Directions for Field/Forest Comparison.

ABIOTIC FEATURES

1. Select an area in the particular habitat for study.

2. Temperature Tests:
   a. Air temperature—Hold the thermometer by the plastic holder until the temperature stabilizes. Record the temperature. Do not place the thermometer on the ground.
Soil temperature—Dig a hole in the ground the depth of the thermometer. Place the thermometer in the hole and cover it with soil. Read the soil temperature after all activities have been completed.

3. Light Intensity:
   Use the plant computer carefully. Do not touch the probes. Hold the plant computer so that the back of the instrument is facing the light to be measured. Read the light measurement directly from the scale: 1-3 (dark), 4-6 (semi-sunny), 7-9 (full sun).

4. Soil Moisture:
   Use the trowel to loosen soil 10 cm deep. Cover the opening on the back of the plant computer with your forefinger. Insert the probes into the soil up to the computer base. Read the meter. The results are instantaneous: 1-3 (dry), 4-6 (moist), 7-9 (wet). Wipe the probes thoroughly before storing away.

5. Air Moisture (humidity):
   Follow the directions given with the hygrometer.

6. Soil pH Test (acidity or alkalinity of the soil):
   Follow the directions with the soil pH kit.

7. Soil Permeability Test:
   Select an area in each given habitat. Remove any plant material in order to expose a circle of soil 10 cm in diameter. A tin can is provided in which both the top and bottom have been removed and a line has been marked 4 cm from the bottom. Set the can on the soil with the end closest to the 4 cm line closest to the ground. Place a board on the can and tap the top of the board with a hammer until the 4 cm line is level with the ground. Begin your stop watch as you pour in 200 ml of water into the can. Time how long it takes for all the water to percolate into the soil.

BIOTIC FEATURES—Producers (plants)

1. Mark an area one meter square using the meter sticks. Define this space by hammering in stakes at the four corners and tying string around the four stakes. Divide the one meter quadrant into four smaller boxes, each one-quarter meter square, using string. Two students will work in each of these four smaller boxes.

2. Identify the producers (plants) in your box. Use the field guides and adult leaders to assist you in identifying the plants. Estimate the number of specimens of each type of plant that you identified in your box.

3. Scan the area and record the types and numbers of large prominent plants in each habitat.

BIOTIC FEATURES—Consumers and Decomposers

1. Identify the consumers (animals) in your quadrant. Use the field guides and adult leaders to assist you in identifying the animals. Estimate the number of specimens of each type of animal that you identified in your quadrant.

2. You may not be able to see many of the consumers that live in a given habitat. Some may be nocturnal (active at night), some may be hiding from humans, some may be in another nearby location away from your view. You may find signs such as scat, runs, shelter, feathers, fur, etc. to help you predict which primary, secondary, and top consumers may be found in each location.

3. Locate and identify the decomposers that break down dead matter into soil. Check in the soil, under logs, and amidst dead plant matter. Estimate the number of specimens of each type of decomposer that you identify.

4. You may also find signs of decomposers that can allow you to predict the types of decomposers that could exist in a given habitat. For example, you may find worm castings as evidence of worm activity.

Data Collection Sheet for Field/Forest Comparison

ABIOTIC FEATURES

Abiotic Feature	Field Data	Forest Data
Air Temperature		
Soil Temperature		
Light Intensity		
Air Moisture		

Soil Moisture		
Soil pH		
Soil Permeability (in min./sec.)		

BIOTIC FEATURES—Producers (Plants)

Using a field guide, identify the number and types of plants that you find in your quadrant.

FIELD		FOREST	
Plant Type	Number	Plant Type	Number

BIOTIC FEATURES—Consumers and Decomposers

Actual Consumers Observed:

FIELD		FOREST	
Animal Type	Number	Animal Type	Number

Signs of Consumers Observed (scat, runs, shelter, feathers, etc.):

FIELD		FOREST	
Sign of Animal	Number	Sign of Animal	Number

Actual Decomposers Observed:

FIELD		FOREST	
Animal Type	Number	Animal Type	Number

Signs of Decomposers Observed (e.g., worm castings):

FIELD		FOREST	
Sign of Animal	Number	Sign of Animal	Number

Materials Needed for Field Trip

1 thermometer
1 plant computer—doubles as a light meter and soil moisture indicator—available for under $20 from Frey Scientific.
1 trowel
1 hygrometer—available for under $20 from Edmund Scientific
1 soil pH Test Kit—available for under $5 from Frey Scientific
1 stop watch
1 tin can with top and bottom removed
1 measuring cup
Paper toweling
1 liter bottle of water
1 wooden board (15 cm x 15 cm)
8 wooden stakes
2 hammers
2 balls of string
2 pairs of scissors
2 meter sticks
Several plant field guides
Several animal field guides

For each student:
Backboards (heavy corrugated cardboard cut 25 cm x 30 cm)—for use as a writing surface
Data sheets
Elastic band to hold the data sheet onto the backboard
Pencil

Directions for Communities Challenge Report

1. Select one of the following situations that could affect the balance of the community (either
field or forest).
a. forest fire
b. invasive species (autumn olive) in the field
c. gypsy moth infestation in the forest
d. toxic waste dumping in the field

2. First, you will need to do research and gather information to determine how the situation could affect your habitat and community of plants and animals. Information may be obtained from the following sources:
   a. books
   b. information pamphlets from appropriate government agencies
   c. internet
   d. interviews with experts

NOTE: Books and informational pamphlets will be available for you to borrow. In addition, a top expert on your situation will come to our science class on_____. You will have an opportunity to interview this person and ask specific questions that you will prepare ahead of time.

3. List all of your resources in the "References" section of the worksheet using the correct citation format.

4. Complete the following worksheet. You have been provided with two copies of this worksheet. One is for a first draft working copy. The second should be completed as a final edited copy. You will need to make predictions about how your community will change as a result of your chosen situation. Remember, base your predictions on your research.

In class, you have drawn a picture of your community complete with a listing of the abiotic data and labeling of the plants and animals found there. Draw a second picture of your community. This picture will show how the abiotic factors and the plant and animal life could be different in response to this situational change.

6. This project is due on_____. You will make an oral presentation of your work on that day.

7. Read the rubric carefully to understand the expectations for this project.

Name_____ Grade 5 Date_____

Communities Challenge Report

1. I have chosen to study the following situational change to a field or forest habitat. (circle one)
   a. forest fire
   b. invasive species (plants) in a field
   c. gypsy moths in the forest
   d. toxic waste dumping in the field

2. From my research, I found the following information about this situation and how it can affect my chosen habitat.

_____

_____

_____

_____

3. This is what I think could happen to this community. Here are my PREDICTIONS of how this situation could affect specific plants and animals in this community. (NOTE: Be specific! Name plants and animals on this page and abiotic factors on the next page.)

PLANTS

_____

_____

_____

_____

ANIMALS

_____

_____

_____

_____

ABIOTIC FACTORS

4. Explain how this situation could have a positive and/or negative effect on the balance within this community.

5. References (personal interviews, pamphlets, internet, books, etc.)

Rubric Scoring:

4—Above requirement
3—Meets requirement
2—Nearly meets requirement
1—Does not meet requirement
0—Not completed

Criteria:	Score:
Content	
Provides specific information about the topic	_____
Demonstrates understanding about the effect of the situation on the biotic and abiotic factors	_____
Makes reasonable predictions about the expected changes to the community based on researched information	_____
Written Report	
Explains information and predictions clearly in complete sentences	_____
Uses correct conventions for punctuation, grammar, and spelling	_____
Completes each section fully	_____
Visual Display	
Reflects details of the information in the artwork for both the pre and post drawings	_____
Presents design in neat way with clearly labeled details for both biotic and abiotic factors	_____
Oral Presentation	
Conveys detailed information in a logical progression from the community condition before the event to the condition after the event	_____
Presents reasonable predictions concerning any changes in the biotic or abiotic factors based on researched information	_____
Speaks clearly, looks at the audience, and glances at notes without reading them	_____

Average score: _____

INTERVIEWING TIPS

Plan questions ahead of time.

Introduce yourself.

Be polite and sit poised.

Ask questions slowly and clearly. Look person in the eye.

Stay on the topic. Don’t ask personal questions.

Ask unprepared questions if a thought comes to mind.

Do not interrupt the expert.

Listen to what the expert says and then take brief notes.

Write answers in bullets or key words.

Show enthusiasm.

Ask about confusing information.

Ask about sources you can use.

Say, “thank you” at the end.

Back in the classroom, clean up your notes so that they make sense while you still remember the conversation.