebook Animal Investigations No. 4 Science Notebook Response Sheet – Isopods and Beetles</p>	<p><u>Scientific Concept</u> “A hawk gets eaten by other thing or organisms”</p>	<p>Basic</p>
	<p><i>Prompt # 3</i> No. 5 Science Notebook How Organisms Depend On One Another</p>	<p>“producers provid food for consumers which eat producers”</p>	<p>Below Basic</p>
	<p><i>Prompt # 4</i> No. 7 Science Notebook Food Chains and Food Webs</p>	<p>“A lamp is not living” “Soil is not living” “without soil what would the plants grow in”</p>	<p>Not Assessed</p>
	<p><i>Prompt # 5</i> No. 8 Science Notebook Response Sheet – Aquatic Environments</p>	<p>“The lamp can effect the plants and lizards”</p>	
	<p><i>Prompt # 6</i> No. 11 Science Notebook Brine Shrimp – Hatching Observations</p>	<p>“Our plants are growing sideways. Why? The sun was in that direction. Plants grow toward the sun.”</p>	
	<p>No. 12 Science Notebook Brine Shrimp – Hatching Conclusions</p>	<p>“food is what gives you energy you eat it”</p>	
	<p><i>Prompt # 7</i> No. 18 Science Notebook Response Sheet – Range of Tolerance</p>	<p>“Isopods need a moist environment to keep their gills wet to keep breathing.”</p>	
<p><i>Additional Classwork</i></p>	<p><i>FOSS Expected Student Responses should also include – examples of how organisms depend on one another; plants provide food for animals, seeds move to new places when they stick to animal fur, animals carry seeds for food</i></p>		

Strand	Evidence	Notes on Quality	Report Card Mark
		<p><i>FOSS Expected Student Responses should also include – food chains and food webs; plants made food from carbon dioxide and water when the sun shines, bacteria and fungi are decomposers, arrows in a food web go from the organism that is eaten to the organism that eats it.</i></p>	
<p>INVESTIGATION & EXPERIMENTATION</p> <p>Scientific progress is made by asking meaningful questions and conducting careful investigations.</p> <p><i>-differentiate observation from inference AND explanations come partly from what they observe and partly from how they interpret their observations</i></p> <p><i>-measure length</i></p> <p><i>-formulate and justify predictions based on cause-and-effect relationships</i></p> <p><i>-follow a set of written instructions for a scientific investigation</i></p>	<p><i>Prompt # 2</i> No. 3 Science Notebook Animal Investigations No. 4 Science Notebook Response Sheet – Isopods and Beetles</p> <p><i>Prompt # 6</i> No. 11 Science Notebook Brine Shrimp – Hatching Observations No. 12 Science Notebook Brine Shrimp – Hatching Conclusions</p> <p><i>Additional Classwork</i></p>	<p><u>Data Collection</u> “corn about 2 ½ centimeters” “radish 4 ½ centimeters roots 10cm” “Every time I’ve seen barley its in day dirt. So that’s why I think its not growing”</p> <p><u>Use of Data</u> “The beetles love dry soil. The isopods like moist and wet soil. The beetles like to dig under the dry soil.”</p> <p>“I think baby tears can live in the rain forrest, because they like warm shady moist places and that is what a rain forrest is like.”</p> <p>“I think the brine shrimp will hatch in the 2 spoon saltwater cup.”</p>	<p>Advanced</p> <p style="text-align: center;">Proficient</p> <p>Basic</p> <p>Below Basic</p> <p>Not Assessed</p>

Observe Terrariums

There's condensation on the sides of the box. The barley has not grown at all. Clover has no roots. Radish has skinny long roots. The corn is a whiteish color. We added 60 mL water. To put the water by the roots I made a hole by each plant and poured the water there.

Corn about $2\frac{1}{2}$ centimeters

clover 2 centimeters roots are two small

pea 2 centimeters roots 8 cm

barley 0 centimeters

radish $4\frac{1}{2}$ centimeters roots 10 cm

Why isn't the barley growing?
 What do I think? Every time I've seen barley it's in dry dirt. So that's why I think it's not growing so I put no water there.

Observe terrariums

length

Corn 15 centimeters

Peas 10 centimeters

Clover 4 centimeters

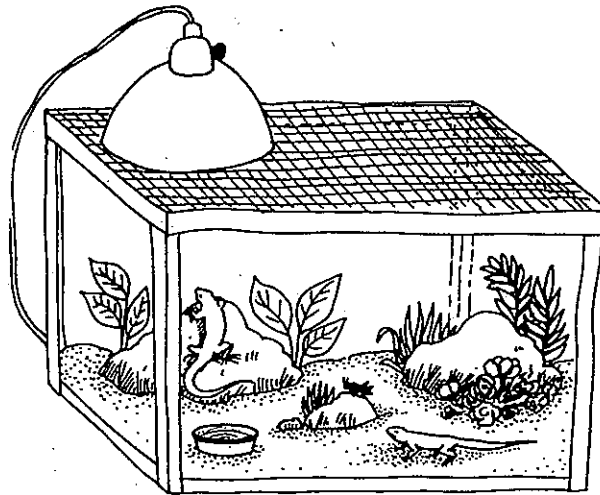
radish 10 centimeters

barley 0 centimeters

Our corn is very tall. Our plants are growing sideways. Why? the sun was in that direction. Plants grow toward the sun. Sunlight helps plants grow.

Modifications we added 90 ml water all over

RESPONSE SHEET—TERRESTRIAL ENVIRONMENTS



- salamanders L
- cricket L
- rocks
- pan of water
- broad-leaved plants L
- light L
- grassy plants L
- glass terrarium
- thin-leaved plants L
- soil L
- flowering plants L
- temperature

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Sara used the picture above to make a list of all the environmental factors she saw in this terrestrial environment. She put an L next to each factor she identified as a living factor. The list Sara made appears above.

Do you agree that all the factors Sara marked with an L are living? no If not, tell which ones you don't agree with and explain why you don't agree.

Describe how two of the nonliving factors might influence the living factors in this terrarium. ^{effect}

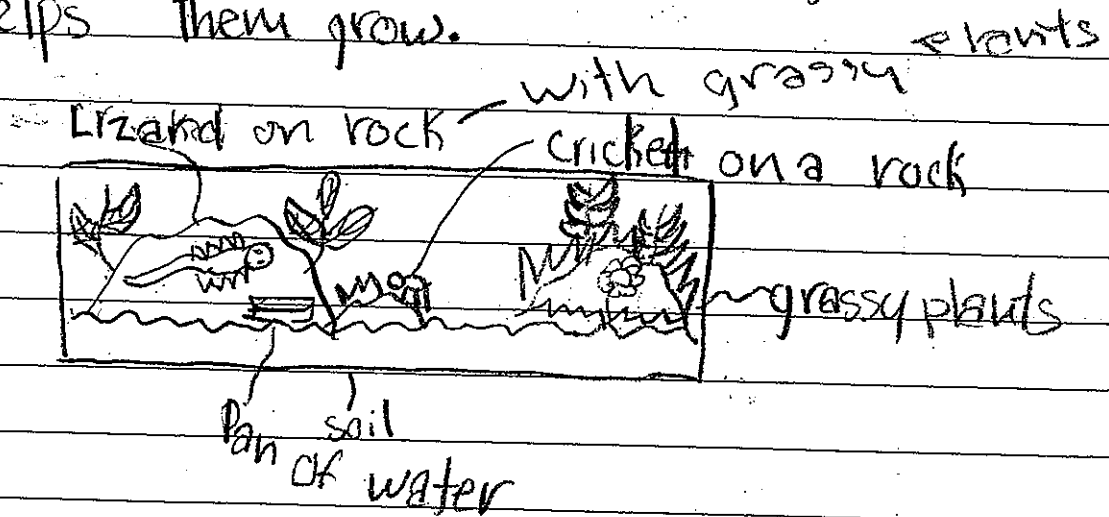
○ Explanations for Response Sheet

Part One
1 A lamp is not living because it is electrical it does not breathe you don't feel

2 Soil is not living soil is not alive it is just what the plants grow in it does not grow

Part two
1 soil can effect the plants that grow in the terrarium because without soil what would the plants grow in.

2 The lamp can effect the plants and lizards. Lizards like heat and the lamp look like a heat lamp. The light can also effect the plants because I know ^{some} plants like heat and light. It helps them grow.



pg # 90-91 1-3

Summary Environments Questions

1 I think baby tears can live in the rain forest, because they like warm shady moist places and that is what a rain forest is like.

I don't think baby tears can live in the desert because they like wet shady places and that's opposite of a desert.

2 Living

- corn seed
- radish seed
- peas seed
- clover seed

Non living

soil what plants grow in

3 No because our terrariums by the window getting a lot of light NOT SHADE.

Review Questions

93-97

1-3

1 Isopods need a moist environment to keep their gills wet to keep breathing.

2 Beetle have to have an elytra. \rightarrow (Hard front wings)

3 There are abt of insects and very few mammals

④ Because of the earths rotation.

(roly poly)
Isopod / Beetle
(potato bug)

EXPERIMENT

Hypothesis - Isopods will like moist dirt
Beetles will like dry dirt.

Question - Do beetles and Isopods like
a moist or dry environment

Materials - foil runways, Isopods, Darkling
beetles, wet, moist, and dry soil

Observations

Beetles are digging deep into the
dry soil

Isopods like to crawl on wet
soil

After 2 days the beetles are
all in dry soil

After 2 days all Isopods are
in wet soil

ANIMAL INVESTIGATIONS

Animal Beetles

Environmental factor tested

PART 1. SETUP

Moisture

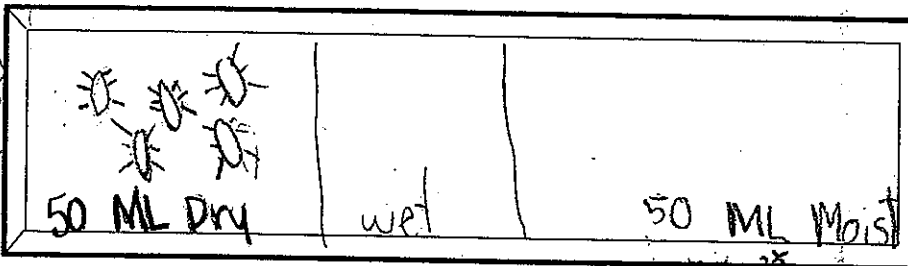
Describe how you set up the runway.

PART 2. OBSERVATIONS

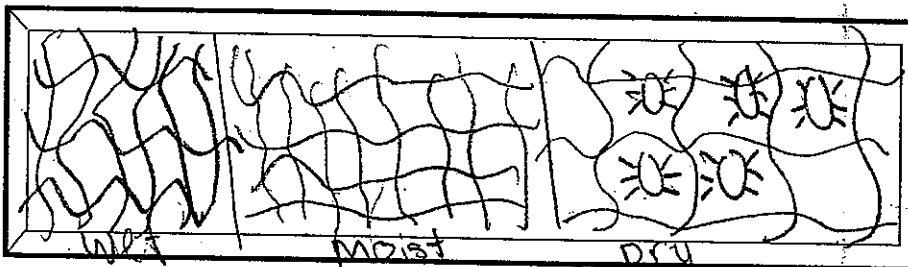
Record where each animal was and what it was doing (on surface, buried, moving).

Short run. This is where the animals were after 12 minutes.

Beetles
Isopods



Long run. This is where the animals were after 48 hours.



PART 3. INTERPRETATION

From your observations, what can you say about the animals' environmental preferences?

Prompt #2
(cont.)

(1)
Conclusion:

The beetles love dry soil.
The Isopods like moist and wet soil. The beetles like to dig under the dry soil.

Isopods and Beetles Light Preferences.

Question: Do Isopods and beetles like a dark or light environment?

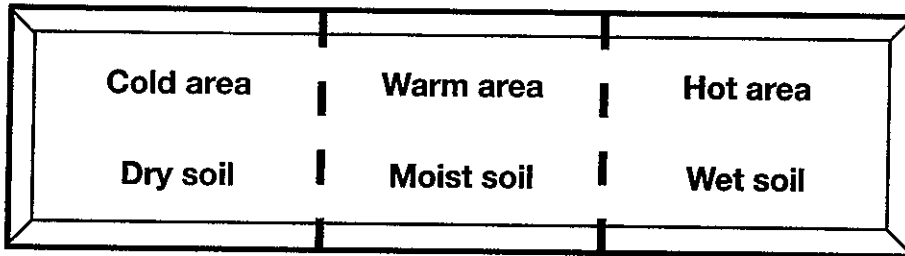
Hypothesis: Isopods like the light. Darkling Beetles like the dark.

Materials: light, black paper, Isopods, Beetles, Runways, Soil

RESPONSE SHEET—ISOPODS AND BEETLES

Bret wanted to find out isopod preferences for temperature. Below is his notebook entry.

We put dry, moist, and wet soil in the runways just like we did before in class. Next, we put a heating pad under part of the runway to make three areas, each with a different temperature. That way we could find out if isopods like it cold, warm, or hot.



Results:

After 10 minutes, we found some isopods in the warm and hot areas. After an hour, we found all of the isopods in the warm area. Conclusion: Isopods like it warm.

Do you agree that Bret's investigation supports his conclusion? Why or why not?

Disagree. Bret tested too many factors at the same time. Isopods might be reacting to different amounts of water, not temperature.

What would you do differently to improve his investigation?

Have the same amount of water everywhere in the runway. Moist might be the best choice for amount of water.

HOW ORGANISMS DEPEND ON ONE ANOTHER

1. Describe three examples of how animals depend on plants for survival.

Trees provide shelter for birds to nest.

Holes in trees provide protection for birds and their eggs.

Animals can hide in plants to avoid being eaten, like a beetle under bark or walkingstick in twigs.

Plants provide food for animals: pollen, berries, nuts, leaves.

2. Describe three examples of how plants depend on animals for survival.

Seeds move to new places when they stick to animal fur.

Seeds move to new places when fruits are eaten or are buried.

Seeds move to new places when animals bury nuts to eat later.

Bees and other animals pollinate flowers to produce new seeds.

Ants defend their tree against other animals and plants.

3. Do you think animals pollinate flowers and disperse seeds on purpose or by accident? Explain why you think so.

By accident. The animals are getting pollen and nectar to eat. Pollen gets stuck by accident.

Animals carry seeds for food. Some seeds get discarded or lost by accident.

#123-127 #1-6

1 Food is what gives you energy you eat it
Food gives you energy

2 I don't know about food yeah water

3 A Hawk gets eaten by other thing
or organisms

4 producers provide food for consumers
which eat producers

5 bass, crayfish, minnow



6 They eat dead animals

Prediction

I think the brine shrimp will hatch in the 2 spoon saltwater cup. In about a week the water adjust to

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BRINE SHRIMP-HATCHING EXPERIMENT

QUESTION

Write the question you will answer with your investigation.

What level of salinity do brine shrimp need to hatch?

MATERIALS

- 4 Plastic cups with lids
- 4 Self-stick notes
- 1 Cup of salt
- 1 Spoon, 5-ml
- 1 Beaker, 100-ml
- 1 Vial of brine shrimp eggs
- 1 Minispoon
- 1 Craft stick
- 1 FOSS tray
- 1 Container of water

SET UP THE HATCHING EXPERIMENT

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- a. Label four cups—0 spoons, 1 spoon, 2 spoons, and 3 spoons salt. Write your group name on each label.
- b. Measure 150 ml of water into each cup. Use the 100-ml beaker.
- c. Measure salt into the labeled cups using the 5-ml spoon. Use a craft stick to level the measure. Put lids on the cups. Gently swirl the cups to dissolve the salt.
- d. Put 1 level minispoon of brine shrimp eggs in each cup. Put the lids on. Gently swirl the water to wet the eggs.
- e. Place all four cups on the FOSS tray.

I think 3 cups salt is too much 0 salt is not going to happen.

FOOD CHAINS AND FOOD WEBS

1. What is food? Why is it important?

Food is a source of matter and energy, which all organisms need to survive.

Food provides the raw materials organisms need to grow and reproduce.

2. Do plants need food? Why or why not?

Yes, plants need food, but they don't have to eat food. They make food from carbon dioxide and water when the sun shines.

3. What happens to hawks when they die?

They are decomposed by bacteria and fungi, which are the decomposers in ecosystems.

4. What is the role of producers in an ecosystem?

They make the food that is used in ecosystems. Producers are food for consumers.

5. Look at the food web for a California river on page 126 of the *Science Resources* book. Give three examples of animals that compete for a food source.

Crayfish, bass, and egrets compete for minnows.

Crayfish and mayflies compete for water plants.

Egrets and bass compete for crayfish.

6. What is the role of decomposers in an ecosystem?

Decomposers are the ecosystem's cleanup crew. They break down dead

organisms into raw materials. The raw materials are recycled into the

ecosystem.

RESPONSE SHEET—AQUATIC ENVIRONMENTS

Here is a description of the organisms that live in a pond.

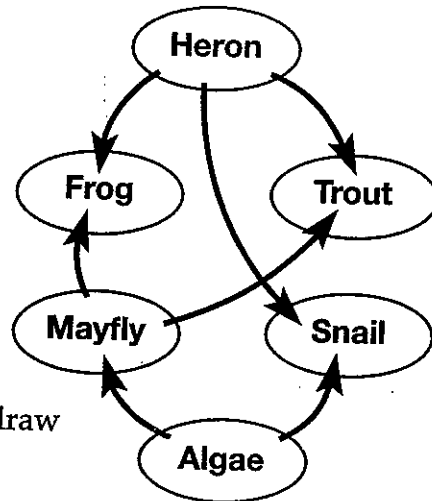
Aquatic snails and mayflies eat algae.

Frogs and trout eat mayflies.

Hérons eat frogs, trout, and snails.

Bacteria decompose the dead organisms.

Yolanda read the information about organisms living in a pond. Then she made a food web.



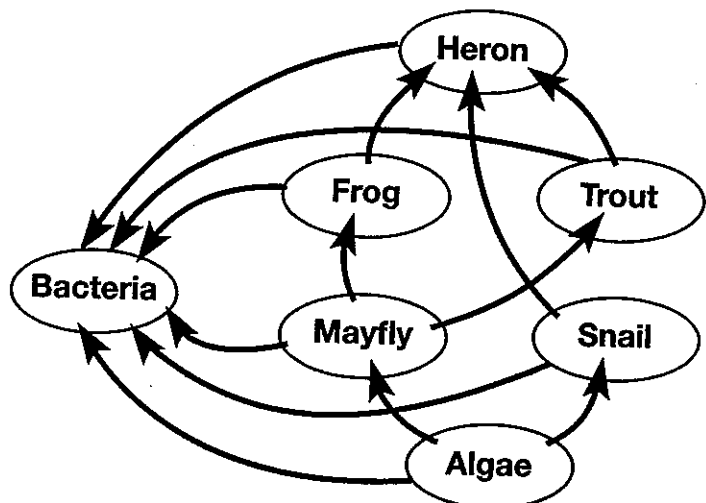
Write comments about Yolanda's food web. You can draw a new food web if you would like to.

Write comments and draw here.

Arrows from the heron to the frog, trout, and snail go in the wrong direction—they should go to the heron.

Arrows always go from the organism that is eaten to the organism that eats it.

The food web needs bacteria decomposers. An arrow goes from every organism to the decomposers.



Observations

The cup with one spoonful salt has the most brine shrimp

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BRINE SHRIMP-HATCHING OBSERVATIONS

PART 1

What day of your experiment did you first notice hatching?
(Count setup day as day 1.)

- Day 1
- Day 2
- Day 3
- Day 4

In which container did you first observe hatching?

- 0 5-ml spoons
- 2 5-ml spoons
- 1 5-ml spoon
- 3 5-ml spoons

What additional observations did you make?

PART 2

Record the number of eggs that hatched in each salt condition.

Make an X in one box for each salt condition.

Day 2 (Count setup day as day 1.)

	SALT CONDITIONS			
	0 5-ml spoons	1 5-ml spoon	2 5-ml spoons	3 5-ml spoons
Most		✓		
Some			✓	✓
None	✓			

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Prompt #6

BRINE SHRIMP-HATCHING CONCLUSIONS

As a class, we conducted an experiment using multiple trials. Here are the class data.

SALT CONDITIONS				
	0 spoons	1 spoon	2 spoons	3 spoons
Most				
Some				
None				

Write a report answering Dr. Bryan's question. Is salinity an environmental factor that affects brine shrimp egg hatching?

Salinity does affect brine shrimp hatching. Students should use evidence from class investigations to discuss range of tolerance and the optimum condition of salt for the hatching.

RESPONSE SHEET—RANGE OF TOLERANCE

Carlos designed an experiment to test for the water tolerance of sunflower seeds. He controlled all environmental factors except for the amount of water used. His design included three water conditions:

Moist: 0 ml of water Wet: 50 ml of water Super wet: 100 ml of water

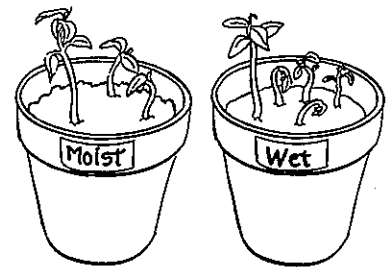
Below are his recorded observations on 2 days and his conclusion.

May 10

There are 3 sprouts in the moist cup. All are green.

May 13

There are 3 sprouts in the moist cup and 5 sprouts in the wet cup. One in the wet cup is pretty tall. There is a tall one in the moist cup also. One of the plants in the wet cup has 4 leaves.



Conclusion:

The wet condition is best for growing sunflowers.

Do you agree with his conclusion? What might Carlos do to improve it?

Students might agree based on limited data available.

Students might disagree based on incomplete data available.

How could Carlos improve his recordings?

include number of seeds planted

include amount of time growing

include data for all three conditions every day

more measurements: height, length of leaves, number of leaves