

# **WASL — Washington Assessment of Student Learning**

A Component of the Washington State Assessment Program

## **Using Results to Improve Student Learning**

### **Science Grade 5**

**2004 Released Scenarios and Items**



Published by the Science Assessment Team of the Washington Office of the Superintendent of Public Instruction on August 1, 2004.

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August 1, 2004

Dear Washington Educator:

I am delighted to offer this fourth annual publication of released test items from the 2004 Washington Assessment of Student Learning (WASL). My staff worked hard to make certain these materials were available in time for use during administration workshops and summer staff development activities, and I hope they are helpful in positively impacting instruction resulting in improved student learning.

I am particularly excited to tell you that this released item document is now available in an electronic format on our Web site that provides you the opportunity to print sections individually. In addition, we have already printed the state results for each test question into the data analysis box.

We release items from the WASL each year so that teachers and administrators can better analyze the results of specific test items in order to identify strengths, weaknesses, patterns and trends of student performance on the Essential Academic Learning Requirements (EALRs).

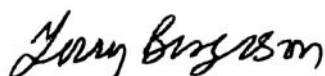
Using these test items and your school- and district-specific data that is provided by the state, you will be able to learn more about students in your school and district. By analyzing the differences in data and the relationship of each question to the EALRs, areas of strength and improvement will become apparent.

I encourage you to join with other staff before the start of the year to work with the item-specific scoring guides in reading, mathematics and science and the annotated student responses that illustrate each score point. Schools that have used this process have given very positive feedback about this experience. This year's writing prompts and annotations are also available on our Web site in a separate document.

Please continue to visit our Web site, [www.k12.wa.us](http://www.k12.wa.us), for additional resources.

I wish you a wonderful and successful school year as we continue our work toward improving student achievement in the 21<sup>st</sup> century.

Sincerely,

A handwritten signature in black ink that reads "Terry Bergeson". The signature is written in a cursive style with a large, prominent "T" and "B".

Dr. Terry Bergeson  
State Superintendent of Public Instruction

## Introduction to the Science Released Scenarios and Items

We are delighted to offer these released scenarios and items from the first operational Science WASL voluntarily given in the spring of 2004 to over 90% of grade 5 students. This release booklet contains two scenarios with associated items which comprise about 30% of the exam. Release booklets are designed to assist teachers and administrators in understanding how the Science WASL measures students' achievement of the Science EALRs.

The Science WASL is composed of scenarios that measure the three Science EALRs. Systems scenarios briefly describe a system as expressed in EALR 1: concepts and principles of physical, Earth, space, and living systems. Inquiry scenarios describe student investigations into these systems that exemplify EALR 2: inquiry and the nature of science. Design scenarios describe how students applied their understanding of the concepts of EALR 1 and the inquiry process of EALR 2 to designing solutions to human problems. Design scenarios exemplify the processes described in EALR 3: application. Students' scores are reported in five strands: properties of systems, structure of systems, changes in systems, inquiry in science, and designing solutions.

In addition to this booklet, there are many other instructionally supportive materials available for the Science WASL. All these materials can be accessed through the OSPI website [www.k12.wa.us](http://www.k12.wa.us).

- Science WASL Specifications: This booklet contains all guidelines and templates for writing and scoring scenarios and items, the Grade Level Expectations with Evidence of Learning that specify every item on the Science WASL. In addition, this booklet contains the names and contact information for all the Science Assessment Leadership Team members that can be available for professional development.
- Scoring Training Booklets: These booklets contain from 9 to 15 anchor papers, at least 10 practice papers, 10 qualifying papers, annotations explaining how and why each paper was scored, and instructions for printing and using these with students. Educators have found these Scoring Training booklets invaluable in helping teachers and students learn how open-ended items can be objectively scored for student understanding of the Science EALRs.

If you have any questions or ideas, please contact Roy Q. Beven at [rbeven@ospi.wednet.edu](mailto:rbeven@ospi.wednet.edu), Cinda Parton at [cparton@ospi.wednet.edu](mailto:cparton@ospi.wednet.edu), or Mercedes Eckroth at [meckroth@ospi.wednet.edu](mailto:meckroth@ospi.wednet.edu).

Sincerely,

Roy Q. Beven  
OSPI Science Assessment Manger

Cinda Parton  
OSPI Science Assessment Specialist

Mercedes Eckroth  
OSPI Science Assessment Support

## How to Use this Released Item Booklet and the Item Analysis Report

### Introduction:

You should have two documents: this released item booklet and the Item Analysis Report. These two documents should be used together to help administrators and teachers understand and use released Science WASL scenarios and items to assess and improve student achievement of the Science Grade Level Expectation as demonstrated by the Evidence of Learning these released items measure.

This **Released Item Booklet** includes the following information:

- WASL science scenarios and items from the 2004 operational exam
- A table for each item where state-level results are recorded and places for you to enter your school-level and district-level results for each item.
- Information to indicate the EALR strand, Grade Level Expectation, and Evidence of Learning for each item.
- Item-specific scoring rubrics, sample student responses at each score point, and annotations for each student response explaining how the score was derived

The **Item Analysis Report** includes the following information:

- A list of all released items referenced to strands and learning targets is provided.
- Data on student responses to multiple-choice items including the percentage of students who responded to each possible answer by school, district, and state is provided. Correct answers are indicated with an asterisk.
- Data for constructed-response items (short answer and extended response) are presented by the percentage of students who scored at each score point by school, district, and state.
- Data for the “planning an investigation” extended response (4-point) item are presented in terms of 8 value points by school, district, and state. The attributes of a scientific investigation are assigned value points that are used to derive the student’s item score.

### To Interpret Your Data:

- First, transfer your data from the Item Analysis Report to the released item booklet. Transfer all the information for each item into each table so that you will have all the information in one place.
- Second, examine the item types to determine the strengths and weaknesses in student performance in your school or district. Do the students perform well on multiple-choice items? Constructed-response items? What percentage of students in a school or district left constructed-response items blank or earned a zero?
- Third, examine the data by strand and learning targets. Group together targets that represent strengths and weaknesses for the students in a school or a district. Do the targets all fit under one particular strand or do they belong to several strands?
- Fourth, look for trends. Do the students in your school perform markedly lower or markedly higher on a particular item in comparison to the students in the district or the state?

## What do the Scores on the Science WASL Mean?

The 5<sup>th</sup> grade Science WASL measures what **all** students should know and be able to do in science by the spring of their 5<sup>th</sup> grade year. The Science WASL does **not** measure student understanding developed in one course or one school year. The Science WASL measures students' understanding of science concepts and processes developed from Kindergarten through 5<sup>th</sup> grade with the assumption that all students have been provided the opportunity to learn the Science Grade Level Expectations (GLEs) every one of the six years the students have been in school.

The items on the Science WASL measure the Science GLEs. These released items give some indication of how well students did on a particular GLE. In addition, the strand scores indicate how well students did on all the items of a strand compared to proficient or advanced students. These GLEs are organized into the five reported strands as listed below:

- Properties of Systems strand with six GLEs measured by 10% of the Science WASL.
- Structure of Systems strand with eight GLEs measured by 14% of the Science WASL.
- Changes in Systems strand with ten GLEs measured by 16% of the Science WASL.
- Inquiry in Science strand with ten GLEs measured by 40% of the Science WASL.
- Application of Science strand with seven GLEs measured by 20% of the Science WASL.

## Using Information and Data to Improve Instruction and Student Achievement

To add meaning to the released item data and strand scores, educators should establish how and where students have the opportunity to learn the Science GLEs and collect Evidence of Learning in their classrooms and school systems. To improve student learning, educators must assure that all the GLEs are part of students' instructional activities and that Evidence of Learning is being gathered for each. To assure that students' Science WASL scores reflect their true understanding of the GLEs, educators should assure that all students have the opportunity to learn to do their best on the Science WASL.

### Teachers and Administrators:

In K-2 and 3-5 grade band groups, assure that you have adequate instructional materials to provide students the opportunity to learn the GLEs for those grade bands. Your student performance data on these released items and your strand scores indicate strengths and weakness.

As probably indicated in your students' performance data, a good place to start is to focus on Inquiry in Science. Notice that 40% of the Science WASL is measuring the ten GLEs of the Inquiry in Science strand. Check that your classroom activities are investigating systems expressly described in the Science GLEs of EALR 1; we probably do not have regular class time to investigate other areas.

To assure that the Inquiry in Science activities you provide will translate well into performance on the Science WASL, build quizzes with WASL-like scenarios. These can be constructed using the materials in the Science Specification booklet and assistance from SALT members.

# Using Released Items as Professional Development Opportunities

## Key Goals of Professional Development Opportunities

- Develop understanding of the Science EALRs, GLEs, and Evidence of Learning.
- Develop understanding of the Science WASL, the data it provides, and the relationship between the WASL data and the Evidence of Learning gathered in the classroom.
- Develop a deeper understanding of how to objectively score student responses in science.

## Half-Day Professional Development

- Use this release booklet, the Science Specifications, and follow the guidelines described in the section of this booklet titled, “How to Use this Released Item Booklet and Item Analysis Report.”
- Provide data analysis from the 2004 released items and ask, “Where do we see areas that need further improvement?” and “What instructional practices can improve student learning in those areas?” Formulate questions based on the work you have done in the school and/or district.
- Compare your Science WASL results with other Evidence of Learning gathered in the classroom to further define areas in which to focus instruction.
- Contact a science education leader in your district and/or Science Assessment Leadership Team (SALT) member in your region and ask them to facilitate a workshop focused upon your identified areas of need.

## Full-Day Professional Development

- Complete the suggestions for Half-Day Professional Development
- Contact a science education leader in your district and/or Science Assessment Leadership Team (SALT) member in your region to receive more in-depth training on the Scoring Student Responses on the Science WASL booklets and begin constructing classroom quizzes with WASL-like scenarios.

## Follow-Up Professional Development Involving Students

- Have teachers construct classroom quizzes with WASL-like scenarios using the Science Specifications booklet and share the quizzes with their peers before using them.
- Use quizzes with WASL-like scenarios to assess students, then teach students how to score their own responses.
- Bring teachers together with their classroom Evidence of Learning and ask, “What do the results tell us?” Lay out the unit of study and ask, “How can we modify this unit to build appropriate understanding of the targeted Science Grade Level Expectations and gather reliable Evidence of Learning?”

# The Grass is Always Greener

## Scenario Summary

Title: The Grass is Always Greener		Grade: 5							
Description: Two students investigated how the amount of light affects growth of grass									
Item Descriptor	EALR Strand, Learning Target, and Item Characteristic					Item Type			
	Properties of Systems	Structure of Systems	Changes in Systems	Inquiry in Science	Designing Solutions	Multiple Choice	Short Answer	Extended Response	Cognitive Level
1	Understand how to ask scientific questions by identifying the question of the given investigation.					C			II
2	Understand the physical properties of Earth materials by identifying the properties of soil important for grass.					B			II
3	Understand how to plan simple investigations by identifying the one variable changed in the given investigation					A			I
4	Understand that organisms have life needs by describing the needs of grass such as air, water, and nutrients.						SA		II
5	Understand how to use data to construct reasonable explanations by writing a conclusion.						SA		II
6	Understand how to plan a simple investigation by writing a plan for a new, yet similar, investigative question.							ER	II
<b>Total</b>						<b>3</b>	<b>2</b>	<b>1</b>	I:1pt II:10pts
Ideal Totals						3-6	1-2	0-1	I: 33% II:67%

# The Grass is Always Greener

**Directions:** Use the following information to answer numbers 1 through 6.

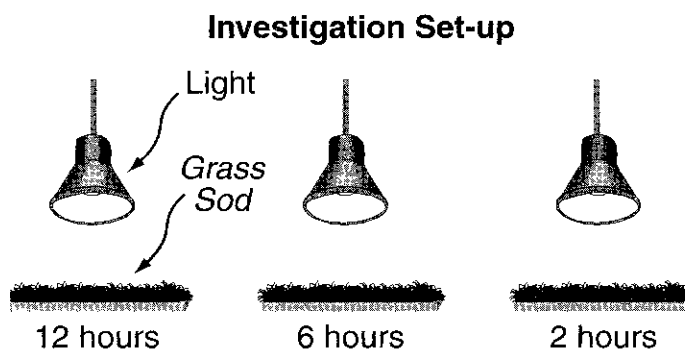
Jose and Maria noticed the grass in one part of the yard was growing better than in other areas. They thought this happened because parts of the yard received more light than other parts. They did the following investigation with *grass sod* (a layer of grass with its roots in soil).

**Prediction:**

Grass that receives more light will grow the tallest.

**Materials:**

- grass sod cut into 3 equal pieces
- meter stick
- water
- 200 mL beaker
- 3 trays of the same size
- 3 lights connected to timers



**Procedure:**

1. Set the three pieces of *grass sod* into the three trays and put the trays in a dark place with the lights above them as shown in the Investigation Set-up.
2. Measure the average height of the grass in each tray and record as starting heights.
3. Set the timers to turn the lights on daily: one light for 2 hours, one light for 6 hours, and one light for 12 hours.
4. Water each tray with 200 mL of water every four days.
5. Measure the average height of the grass at the end of each week.
6. Record the average heights in the data table for 3 weeks.

**Data:**

**Amount of Light vs. Height of Grass**

Amount of Light (hours)	Average Height of Grass (cm)			
	Start	Week 1	Week 2	Week 3
2	1	2	3	4
6	1	3	5	7
12	1	5	9	13

## The Grass is Always Greener

1 What question were Jose and Maria asking in their investigation?

- A. How does the amount of light affect the color of grass?
- B. How does the amount of light affect the thickness grass?
- C. How does the amount of light affect the height of grass?

### Item information

Correct Response: C

EALR Strand: IN Inquiry in Science

Grade Level Expectation: IN01 2.1.1: Questioning

Understand how to ask questions about objects, organisms, and events in the environment.

Evidence of Learning: b) Given a description of a scientific investigation, items may ask students to identify the question being answered in an investigation.

### Performance Data

Use the space below to fill in student performance information for your school and district.

Item 1 Responses * correct response	Item 1 Percent Distribution of Responses		
	School	District	State
A			6.3
B			3.3
*C			89.9
NR (No Response)			0.5

## The Grass is Always Greener

2 Why is soil important to the plant in Jose and Maria's investigation?

- A. The soil prevents dust from getting to the leaves.
- B. The soil provides support and nutrients for the grass.
- C. The soil provides a place for insects and worms to live.

### Item information

Correct Response: B

EALR Strand: PR Properties of Systems

Grade Level Expectation: PR05 1.1.5: Nature and Properties of Earth Materials  
Understand physical properties of Earth materials including rocks, soil, water, and air.

Evidence of Learning: b) Given a description of an appropriate system, items may ask students to identify, describe, or sort soils based on physical properties (e.g. color, particle size, ability to retain or drain water, texture, smell, source of nutrients (not food) for plants).

### Performance Data

Use the space below to fill in student performance information for your school and district.

Item 2 Responses * correct response	Item 2 Percent Distribution of Responses		
	School	District	State
A			1.1
*B			95.6
C			2.8
NR (No Response)			0.5

## The Grass is Always Greener

3 Which variable did Jose and Maria change (manipulate) in their investigation?

- A. The amount of light
- B. The amount of water
- C. The amount of *grass sod*

### Item information

Correct Response: A

EALR Strand: IN Inquiry in Science

Grade Level Expectation: IN02 2.1.2: Planning and Conducting Safe Investigations  
Understand how to plan and conduct simple investigations following all safety rules.

Evidence of Learning: c) Given a description of a scientific investigation, items may ask students to identify the one variable changed (manipulated) in the given investigation.

### Performance Data

Use the space below to fill in student performance information for your school and district.

Item 3 Responses * correct response	Item 3 Percent Distribution of Responses		
	School	District	State
*A			83.7
B			5.0
C			10.9
NR (No Response)			0.5

## The Grass is Always Greener

- 4 Name **two** needs besides sunlight that Jose and Maria must provide for the grass so that it can grow healthy and tall. Explain why grass needs these things.

Use words, labeled pictures, and/or labeled diagrams in your answer.

**First Need:**

**Why does grass need this?**

**Second Need:**

**Why does grass need this?**

## The Grass is Always Greener

4 (continued)

### Item information

Score Points: 2

EALR Strand: CH: Changes in Systems

Grade Level Expectation: CH08 1.3.8 Life Processes and the Flow of Matter and Energy  
Understand that living things need constant energy and matter.

Evidence of Learning: Given a description of an appropriate system, items may ask students to:  
a) Identify or describe the sources of energy and matter used by plants and animals to grow and sustain life (e.g. air, water, light, food, nutrients).  
b) Identify or describe how plants obtain food (i.e. plants make food from light, air, water, and nutrients)

### Performance Data

Use the space below to fill in student performance information for your school and district.

Item 4 Score Points	Item 4 Percent Distribution of Score Points		
	School	District	State
0			30.8
1			63.9
2			4.9
NR (No Response)			0.4
Mean			0.7 points

# The Grass is Always Greener

## Scoring Rubric for Item 4

**A 2-point response:** The response demonstrates that the student understands that living things need constant energy and matter.

The student names **two** needs, besides sunlight, that Jose and Maria must provide for the grass so that it grows healthy and tall.

AND The student explains why grass needs these things.

Examples: Plants need water to make food. Plants need soil for nutrients.

Sample other needs:

1. Soil for nutrients, to provide stability to the roots, or to hold water.
2. Water to carry nutrients, for nutrients, or to make food.
3. Air to make food or to respire.
4. Nutrients for photosynthesis for cell growth (specific growth).
5. Space to be able to get enough sunlight, water, and nutrients.

Note: Water and the CO<sub>2</sub> in air are used in photosynthesis therefore plants use water and air to ‘make food.’

**A 1-point response:** The response demonstrates that the student partially understands that living things need constant energy and matter.

The student names **two** needs, besides sunlight, that Jose and Maria must provide for the grass so that it grows healthy and tall but does not explain why the grass needs these things.

OR The student names one need, besides sunlight, that Jose and Maria must provide for the grass so that it grows healthy and tall and explains why the grass needs this one thing.

OR The student names two needs, besides sunlight, that Jose and Maria must provide for the grass so that it grows healthy and tall but only explains why the grass needs one of the things.

OR The student names two needs, besides sunlight, that Jose and Maria must provide for the grass so that it grows healthy and tall but only vaguely explains why the grass needs both of the things.

**A 0-point response:** The response demonstrates that the student has little to no understanding that living things need constant energy and matter.

## Notes:

1. Food in conjunction with nutrients needs further explanation to be credited.
2. To grow, grow healthy, or grow tall cannot be credited because these are given in prompt.
3. An explanation of “so it won’t die” cannot be credited.
4. Misconceptions, like needing nutrients for food, cannot be credited.
5. Correct analogies between plants and humans can be credited (e.g. suffocate, breath are acceptable). Unacceptable analogies like “drinking just like humans” or “need food just like humans” cannot be credited.

## The Grass is Always Greener

### Annotated example of a 2-point response for item 4:

- 4 Name **two** needs besides sunlight that Jose and Maria must provide for the grass so that it can grow healthy and tall. Explain why grass needs these things.

Use words, labeled pictures, and/or labeled diagrams in your answer.

<b>First Need:</b>
<b>Water</b>
<b>Why does grass need this?</b>
<b>To bring minerals and to make sure it doesn't dry up.</b>
<b>Second Need:</b>
<b>Soil</b>
<b>Why does grass need this?</b>
<b>To provide mineral and a holding place and to catch more water.</b>

### Annotation:

The response demonstrates that the student understands that living things need constant energy and matter.

The response correctly states “**Water**” and explains “**To bring minerals**” (1 point).

The response correctly states “**Soil**” and explains “**To provide mineral and a holding place and to catch more water**” (1 point).

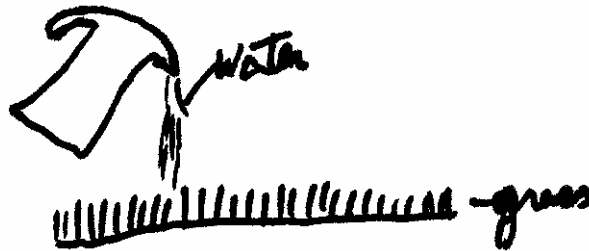
# The Grass is Always Greener

Annotated example of a 1-point response for item 4:

- 4 Name **two** needs besides sunlight that Jose and Maria must provide for the grass so that it can grow healthy and tall. Explain why grass needs these things.

Use words, labeled pictures, and/or labeled diagrams in your answer.

First Need: **Water**



Why does grass need this? **Grass needs water because without water grass would dry out and die so grass needs water to help it grow**

Second Need: **Soil**



Why does grass need this? **Grass needs soil because soil give grass support and nutrients. Without soil grass would not be able to grow.**

## The Grass is Always Greener

**Annotated example of a 1-point response for item 4:** (continued)

**Annotation:**

The response demonstrates that the student partially understands that living things need constant energy and matter.

The response correctly states “**Water**” but the explanation “...because without water grass would dry out and die...” cannot be credited (see rubric Notes #2 and #3) (0 point).

The response correctly states “**Soil**” and explains “...because soil gives grass support and nutrients” (1 point).

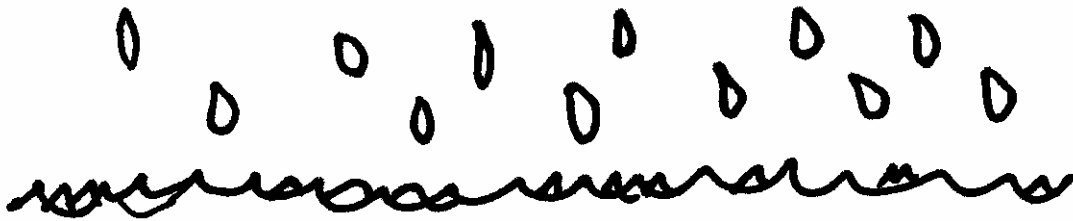
## The Grass is Always Greener

Annotated example of a 0-point response for item 4:

- 4 Name **two** needs besides sunlight that Jose and Maria must provide for the grass so that it can grow healthy and tall. Explain why grass needs these things.

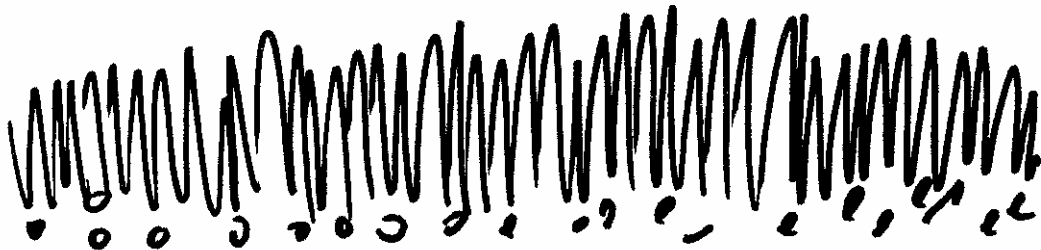
Use words, labeled pictures, and/or labeled diagrams in your answer.

**First Need: This need is water**



**Why does grass need this? It needs water because they need to drink fluids just like humans do to survive**

**Second Need: Food nutrients are another need.**



**Why does grass need this? Grass needs little particles of nutrients because they need food just like humans need food to they can keep up their energy.**

## The Grass is Always Greener

**Annotated example of a 0-point response for item 4:** (continued)

**Annotation:**

The response demonstrates that the student has little to no understanding that living things need constant energy and matter

The response correctly states “**Water**” but the explanation “...to drink fluids just like humans to **survive**” cannot be credited (see rubric Note #5) (0 point).

The response incorrectly states “**Food nutrients**” and reinforces this misconception in the explanation “..because they need food just like humans...” (0 point).



## The Grass is Always Greener

5 (continued)

### Item Information

Score Points: 2

EALR Strand: IN Inquiry in Science

Grade Level Expectation: IN03 2.1.3 Explaining  
Understand how to construct a reasonable explanation using evidence.

Evidence of Learning: a) Given a description of a scientific investigation, items may ask students to identify or write a conclusion that answers the investigative question or explains whether the prediction was correct including supporting data from the investigation (e.g. Grass grows taller with more light. With only 2 hours of light, grass grew 2 centimeters in two weeks but with 6 hours of light, grass grew 8 centimeters.).

### Performance Data

Use the space below to fill in student performance information for your school and district.

Item 5 Score Points	Item 5 Percent Distribution of Score Points		
	School	District	State
0			59.5
1			11.5
2			27.2
NR (No Response)			1.8
Mean			0.7 points

# The Grass is Always Greener

## Scoring Rubric for Item 5

A **2-point response**: The response demonstrates that the student understands how to construct a reasonable explanation using evidence.

The student writes a conclusion explaining that Maria and Jose’s prediction was correct and includes supporting data from the Amount of Light vs. Height of Grass table.

AND The student explains how this data support the conclusion.

Example:

The grass that receives the most light does grow tallest. The grass grown in 12 hours of light grew 12 cm but the grass grown in 2 hours of light only grew 3 cm.

A **1-point response**: The response demonstrates that the student has partial understanding of how to construct a reasonable explanation using evidence.

The student writes a conclusion explaining whether the prediction was correct and includes supporting data but does **not** explain how this data support the conclusion.

OR The student writes a conclusion explaining that the predictions was correct, but includes **incomplete** data and a **vague** explanation of how the data support the conclusion.

A **0-point response**: The response demonstrates that the student has little to no understanding of how to construct a reasonable explanation using evidence.

## Notes:

### What is data?

1. Students should give data for both the changed (amount of light) and measured responding variable (grass height) to be counted as a **data point**.
2. Students must include at least **two data points**, or derived values, that exemplify the trend in the data to be counted as ‘Include data...’
3. Values **derived** from given data may count as ‘Include data...’

### What is complete data?

4. Students must include average (when given) and/or a full range of data, to be complete. Students including all data from 12 hours of light and 2 hours of light (not 6 hours) can be considered complete. Students reporting only trial data or a partial range of data (i.e. data before the end of the investigation) are reporting **incomplete** data.

### What is a serious error?

5. **Misquoting** one or more data points cannot be credited as ‘Include data...’
6. A minor arithmetic error in a calculated value or a misuse of units may be acceptable (e.g. saying the plant grew 13 cm with 12 hrs. of light is okay if the response is consistent).
7. An unacceptable arithmetic error will lose one point

## The Grass is Always Greener

### Annotated example of a 2-point response for item 5:

**5** Write a conclusion that explains whether Maria and Jose’s prediction was correct

In your conclusion, be sure to:

- Include supporting data from the Amount of Light vs. Height of Grass table.
- Explain how this data supports your conclusion.

<b>Predictions: Grass that receives more light will grow taller.</b>
<b>Maria and Jose’s prediction was right because the grass that</b>
<b>had the most light grew the tallest. The grass that had 2 hours</b>
<b>of light grew 1 centimeter a week. The grass that got 6 hours</b>
<b>of light grew 2 centimeters a week. The grass that got 12</b>
<b>hours of light grew 4 centimeters a week. Light is very</b>
<b>important to grasses growth.</b>

### Annotation:

The response demonstrates that the student understands how to construct a reasonable explanation using evidence.

The response states an appropriate conclusion, “Maria and Jose’s prediction was right because grass that had the most light grew the tallest” including supportive data “The grass that got 2 hours of light grew 1 centimeters a week. ... The grass that got 12 hours of light grew 4 cm a week” (1 point).

The derived values given as data (e.g. “... 12 hours of light grew 4 centimeters a week”) is taken as an explanation of how the data supports the conclusion (1 point).

## The Grass is Always Greener

### Annotated example of a 1-point response for item 5:

5 Write a conclusion that explains whether Maria and Jose’s prediction was correct

In your conclusion, be sure to:

- Include supporting data from the Amount of Light vs. Height of Grass table.
- Explain how this data supports your conclusion.

**Predictions: Grass that receives more light will grow taller.**

**They have 3 weeks & each one grew more with more light so they kids were right because they said that when the grass has more light it will grow more & it does. How I know is that in week one I grew 5 for 12 hours & 3 for 6 hours 2 for 2 hours so they were right when you have more light on grass it will grow**

### Annotation:

The response demonstrates that the student has partial understanding of how to construct a reasonable explanation using evidence.

The response states an appropriate conclusion explaining that the predictions was correct “...so they were right because when you said that when the grass has more light it will grow more & it does. How I now that ...” (1 point)

However, the response includes incomplete supporting data “...in week one I grew 5 for 12 hours & 3 for 6 hours 2 for 2 hours” (see rubric Note #4) (0 point).

## The Grass is Always Greener

### Annotated example of a 0-point response for item 5:

**5** Write a conclusion that explains whether Maria and Jose’s prediction was correct

In your conclusion, be sure to:

- Include supporting data from the Amount of Light vs. Height of Grass table.
- Explain how this data supports your conclusion.

**Predictions: Grass that receives more light will grow taller.**

**Their prediction was true because the grass that had 12 hours of light grew the tallest and the grass that had 6 hours of light grew taller than the grass that had 2 hours of light.**

### Annotation:

The response demonstrates that the student has little to no understanding of how to construct a reasonable explanation using evidence.

The response states a conclusion explaining the prediction was correct but does not include any data points (see rubric Note #1). The response states only the changed variable (amount of light) but states tallest without giving the actual height. The response cannot be credited without data points (0 point).

## The Grass is Always Greener

- 6 Jose and Maria noticed three different types of soil, black soil, sand, and clay, were found in their neighborhood. They decided to investigate the question, “How does the type of soil (black soil, sand, and clay) under *grass sod* affect the height of grass?”

Plan an investigation that could answer their new question.

In your plan, be sure to include:

- Prediction of the outcome of the investigation
- Materials needed to do the investigation
- Procedure that includes:
  - logical steps to do the investigation
  - one variable kept the same (controlled)
  - one variable changed (manipulated)
  - any variables being measure and recorded
  - how often measurements are taken and recorded

<b>Question: How does the type of soil (black soil, sand, and clay) under <i>grass sod</i> affect the height of grass?</b>
--

<b>Prediction:</b>

<b>Materials:</b>



## The Grass is Always Greener

**6** (continued)

### Item Information

Score points: 4

EALR Strand: IN Inquiry in Science

Grade Level Expectation: IN02 2.1.2 Planning and Conducting Investigations  
Understand how to plan and conduct simple investigations following all safety rules.

Item Characteristic: e) Given a description of a scientific investigation, items may ask students to make a logical plan for a similar new investigation for a new investigative question with a different changed (manipulated) and/or measured (responding) variable. A logical plan includes step by step instructions clear enough that others could do the investigation.

### Performance Data

Use the space below to fill in student performance information for your school and district.

Item 6 Score Points	Item 6 Percent Distribution of Score Points		
	School	District	State
0			40.3
1			21.5
2			13.2
3			16.9
4			6.5
NR (No Response)			1.6
Mean			1.3 points

# The Grass is Always Greener

## Scoring Rubric for Item 6

### Performance Descriptions:

A **4-point response** demonstrates the student has understanding of how to plan simple investigations following all safety rules by earning 6 to 8 value points.

A **3-point response** demonstrates the student has partial understanding of how to plan simple investigations following all safety rules by earning 4 to 5 value points.

A **2-point response** demonstrates the student has limited understanding of how to plan simple plan simple investigations following all safety rules by earning 3 value points.

A **1-point response** demonstrates the student has very little understanding of how to plan simple investigations following all safety rules by earning 1 to 2 value points.

A **0-point response** demonstrates the student has almost no understanding of how to plan simple investigations following all safety rules by earning 0 value points.

### Scoring Rubric for Awarding Value Points for Investigation Attributes

Investigation Attributes	Description of Attribute	Value Point
<b>Prediction</b>	The prediction must answer the given investigative question including the effect of the changed (manipulated) variable (type of soil) on the measured variable (height that grass grows/amount that grass grows).	1
<b>Materials</b>	A list of the minimum materials needed to perform the procedure must be listed in this section: different soil types: black soil, sand, and clay grass sod trays to hold the soil (if used in student's investigation) measuring device (meter stick) water (if used in student's investigation) beaker (if used in student's investigation)	1

## The Grass is Always Greener

### Scoring Rubric for Item 6 (continued)

#### Scoring Rubric for Awarding Value Points for Investigation Attributes (continued)

Investigation Attributes	Description of Attribute	Value Point
<b>Procedure</b>	The written or diagrammed procedure is evaluated as follows.	up to 6
Variable Kept the Same (controlled)	At least one variable kept the same (controlled) is identified or implied in the procedure or the materials list (i.e. amount of water, amount of sunlight).	1
Changed (manipulated) Variable	Only one variable is changed (type of soil) in the procedure or data table (if given).	1
Measured Variable	The procedure, or data table (if given), indicates that the height or amount of the grass is measured.	1
Record Measurements	The procedure states or implies measurements are recorded periodically or gives a data table. If artificial data for the responding variable is given, no value point may be awarded. The phrase 'take measurement' cannot be used to mean record.	1
Trials are Repeated	More than one trial is planned, or implied in a data table, to measure a variable responding to the changed variable.	1
Logical Steps	The steps of the procedure are detailed enough to repeat the procedure effectively.	1
<b>Total Value Points Possible</b>		<b>8</b>

# The Grass is Always Greener

## Scoring Rubric for Item 6 (continued)

### Scoring Rubric for Awarding Value Points for Investigation Attributes (continued)

Notes:

1. If the response does not plan an appropriate procedure for this investigative question, the response cannot earn any of the eight possible procedure value points (e.g. the response repeats the procedure from the scenario).
2. If there is no changed variable present, no points shall be awarded for either variable kept the same or changed.
3. If the response simply names the bulleted attributes listed after “Procedure that includes:” without writing a procedure, no procedure points may be awarded.
4. The ‘right’ amount of ingredients (i.e. ‘x’ mL or ‘y’ grams) needed to carry out the procedure does not need to be given in the material list.
5. Vague materials used in the procedure (i.e. 1mL) may be credited if the vagueness is clarified in the materials list (i.e. 1mL of insecticide)
6. If pre-measured amounts of materials are listed in the materials list, a measuring device may not be needed in the materials list.
7. Measuring a vague parameter (e.g. size of grass instead of height) may be credited as a responding variable but is too vague to repeat, so no point can be awarded for ‘logical steps.’
8. The word “repeat” at the end of a step, refers to that step only. If “repeat” is listed as a separate step or in a new paragraph, it refers to go back to the beginning.

## The Grass is Always Greener

### Performance Data for Item 6 Investigation Attributes

Use the space below to fill in student performance information for your school and district.

Item 6 Value Point Investigation Attributes	Item 6 Percent Distribution of Value Points		
	School	District	State
Prediction			14.5
Materials			20.0
Variable Kept the Same (controlled)			42.6
Changed (manipulated) Variable			48.1
Measured (responding) Variable			20.6
Record Measurements			32.2
Trials are Repeated			2.1
Logical Steps			8.2

## The Grass is Always Greener

### Annotated example of a 4-point response for item 6:

- 6 Jose and Maria noticed three different types of soil, black soil, sand, and clay, were found in their neighborhood. They decided to investigate the question, “How does the type of soil (black soil, sand, and clay) under *grass sod* affect the height of grass?”

Plan an investigation that could answer their new question.

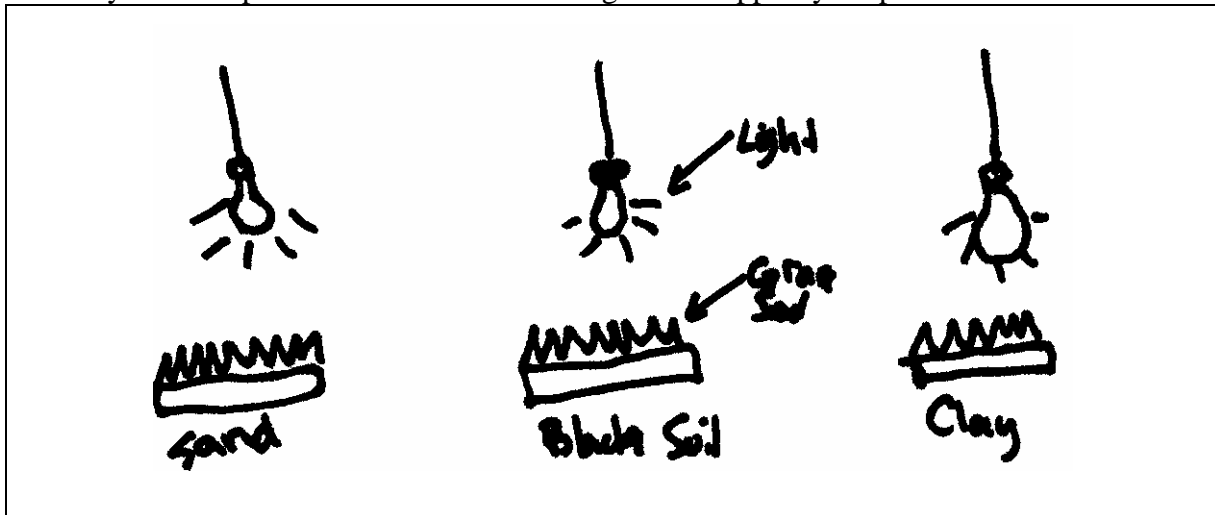
In your plan, be sure to include:

- Prediction of the outcome of the investigation
- Materials needed to do the investigation
- Procedure that includes:
  - logical steps to do the investigation
  - one variable kept the same (controlled)
  - one variable changed (manipulated)
  - any variables being measure and recorded
  - how often measurements are taken and recorded

<b>Question: How does the type of soil (black soil, sand, and clay) under <i>grass sod</i> affect the height of grass?</b>
<b>Prediction:</b>
<b>Clay is probably the best soil because it provides more nutriens for the grass to grow taller and healthier</b>
<b>Materials:</b>
<b>grass sod cut into 3 equal pieces with a difference type of soil in each one, meter stick, water, 200mL beaker, 3 trays the same size and 3 lights.</b>

# The Grass is Always Greener

You may use the space below for a labeled diagram to support your procedure.



## Procedure:

1. Put a different type of soil in each tray.
2. Set the 3 pieces of grass sod into the 3 trays and put the trays in a dark place with 3 lights as the diagram above.
3. Water each tray with 200mL of water every 4 days.
4. At the end of each week for 3 weeks, measure the average height of the grass and record the measurements in a data table.


## The Grass is Always Greener

### Annotation for the 4-point response for item 6:

The response demonstrates the student has understanding of how to plan simple investigations following all safety rules by earning 7 value points for 4 score points.

Investigation Attributes	Value Point	Annotation
Prediction	1	The response provides a prediction that includes the manipulated and responding variables. “Clay ...grass to grow taller...”
Materials	0	Clay, sand, and black soil are not listed. “different type of soil” is not specific enough.
Variable Kept the Same (controlled)	1	“Water each tray with 200mL of water every 4 days.”
Changed (manipulated) Variable	1	“Put a different type of soil in each tray.”
Measured (responding) Variable	1	“..., measure the average height of the grass...”
Record Measurements	1	“... record measurements in a data table.”
Trials are Repeated	0	No repeated trials are included in the procedure.
Logical Steps	1	The steps of the procedure are detailed enough to repeat the procedure effectively.
<b>Total</b>	7 Value Points for <b>4</b> Score Points	

## The Grass is Always Greener

### Annotated example of a 3-point response for item 6:

- 6 Jose and Maria noticed three different types of soil, black soil, sand, and clay, were found in their neighborhood. They decided to investigate the question, “How does the type of soil (black soil, sand, and clay) under *grass sod* affect the height of grass?”

Plan an investigation that could answer their new question.

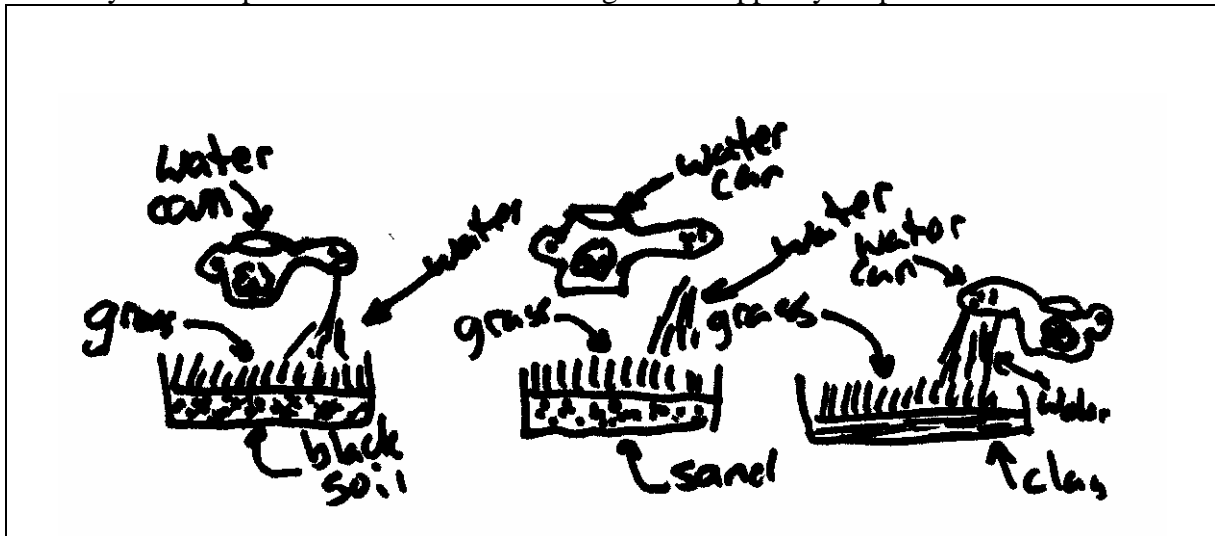
In your plan, be sure to include:

- Prediction of the outcome of the investigation
- Materials needed to do the investigation
- Procedure that includes:
  - logical steps to do the investigation
  - one variable kept the same (controlled)
  - one variable changed (manipulated)
  - any variables being measure and recorded
  - how often measurements are taken and recorded

<b>Question: How does the type of soil (black soil, sand, and clay) under <i>grass sod</i> affect the height of grass?</b>
<b>Prediction:</b>
<b>I predict that the regular soil will still more the grass taller than the other soils.</b>
<b>Materials:</b>
<b>grass sod cut into 3 equals slices</b>
<b>water</b>
<b>3 trays - same size</b>
<b>3 different kinds of soil - black soil, sand, clay</b>

# The Grass is Always Greener

You may use the space below for a labeled diagram to support your procedure.



Procedure:

1. put soil, sand, and clay in each tray.
2. lay down grass sod
3. water each tray of grass about 1 time every 4 days
4. record data for each of three weeks
5. at the end of week three, answer your prediction


## The Grass is Always Greener

### Annotation for the 3-point response for item 6:

This response demonstrates the student has partial understanding of how to plan simple investigations following all safety rules by earning 4 value points for 3 score points.

Investigation Attributes	Value Point	Annotation
Prediction	1	“regular soil...make the grass grow taller than the other soils.”
Materials	0	There is no measuring device.
Variable Kept the Same (controlled)	1	“water each tray of grass about 1 time every 4 days”
Changed (manipulated) Variable	1	“put soil, sand, and clay in each tray” (Picture shows three trays filled with different materials.)
Measured (responding) Variable	0	“data” does not explain what is being measured.
Record Measurements	1	“record data for each of three weeks.”
Trials are Repeated	0	No repeated trials are included in the procedure.
Logical Steps	0	The steps of the procedure are not detailed enough to repeat the procedure effectively.
<b>Total</b>	4 Value Points for <b>3</b> Score Points	

## The Grass is Always Greener

### Annotated example of a 2-point response for item 6:

- 6 Jose and Maria noticed three different types of soil, black soil, sand, and clay, were found in their neighborhood. They decided to investigate the question, “How does the type of soil (black soil, sand, and clay) under *grass sod* affect the height of grass?”

Plan an investigation that could answer their new question.

In your plan, be sure to include:

- Prediction of the outcome of the investigation
- Materials needed to do the investigation
- Procedure that includes:
  - logical steps to do the investigation
  - one variable kept the same (controlled)
  - one variable changed (manipulated)
  - any variables being measure and recorded
  - how often measurements are taken and recorded

<b>Question: How does the type of soil (black soil, sand, and clay) under <i>grass sod</i> affect the height of grass?</b>
--

<b>Prediction:</b>
--------------------

<b>The type of soil effects the growth of the grass because if you tried to grow the grass in sand or clay it wouldn't work.</b>
--

<b>Materials:</b>
-------------------

<b>You will need sand, black soil, clay, 3 Large trays (same size). need water / light (optional) grass connected to the roots.</b>
---

## The Grass is Always Greener

You may use the space below for a labeled diagram to support your procedure.

Soils	how many cm grown
Sand	0 cm
clay	0 cm
Black soil	30 cm

### Procedure:

Get the 3 trays place sand in one Black soil in one and clay in one. place some grass (same size) still connected to the roots in each tray. place a light over each tray and water when you think is needed. leave the grass in the different soils with light and water for 3 weeks then see if the experiment turned out how you predicted.

## The Grass is Always Greener

### Annotation for the 2-point response for item 6:

This response demonstrates the student has limited understanding of how to plan simple plan simple investigations following all safety rules by earning 3 value points for 2 score points.

Investigation Attributes	Value Point	Annotation
Prediction	0	The responding variable is too vague “ <b>tried to grow the grass</b> ”, and there is no one manipulated variable - “ <b>sand or clay</b> ”.
Materials	0	Measuring device is missing.
Variable Kept the Same (controlled)	1	“ <b>place some grass (same size)</b> ”
Changed (manipulated) Variable	1	“... <b>place sand in one Black Soil in one and clay in one.</b> ”
Measured (responding) Variable	1	“ <b>how many cm grown</b> ” (This is written on the data table at the top of the page.)
Record Measurements	0	Artificial data is given in the table so no recorded measurements value point can be awarded.
Trials are Repeated	0	No repeated trials are included in the procedure.
Logical Steps	0	The steps of the procedure, “... <b>water when you think is needed</b> ”, are too vague to repeat the procedure effectively
<b>Total</b>	3 Value Points for <b>2</b> Score Points	

# The Grass is Always Greener

## Annotated example of a 1-point response for item 6:

- 6 Jose and Maria noticed three different types of soil, black soil, sand, and clay, were found in their neighborhood. They decided to investigate the question, “How does the type of soil (black soil, sand, and clay) under *grass sod* affect the height of grass?”

Plan an investigation that could answer their new question.

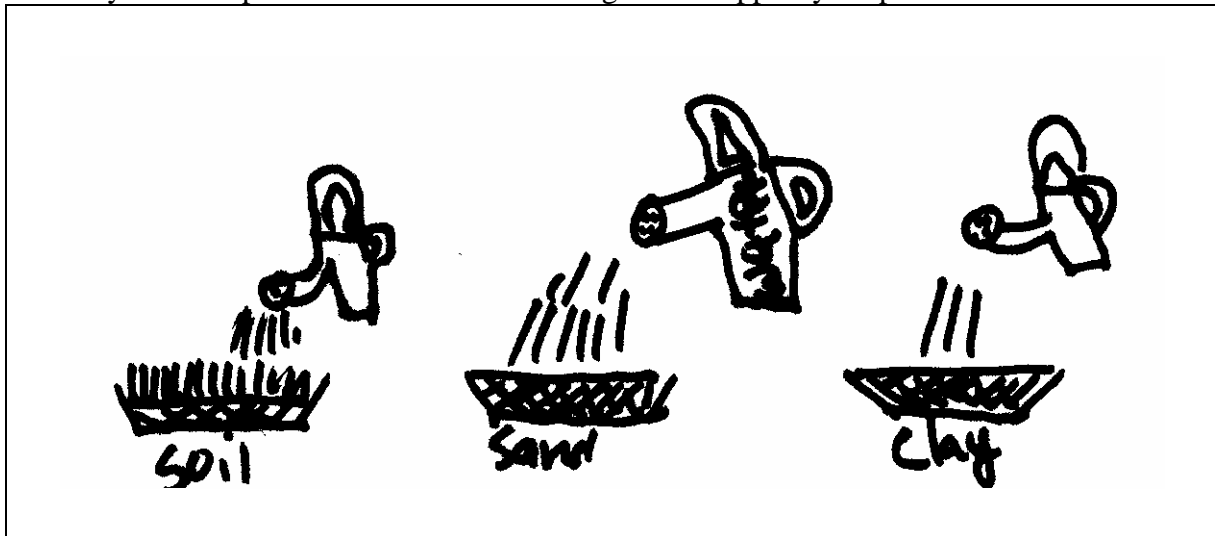
In your plan, be sure to include:

- Prediction of the outcome of the investigation
- Materials needed to do the investigation
- Procedure that includes:
  - logical steps to do the investigation
  - one variable kept the same (controlled)
  - one variable changed (manipulated)
  - any variables being measure and recorded
  - how often measurements are taken and recorded

<b>Question: How does the type of soil (black soil, sand, and clay) under <i>grass sod</i> affect the height of grass?</b>
<b>Prediction:</b>
<b>The grass it has roots so soil makes it so when you water it the roots can suck up the water.</b>
<b>Materials:</b>
<b>soil, sand, clay</b>
<b>water</b>
<b>Grass Sod</b>
<b>3 time trays (for the Grass Sod)</b>

# The Grass is Always Greener

You may use the space below for a labeled diagram to support your procedure.



Procedure:

You get 3 tin trays or plant pots the same size. Then you put soil in 1 tray in the 2<sup>nd</sup> and clay in the 3<sup>rd</sup>. Water them and see which one grows the best. I just predicted which one grew the best and which one grew didn't grow that well. Above I thought soil was best sand was second and clay third. I picked soil for first because water asorbes faster and same with sand. With clay I thought it would take a while.

## The Grass is Always Greener

### Annotation for the 1-point response for item 6:

This response demonstrates the student has very little understanding of how to plan simple investigations following all safety rules by earning 2 value points fro 1 score point.

Investigation Attributes	Value Point	Annotation
Prediction	0	The prediction does not answer the question asked.
Materials	0	Measuring device is missing.
Variable Kept the Same (controlled)	1	"...3 tin trays or plant pots the same size."
Changed (manipulated) Variable	1	"...soil in 1 tray sand in the 2 <sup>nd</sup> and clay in 3 <sup>rd</sup> ."
Measured (responding) Variable	0	"...see which one grows the best" is too vague.
Record Measurements	0	Measurements are not recorded.
Trials are Repeated	0	No repeated trials are included in the procedure.
Logical Steps	0	The steps of the procedure are too vague to repeat the procedure effectively (Amount of water used, how often watered, duration of experiment are all unknown).
<b>Total</b>	2 Value Points for <b>1</b> Score Point	

## The Grass is Always Greener

### Annotated example of a 0-point response for item 5:

- 6 Jose and maria noticed three different types of soil, black soil, sand, and clay, were found in their neighborhood. They decided to in vestigate the question, “How does the type of soil (black soil, sand, and clay) under *grass sod* affect the height of grass?”

Plan an investigation that could answer their new question.

In your plan, be sure to include:

- Prediction of the outcome of the investigation
- Materials needed to do the investigation
- Procedure that includes:
  - logical steps to do the investigation
  - one variable kept the same (controlled)
  - one variable changed (manipulated)
  - any variables being measure and recorded
  - how often measurements are taken and recorded

<b>Question: How does the type of soil (black soil, sand, and clay) under <i>grass sod</i> affect the height of grass?</b>

<b>Prediction: Brown soil will grow better because it is richer soil.</b>

<b>Materials: Grass, Trays and lighte bulbs. Clay. Dar soil, brown soil.</b>



## The Grass is Always Greener

### Annotation for the 0-point response for item 6:

This response demonstrates the student has almost no understanding of how to plan simple investigations following all safety rules by earning 0 value points for 0 score points.

Investigation Attributes	Value Point	Annotation
Prediction	0	"grow better" is too vague as the measured variable.
Materials	0	The materials list is not complete. Water and beakers are not used in the procedure and so do not need to be included. However, the measuring device is missing.
The response is another prediction, not a procedure. No procedure points can be awarded.		
Variable Kept the Same (controlled)		
Changed (manipulated) Variable		
Measured (responding) Variable		
Record Measurements		
Trials are Repeated		
Logical Steps		
<b>Total</b>	0 Value Points for <b>0</b> Score Points	

# Olympic Rainforest Summary

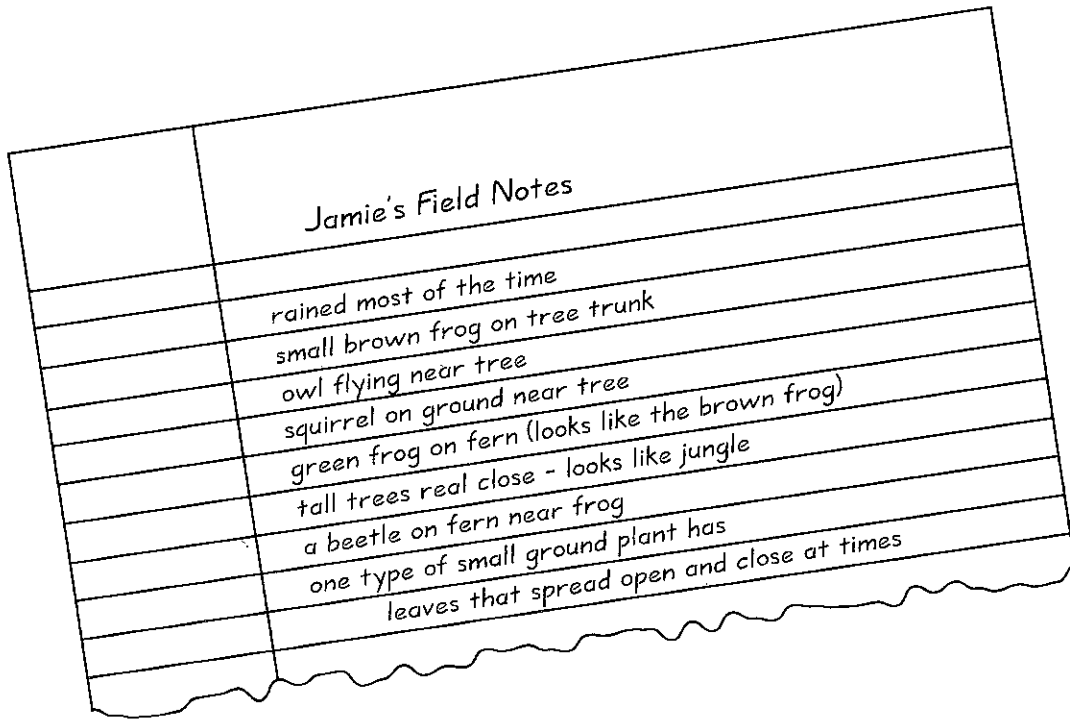
## Scenario Summary

<b>Title:</b> Olympic Rainforest						<b>Grade:</b> 5				
<b>Description:</b> On a field trip, a student keeps a journal and diagrams a partial food web for the Olympic Rainforest.										
Item Descriptor		EALR Strand, Learning Target, and Item Characteristic				Item Type				
		Properties of Systems	Structure of Systems	Changes in Systems	Inquiry in Science	Designing Solutions	Multiple Choice	Short Answer	Extended Response	Cognitive Level
7	Understand that living things need constant energy and matter by identifying the Sun as the source of energy in an ecosystem.			CH08 1.3.8 a			C			I
8	Understand how an organism's ability to survive is influenced by its behavior and its ecosystem by identifying the role of an organism in a food chain.			CH10 1.3.10 b			C			I
9	Understand how an organism's ability to survive is influenced by its behavior and its ecosystem by describing how an animal's characteristics increase its likelihood of survival.			CH10 1.3.10 a				SA		II
10	Understand how humans depend on the natural environment and can cause changes in their environment that affect their ability to survive.					DE07 3.2.4 c		SA		II
<b>Total</b>						<b>3</b>	<b>2</b>	<b>0</b>	I:2pt II:4pts	
Ideal Totals						3-6	1-2	0-1	I: 33% II:67%	

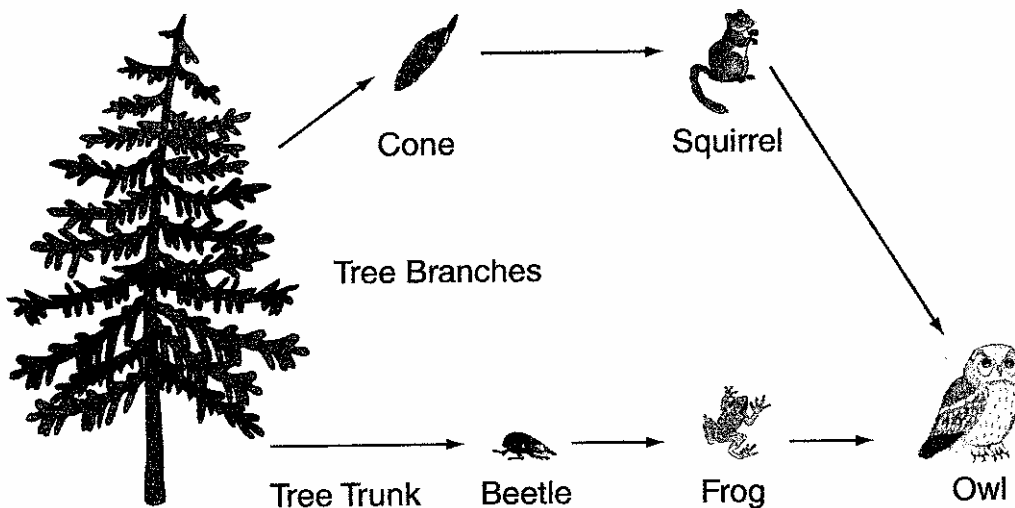
# The Olympic Rainforest

**Directions:** Use the following information to answer numbers 7 through 11.

On a field trip through the Olympic Rainforest, Jamie wrote down everything she saw in her field journal. Here are Jamie's notes:



Jamie made the following partial food web for the Olympic Rainforest.



## The Olympic Rainforest

7 Where does the energy to support the life in the Olympic Rainforest come from?

- A. The insects
- B. The trees
- C. The Sun

Item information

Correct Response: C

EALR Strand: CH Changes in Systems

Grade Level Expectation: CH08 1.3.8: Life Processes and the Flow of Matter and Energy  
Understand that living things need constant energy and matter.

Evidence of Learning: a) Given an adequate description of an appropriate system, items may ask students to identify or describe the sources of energy and matter used by plants and animals to grow and sustain life (e.g. air, water, light, food, nutrients).

Performance Data

Use the space below to fill in student performance information for your school and district.

Item 7 Responses * correct response	Item 7 Percent Distribution of Responses		
	School	District	State
A			6.5
B			63.2
*C			29.3
NR (No Response)			1.0

## The Olympic Rainforest

**8** How does the tree in Jamie’s diagram help this ecosystem?

- o **A.** By removing oxygen from the air.
- o **B.** By releasing water into the ground
- o **C.** By giving shelter and food to animals

Item information

Correct Response:           C

EALR Strand:                CH Changes in Systems

Grade Level Expectation: CH10 1.3.10: Interdependence of Life  
 Understand that an organism’s ability to survive is influenced by the organism’s behavior and by the ecosystem in which it lives.

Evidence of Learning:    b) Identify or describe the role of an organism in a food chain of an ecosystem (i.e. predator, prey, consumer, producer, decomposer, scavenger).

Performance Data

Use the space below to fill in student performance information for your school and district.

<b>Item 8 Responses</b> * correct response	<b>Item 8 Percent Distribution of Responses</b>		
	School	District	State
A			6.4
B			5.0
*C			87.6
NR (No Response)			1.1

## The Olympic Rainforest

- 9 The frog Jamie saw during her field trip was the Pacific Tree Frog. This frog is able to change its color from brown to green as she observed.

Explain how this color change would help the frog survive longer.

In your explanation, be sure to:

- Describe how changing color would help the frog get more food.
- Describe how changing color would help the frog get away from its predators.

Use words, labeled diagrams, and/or labeled pictures in your answer.


# The Olympic Rainforest

**9** (continued)

Item information

Score Points: 2

EALR Strand: CH Changes in Systems

Grade Level Expectation: CH10 1.3.10 Interdependence of Life  
 Understand that an organism’s ability to survive is influenced by the organism’s behavior and by the ecosystem in which it lives.

Evidence of Learning: a) Given an adequate description of an ecosystem, items may ask students to identify or describe the characteristics of organisms that allow them to survive in an ecosystem.

Performance Data

Use the space below to fill in student performance information for your school and district.

Item 9 Score Points	Item 9 Percent Distribution of Score Points		
	School	District	State
0			30.0
1			31.7
2			36.5
NR (No Response)			1.1
Mean			1.1 points

# The Olympic Rainforest

## Scoring Rubric for item number 9:

**A 2-point response:** The response demonstrates that the student understands that an organism's ability to survive is influenced by the organism's behavior and by the ecosystem in which it lives.

The student explains how the color changes in the Pacific Tree frog help the frog survive longer. In the explanation, the student describes how changing colors would help the frog get more food.

AND

The student describes how changing colors would help the frog get away from its predators.

Example:

The frog can get more food because it blends in with its environment and its prey cannot see the frog as well. The frog can get away from the frogs' predators as the predator cannot see the frog as well.

**A 1-point response:** The response demonstrates that the student has partial understanding that an organism's ability to survive is influenced by the organism's behavior and by the ecosystem in which it lives.

The student explains how the color changes in the Pacific Tree frog help the frog survive longer. In the explanation, the student describes how changing colors would help the frog get more food.

OR

The student describes how changing colors would help the frog get away from the frogs predators.

**A 0-point response:** The response demonstrates that the student has little to no understanding that an organism's ability to survive is influenced by the organism's behavior and by the ecosystem in which it lives.

## Notes:

1. The response needs to use the concept of hiding, blending in, or being invisible in relation to predators/prey.
2. The misconception that a frog changes color as response to the presence of a predator or prey will reduce the score by one point.

## The Olympic Rainforest

### Annotated example of a 2-point response for item 9:

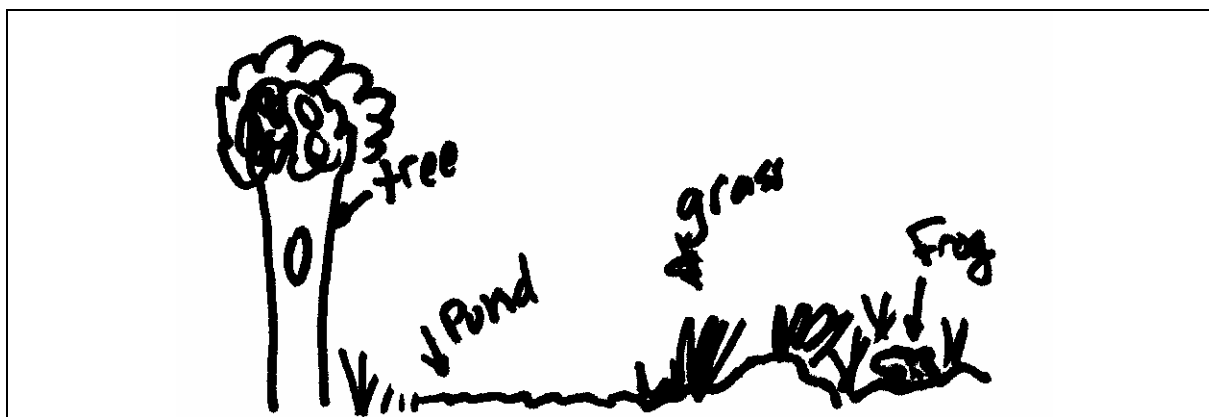
- 9 The frog Jamie saw during her field trip was the Pacific Tree Frog. This frog is able to change its color from brown to green as she observed.

Explain how this color change would help the frog survive longer.

In your explanation, be sure to:

- Describe how changing color would help the frog get more food.
- Describe how changing color would help the frog get away from its predators.

Use words, labeled diagrams, and/or labeled pictures in your answer.



Color would help the frog get food and stay away form its predators becaus brown and green will blend in with the dirt, . trees and grass so its predators will not see the frog and things that it eats will not see him.

#### Annotation:

The response demonstrates that the student understands that an organism's ability to survive is influenced by the organism's behavior and by the ecosystem in which it lives.

The response gives a correct description of how changing color would help the frog get more food, "becaus brown and green will blend in with the dirt, trees and grass so its predators will not see the frog" (1 point)

The response gives a correct description of how changing color would help the frog get away from its predators, "...things that it eats will not see him."

Note: Using the 'It' Rule, all 3 of the 'its' in the response are replaced with 'the frog' and the response still makes sense.

## The Olympic Rainforest

### Annotated example of a 1-point response for item 9:

- 9 The frog Jamie saw during her field trip was the Pacific Tree Frog. This frog is able to change its color from brown to green as she observed.

Explain how this color change would help the frog survive longer.

In your explanation, be sure to:

- Describe how changing color would help the frog get more food.
- Describe how changing color would help the frog get away from its predators.

Use words, labeled diagrams, and/or labeled pictures in your answer.

<b>When the frog is on a fern it will chang its color to green so it</b>
<b>can blend in and when the bug comes to close, the frog will eat</b>
<b>the bug. When the frog is on a tree and it sees an owl it will</b>
<b>turn brown to blend in and not become a meal.</b>

#### Annotation:

The response demonstrates that the student partially understands that an organism's ability to survive is influenced by the organism's behavior and by the ecosystem in which it lives.

The response gives a correct description of how changing color would help the frog get more food, "...so it can blend in and when the bug comes to close, the frog will eat the bug." (1 point)

The response gives a correct description of how changing color would help the frog get away from its predators, "...it will turn brown to blend in and not become a meal." However, the misconception that the frog changes color in response to a predator is a minus point (see rubric Note #2) (0 point).

# The Olympic Rainforest

## Annotated example of a 0-point response for item 9:

- 9 The frog Jamie saw during her field trip was the Pacific Tree Frog. This frog is able to change its color from brown to green as she observed.

Explain how this color change would help the frog survive longer.

In your explanation, be sure to:

- Describe how changing color would help the frog get more food.
- Describe how changing color would help the frog get away from its predators.

Use words, labeled diagrams, and/or labeled pictures in your answer.

**It probly helps the frog so that other animals cant hert it.**

### Annotation:

The response demonstrates that the student has little to no understanding that an organism's ability to survive is influenced by the organism's behavior and by the ecosystem in which it lives.

Using the 'It' Rule, the first "It..." can translated for the prompt to mean 'changing colors.' However the second "...it" must be read as "changing colors" so the response makes no sense (0 points).

# The Olympic Rainforest

10 During Jamie's field trip to the rainforest, she saw this sign:



- Predict how walking off the marked trail might harm the ecosystem.
- Explain how this harm would change the ecosystem.

Use words, labeled diagrams, and/or labeled pictures in your answer.


# The Olympic Rainforest

**10** (continued)

Item information

Score Points: 2

EALR Strand: DE Designing Solutions to Human Problems

Grade Level Expectation: DE07 3.2.4: Environmental and Resource Issues  
 Understand how humans depend on the natural environment and can cause changes in their environment that affect their ability to survive.

Evidence of Learning: c) Given an adequate description of an ecosystem, items may ask students to identify or describe the effects of humans on the health of an ecosystem.

Performance Data

Use the space below to fill in student performance information for your school and district.

Item 10 Score Points	Item 10 Percent Distribution of Score Points		
	School	District	State
0			41.3
1			42.7
2			13.7
NR (No Response)			2.3
Mean			0.7 points

# The Olympic Rainforest

## Scoring Rubric for item number 10:

A **2-point response:** The response demonstrates that the student understands how humans depend on the natural environment and can cause changes in their environment that affect their ability to survive.

The student predicts how walking off the marked trail might harm the ecosystem.

AND

The student explains how this harm would change the ecosystem.

Examples:

1. Walking off the trail might destroy some plants. This means that whatever used those plants for food would not have as much food as before.
2. If people continue to walk off of the trail, they may destroy some animal home. This would cause animal to have to make or find another home and in the animal might die.
3. Walking off the trail might cause the animals to move away. Other animals might not survive if they ate the animal that moved away.
4. As people walk off the trail, they would walk on the plants growing along the edge of the trail. If those plants die, water could wash away the trail because the plants roots hold the soil.

A **1-point response:** The response demonstrates that the student has partial understanding of how humans depend on the natural environment and can cause changes in their environment that affect their ability to survive.

The student predicts how walking off the marked trail might harm the ecosystem but does not explain how the harm would change the ecosystem

A **0-point response:** The response demonstrates that the student has little to no understanding of how humans depend on the natural environment and can cause changes in their environment that affect their ability to survive.

# The Olympic Rainforest

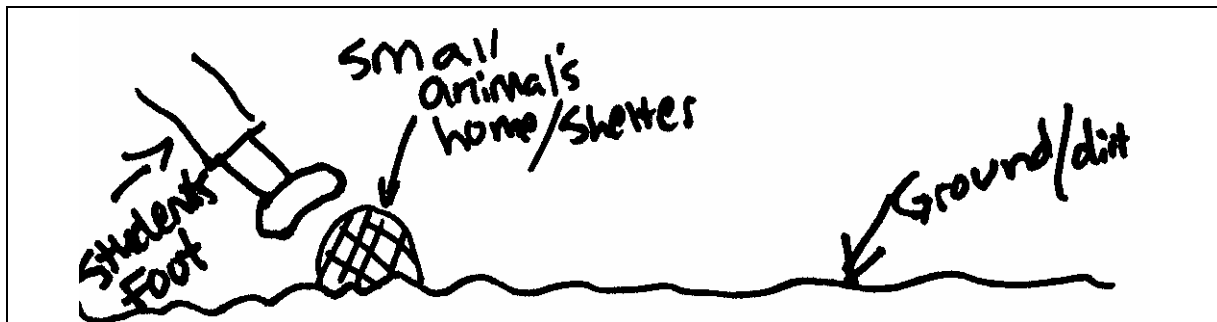
Annotated example of a 2-point response for item 10:

10 During Jamie's field trip to the rainforest, she saw this sign:



- Predict how walking off the marked trail might harm the ecosystem.
- Explain how this harm would change the ecosystem.

Use words, labeled diagrams, and/or labeled pictures in your answer.



By going off the marked trails, the students could step on small animals. This could harm the ecosystem because if the animals who get killed are food for others, they won't be there, then that animal doesn't get food, and eventually it will die.

## The Olympic Rainforest

### Annotation of the 2-point response for item 10:

The response demonstrates that the student understands how humans depend on the natural environment and can cause changes in their environment that affect their ability to survive.

The response gives a correct prediction of how walking off the marked trail might harm the ecosystem, "...the students could step on small animals shelters, or kill small animals" (1 point).

The response gives an explanation of how this harm would change the ecosystem, "...if the animals who get killed are food for others, they won't be there, then that animal doesn't get food, and eventually it will die" (1 point).

## The Olympic Rainforest

Annotated example of a 1-point response for item 10:

10 During Jamie's field trip to the rainforest, she saw this sign:



- Predict how walking off the marked trail might harm the ecosystem.
- Explain how this harm would change the ecosystem.

Use words, labeled diagrams, and/or labeled pictures in your answer.

<b>If people just waltzed around wherever they pleased they would</b>
<b>destroy certain special plants. Special, like important to the</b>
<b>ecosystem. If one part is missing, nothing will work.</b>

**Annotation of the 1-point response for item 10:**

The response demonstrates that the student partially understands how humans depend on the natural environment and can cause changes in their environment that affect their ability to survive.

The response gives a correct prediction of how walking off the marked trail might harm the ecosystem, "...they would destroy certain special plants" (1 point).

The explanation of how this harm would change the ecosystem is too vague to credit, "If one part is missing nothing will work" (0 point).

## The Olympic Rainforest

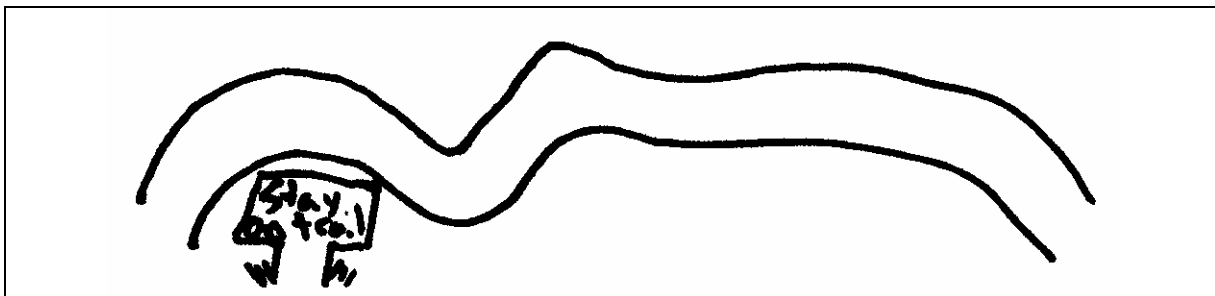
Annotated example of a 0-point response for item 10:

10 During Jamie's field trip to the rainforest, she saw this sign:



- Predict how walking off the marked trail might harm the ecosystem.
- Explain how this harm would change the ecosystem.

Use words, labeled diagrams, and/or labeled pictures in your answer.



**It might harm the ecosystem because if someone walked off the they could easily step on something and kill it.**

The response demonstrates that the student has little to no understanding of how humans depend on the natural environment and can cause changes in their environment that affect their ability to survive.

The prediction of how walking off the marked trail might harm the ecosystem is too vague to credit, "...if someone walked off the they could easily step on something and kill it" (0 point).

The response does not give an explanation of how this harm would change the ecosystem (0 point).