



QUEST Science Literacy for Urban Ecology Assessment

NAME: _____ TEACHER: _____ CLASS PERIOD: _____ GRADE: _____

PART I. MULTIPLE CHOICE - Read each question carefully. Circle the best answer.

1. Ecology is the study of the relationship between:
 - A. organisms and their environments
 - B. humans and other animals
 - C. humans and their environments
 - D. different species of animals
 - E. plants and the atmosphere

2. Dead leaves are considered:
 - A. biotic
 - B. abiotic
 - C. human-made
 - D. none of the above

3. Weather is considered:
 - A. biotic
 - B. abiotic
 - C. human-made
 - D. none of the above

4. What factors are important in determining if an organism is in an ecosystem?
 - A. temperature
 - B. availability of food
 - C. resources needed to reproduce and raise young
 - D. all of the above

5. In urban ecology, humans are:
 - A. a special part of nature
 - B. interrelated to all parts of nature
 - C. not an important part of nature
 - D. the best part of nature

6. Emma and Robert are talking about the number of birds they see near their school. Emma says there are more birds in the park across the street than at the schoolyard. Robert thinks there are the same number of birds. What is the best way for them to settle their disagreement?
 - A. Before school on Monday, count the number of birds at the park. After school, count the number of birds at the schoolyard.
 - B. Before school on Monday, count the number of birds at both the park and schoolyard.
 - C. For five mornings before school, count the number of birds at both the park and schoolyard.
 - D. After school on Monday, count the number of birds at both the park and schoolyard.

7. Four friends visit an island in the middle of the ocean. They talk about what would happen to the birds if the plants disappear. Which is the best answer?
- A. All the birds would start eating insects and survive without the plants.
 - B. All the birds on the island would eventually die.
 - C. Only the birds that eat plants would die but the birds that eat insects would survive.
 - D. Only the birds that are predators would live.



Figure 1. Image of island before the plants disappear.

8. What contributes to an urban heat island effect?
- A. Trees shade areas, preventing a build-up of heat.
 - B. Heat is absorbed by the pavement and released from asphalt.
 - C. Green roofs cool the surrounding air.
 - D. Pervious pavements allow water to filter into the ground.
9. Your city is thinking about planting more trees to reduce global warming. Trees absorb carbon dioxide from the air and store carbon. Your city counts and measures all of its trees. There are 10,000 trees in the city. Review the data in **Table 1**. Then, choose the best choice for the city.

Table 1. Tree Count, Measurement, and Carbon Storage

Tree size	# Trees in city	Circumference	Amount of carbon stored*
Small (young)	2500	30 cm	200 kg
Medium	2500	70 cm	700 kg
Large (old, mature)	5000	110 cm	2000 kg

*Note: The amount of carbon storage is calculated using the tree circumference.

What is the best choice for the city?

- A. There is no need to plant new trees. There are 10,000 trees in our city and that is enough.
 - B. There is no need to plant new trees. The city should care for existing trees.
 - C. The city should plant new trees. Because the 10,000 trees are already planted, the city does not need to care for them.
 - D. The city should plant new trees and care for existing trees. There are 10,000 trees but new trees should be planted in case something happens to the old, mature trees.
10. Urban ecologists define **drivers** as a:
- A. short-term change in an ecosystem
 - B. long-term change in an ecosystem
 - C. force of change that acts on an ecosystem
 - D. human impact on an ecosystem
11. Fertilizer run-off pollutes a river. This is an example of a:
- A. social force
 - B. physical force
 - C. biological force
 - D. chemical force

PART II. OPEN RESPONSE

Read about Maya’s observations. Write possible reasons why there is a difference in what Maya observes in Park 1 versus Park 2. Then, write a research question related to this situation.

12. Maya is walking home from school. She walks past two parks on her way home. Maya notices birds and insects at Park 1, but there are no birds in Park 2.

a. Write three possible reasons why Park 1 seems to have more birds than Park 2. Justify your reasons.

	Possible Reasons	Justification <i>Why is this a possible reason?</i>
1		
2		
3		

b. Write a research question to investigate one of the reasons you listed above.

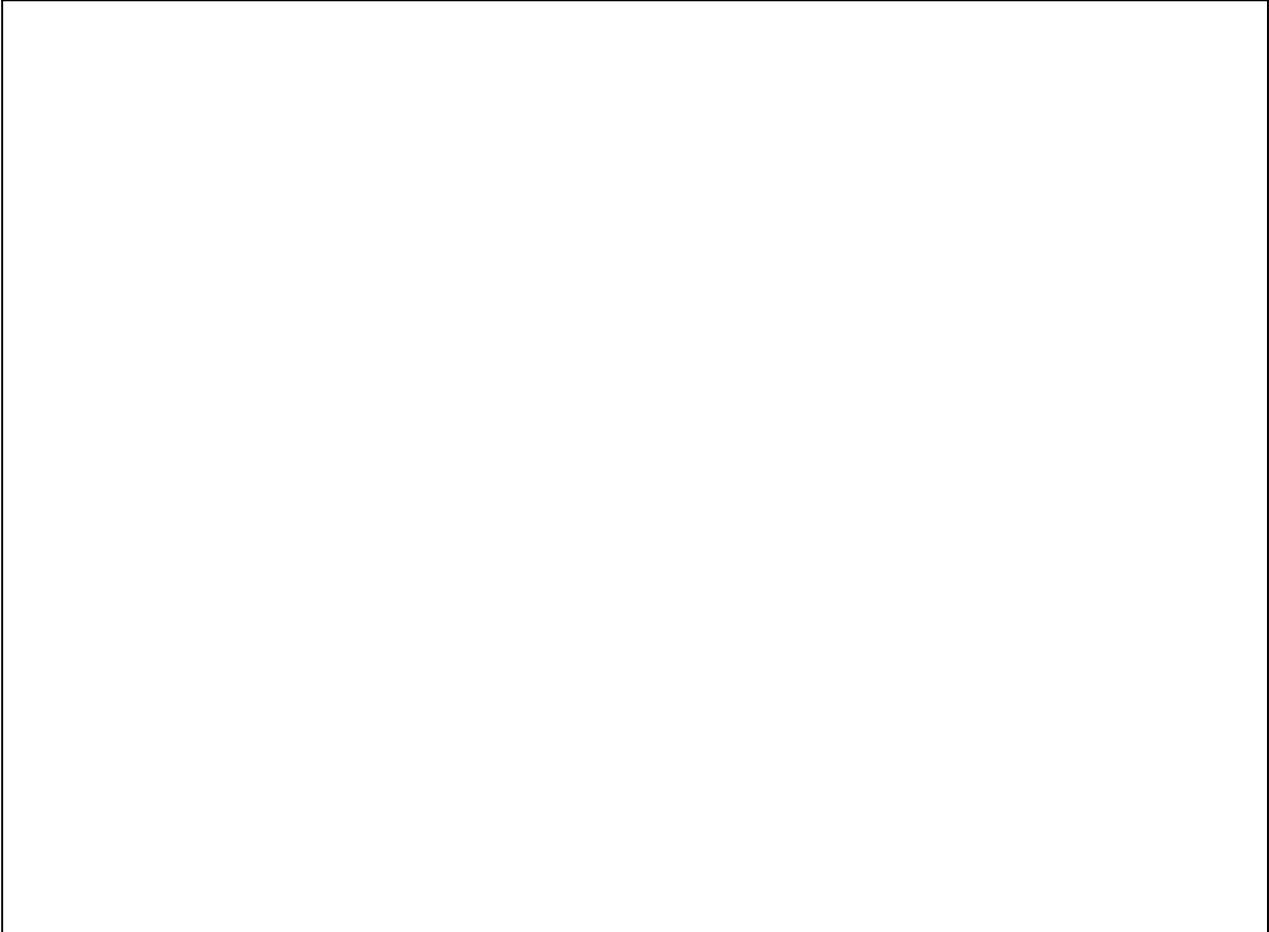
Research Question:

PART III. PERFORMANCE TASK

You are an urban ecologist. You can provide important information about how and why a city is a system. Read the instructions below and complete each part of your assignment.

13. Every city is a system. Think about your city and respond to each question below.

a. Draw a quick sketch of a city as a system. Carefully label the parts of your model.



b. Describe the model you drew.

c. Explain why your city is a system. Justify your answer with evidence.

d. No model is perfect. Evaluate your model. What can be added and why?