Salmonberry Habitats

Directions: Use the following information to answer questions 11 through 19.

Greta and Scott did a field study with a park ranger to learn where black bears find salmonberries to eat in the forests of Washington. They did the following field study.

Field Study Question: How does the number of salmonberry plants change among different habitats?

Salmonberry Habitats Field Study

Forest

Stream Bank

Forest Edge

Key:

Flag

30-meter rope
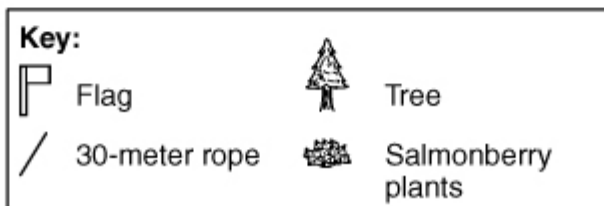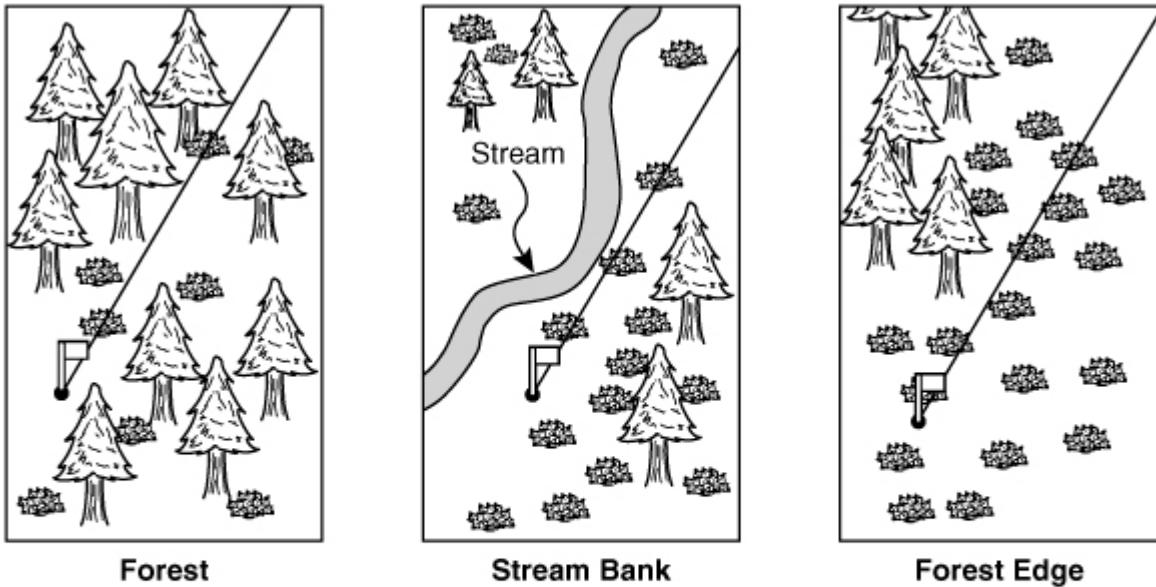
Tree

Salmonberry plants

Diagram not to scale

Procedure:
1. Go to the forest habitat. Record the location, date, and time.
2. Choose three different locations in the forest habitat. Mark each location with a flag and attach a 30-meter rope. Label the flags as Location 1, Location 2, and Location 3.
3. Using a compass, walk 30 meters north from Location 1. Mark the line walked with the rope.
4. Count the number of salmonberry plants that touch the 30-meter rope and record as Location 1.
5. Repeat steps 3 and 4 for Locations 2 and 3 for the forest habitat.
6. Repeat steps 1 through 5 for the stream bank and forest edge habitats.
7. Calculate and record the average number of salmonberry plants for each habitat.

Data Collected:
Location: Forest, stream bank, and forest edge habitat
Date and Time: May 1, 2, and 3, 1:00 P.M.

Habitat vs. Number of Salmonberry Plants

Habitat	Number of Salmonberry Plants (on a 30-meter rope)			
	Location 1	Location 2	Location 3	Average
Forest	7	3	8	6
Stream bank	19	17	21	19
Forest edge	23	22	27	24

14 Write a conclusion for this field study.

In your conclusion, be sure to:
- Answer the field study question.
- Include **supporting** data from the Habitat vs. Number of Salmonberry Plants table.
- Explain how these data **support** your conclusion.

Question: How does the number of salmonberry plants change among different habitats?

Conclusion:

Scoring Rubric for Item 10: Hot Lamp New Procedure (page 1 of 2)

Performance Description	Attributes	2012 results: Mean= 0.69pts
A **2-point response** demonstrates the student understands the Content Standard INQB: Different kinds of questions suggest different kinds of scientific investigations. Item Specification 1: Describe a plan for a controlled experiment.	5–6	38%
A **1-point response** demonstrates the student has partial understanding of the Content Standard.	3–4	10%
A **0-point response** demonstrates the student has little or no understanding of the Content Standard.	0–2	48%
		4% blank

Attributes of a Procedure

Procedure Attributes	Description of Attribute	Attributes	2012 results:
One Controlled Variable	At least one controlled variable is identified or implied (e.g., *same jar, same lid, same heat source*).	1	48%
Manipulated Variable	Only one manipulated variable (amount of water) is identified or implied in the procedure or data table (if given).	1	47%
Responding Variable	The responding variable (time to heat to 50º C) is identified or implied in the procedure or data table (if given).	1	43%
Record Measurements	The procedure states or implies measurements are recorded periodically or gives a data table. Attribute Notes: 1. If artificial data for the responding variable is given, this attribute may not be awarded. 2. The phrase *take measurement* cannot be used to mean *record*.	1	45%
Trials are Repeated	More than one trial for all conditions is planned, or implied in a data table, to measure the responding variable.	1	35%
Logical Steps	The steps of the procedure are detailed enough to repeat the procedure effectively (examples of illogical steps: no ending time indicated, recording vague data or results).	1	35%
Total Possible Attributes		6	

Scoring Rubric for Item 14 Salmonberry Habitats Conclusion (page 1 of 3)

Performance Description	Attributes	Typical results: Mean= ~1.1 pts
A **2-point response** demonstrates the student understands the Content Standard INQF: It is important to distinguish between the results of a particular investigation and general conclusions drawn from these results. Item Specification 1: Generate a scientific conclusion using inferential logic and including supporting data given a description of and the results from a scientific investigation. Example: *The number of salmonberry plants was greatest in the forest edge habitat. There were 24 salmonberry plants in the forest edge habitat and an average of 6 salmonberry plants in the forest habitat. There was an average of 18 more salmonberry plants in the forest edge habitat than in the forest habitat.*	3-4	~49%
A **1-point response** demonstrates the student has partial understanding of the Content Standard.	2	~10%
A **0-point response** demonstrates the student has little or no understanding of the Content Standard.	0–1	~37% 4% blank

Habitat vs. Number of Salmonberry Plants

Habitat	Number of Salmonberry Plants (on a 30-meter rope)			
	Location 1	Location 2	Location 3	Average
Forest	7	3	8	6
Stream bank	19	17	21	19
Forest edge	23	22	27	24

Scoring Rubric for Item 14 Salmonberry Habitats Conclusion (page 2 of 3)

Attributes of a Conclusion Note: The italicized print is the part of the "Example" credited for the attribute.		
Description	**Attributes**	**Typical results**
Conclusive statement correctly answers the experimental question (or correctly states whether the hypothesis/prediction was correct): *The number of salmonberry plants was greatest in the forest edge habitat.* Attribute Notes: 1. A vague conclusive statement (e.g., *the habitat type did affect the number of salmonberry plants*) cannot be credited for this attribute, but other attributes can be credited. 2. A response with an incorrect conclusive statement or no conclusive statement may not be credited any attributes. 3. A response with both a correct and an incorrect conclusive statement (e.g., *The number of salmonberry plants was greatest in the forest edge habitat … The number of salmonberry plants was highest in the stream bank habitat)* cannot be credited for this attribute but other attributes can be credited, if separate from any contradictory statements.	1	~61%
Supporting data should <u>at least</u> be over the entire range of the conditions investigated. Thus the minimum reported data are the lowest and highest conditions of the manipulated variable for quantitative data (responding variable when the manipulated variable information is descriptive).		
Supporting data for the forest habitat: *...and an average of 6 salmonberry plants in the forest habitat.*	1	~55%
Supporting data for the forest edge habitat: *There were 24 salmonberry plants in the forest edge habitat ...*	1	~55%
Explanatory language, separate from the conclusive statement, is used to connect or compare the supporting data to the conclusive statement: *There was an average of 18 more salmonberry plants in the forest edge habitat than in the forest habitat.* Attribute Notes: 1. This attribute can only be credited when at least one numeric value (or the text from a descriptive data table) for the manipulated or responding variable is included in the response. 2. A copy of the conclusive statement cannot be credited for explanatory language. However, a re-phrased credited conclusive statement can be credited. 3. Explanatory language comparing the range of the manipulated and/or responding variables may be credited (e.g., *The **lowest** average number of salmonberry plants was found in the forest habitat, **only** 6 plants.*) 4. If a response misquotes trend data between the highest and lowest conditions, this attribute cannot be credited. 5. Transitional words (e.g., *however, therefore, because, so, then, clearly, but*) cannot be credited as explanatory language even when added to a conclusive statement. 6. A compound sentence as a conclusive statement may be read as two separate sentences.	1	~44%
Total Possible Attributes	4	

Scoring Rubric for Item 14 Salmonberry Habitats Conclusion (page 3 of 3)

General Notes:

1. **Copying the Data Table**: Responses copying the whole data table verbatim may not be credited the supporting data attribute even with a correct conclusive statement and explanatory language.
   a) For grades 4-5, a translation of the whole data table into sentences is acceptable.
   b) For grades 6-8 and high school, a discussion of the whole data table **may** be acceptable when the data table is minimal with a very small number of data cells.

2. **Supporting Data**: Responses must give the precise numerical values or precise descriptive language from the data table for both the manipulated and responding variables.
   a) Average data (if given) or data from the end of the investigation, must be included for grades 6-8 and high school.
   b) For grades 4-5, consistent trial data, or data before the completion of the investigation when measuring a responding variable over time, can be credited.
   c) Rounded numerical values cannot be credited (e.g., *about 20* cannot be credited for 24). However, a zero after a decimal point may be omitted (e.g., NA).
   d) Units are not necessary for credit (e.g., *24* can be credited for *24 salmonberry plants*).
   e) Minor language differences in descriptive data may be acceptable as decided in rangefinding (e.g., *plants* may be credited as *salmonberry plants*).
   f) For grades 4-5, the manipulated variable may be implied.

3. **Derived Data:** Responses giving their own derived data between conditions can be credited for supporting data **and** explanatory language (e.g., *There was an average of 18 more salmonberry plants in the forest edge habitat than in the forest habitat.*).
   a) When the derived data uses the lowest and/or highest conditions, one or both supporting data attributes can be credited.
   b) Minor arithmetic errors in derived values can be acceptable as decided in rangefinding (e.g., NA).

Annotated example of a 2-point response to item 14.

14 Write a conclusion for this field study.

In your conclusion, be sure to:
- Answer the field study question.
- Include **supporting** data from the Habitat vs. Number of Salmonberry Plants table.
- Explain how these data **support** your conclusion.

Question: How does the number of salmonberry plants change among different habitats?
Conclusion:
There were fewest salmonberry plants in the forest because the soil was dry. The forest had 6 plants along the rope. The forest edge had 24 plants. The forest edge had the most plants out of all three habitats.

Annotations	Attributes	
Conclusive statement: *There were fewest salmonberry plants in the forest...*	1	
Supporting data for forest habitat: *The forest had 6 plants...*	1	
Supporting data for forest edge habitat: *The forest edge had 24 plants.*	1	
Explanatory language: *The forest edge had the most plants ....*	1	
Total Attributes & Score Points	4	**2**

Annotated example of a 1-point response to item 14.

14 Write a conclusion for this field study.

In your conclusion, be sure to:
- Answer the field study question.
- Include **supporting** data from the Habitat vs. Number of Salmonberry Plants table.
- Explain how these data **support** your conclusion.

Question: How does the number of salmonberry plants change among different habitats?
Conclusion:
More salmonberry plants grow in the forest edge. There were 24 salmonberry plants on the forest edge.

Annotations	Attributes	
Conclusive statement: *More salmonberry plants grow in the forest edge.*	1	
Supporting data for forest habitat: None	0	
Supporting data for forest edge habitat: *...24 salmonberry plants on the forest edge...*	1	
Explanatory language: None	0	
Total Attributes & Score Points	2	**1**

Annotated example of a 0-point response to item 14.

14 Write a conclusion for this field study.

In your conclusion, be sure to:
- Answer the field study question.
- Include **supporting** data from the Habitat vs. Number of Salmonberry Plants table.
- Explain how these data **support** your conclusion.

Question: How does the number of salmonberry plants change among different habitats?
Conclusion:
The average number of plants growing on the edge of the forest is greater than the forest and stream averages.

Annotations	Attributes
Conclusive statement: *The average number of plants growing on the edge of the forest is greater than the forest and stream averages.*	1
Supporting data for forest habitat: None	0
Supporting data for forest edge habitat: None	0
Explanatory language: None	0
Total Attributes & Score Points	1 **0**