

--	--	--

Initials

Environmental Literacy Biodiversity Assessment: --- High School Level ---

Park and Farm

Science is easier to understand if you can make connections between what you know now and the new ideas that you are studying. This is a test that will help us to understand what you know now. Please answer these questions as carefully and completely as you can. If you are not sure of the answer, please write about any thoughts that you have. If you can help us to understand how you think about these questions, then we can do a better job of explaining science in ways that make sense to you.

Please put your initials (not your full name) in the boxes

--	--	--

First Middle Last

Date _____

Class _____ Teacher _____

The two pictures below show a park. Picture A shows the north side and Picture B the south side of the same park. Looking at both pictures, respond to the questions that follow.



Picture A –
North side of
park



Picture B –
South side of
park

--	--	--

Initials

1. In picture A you can see a neat lawn where people are having picnics. In the background behind the people there is a forested area with different trees and shrubs. Both grass from the lawn and trees from the forested area produce seeds that are carried by the wind and scattered everywhere.

a. Why do you think that very little grass is growing under the trees, even though some grass seeds sprout under the trees?

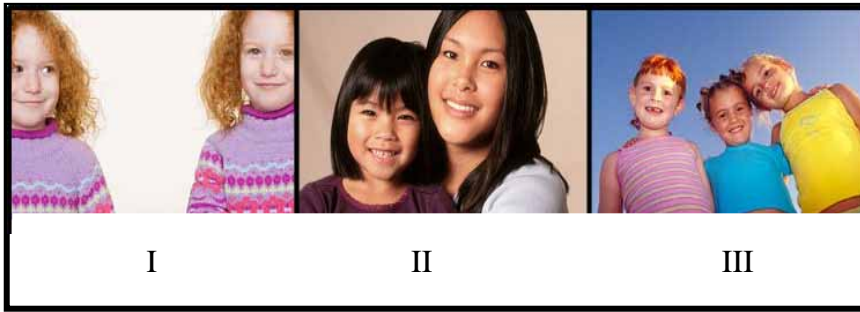
b. Why do you think there are no trees growing in the lawn, even though some tree seeds sprout in the lawn?

c. What do you think that people (including park groundskeepers, visitors, etc.) are doing that makes grass grow well and trees grow poorly on the lawn?

--	--	--

Initials

2. Among the picnickers in Picture A are the following people:



a. Which of the above pictures show twins? How are they alike and different?

Alike:

Different:

b. Which of the above pictures show friends? How are they alike and different?

Alike:

Different:

--	--	--

Initials

c. Which of the pictures show sisters? How are they alike and different?

Alike:

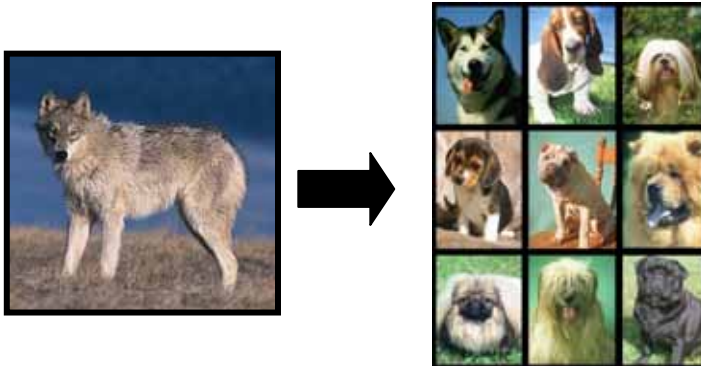
Different:

d. Suppose you have blood samples of the two individuals in picture II. How would you figure out their relationship (twins, sisters, or friends) from the blood samples?

--	--	--

Initials

3. In picture B you see a man with four pet dogs. Three of the dogs are German Shepherds and one is a Cairn Terrier. These dogs are all descended from wolves as are other dog breeds shown in the picture below:



How could dogs that live with humans become so different from one another and from wolves?

4. In the background of Picture A, there are three trees 5a, 5b, and 5c that look like one another. Suppose you are a scientist who is asked to determine how closely the trees are related to one another, for example, if they all have the same parents. Name two tests or observations that you could make to decide how closely the trees are related and what evidence you would look for in each one.

a (i). Suppose you could observe and handle the trees. What would your first test or observation be?

--	--	--

Initials

a (ii). What evidence would it give you about how closely the trees are related?

b (i). Suppose you could not handle the trees but were given samples of tree wood, bark, and leaves. What tests or observations would you make on the tree samples?

b (ii). What evidence would these tests or observations give you about how closely the trees are related?

--	--	--

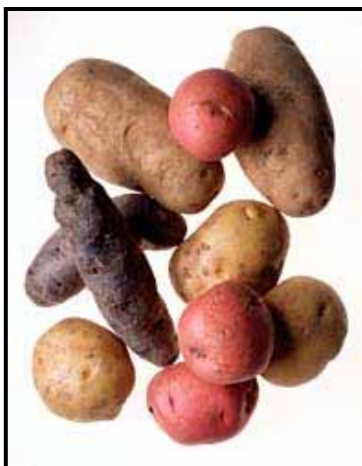
Initials

5. Look at picture A. What do you think will happen to the lawn and to the forested area if humans abandoned this park completely?

Lawn:

Forested area:

6. When Europeans first came to Peru, they found that the Peruvians were growing a crop that they had never seen before: potatoes. Each Peruvian field contained many types of potatoes, as shown in the picture on the left. The Europeans worked hard to improve Peruvian potatoes. Eventually they developed potatoes like the one on the right—all bigger and providing more food than Peruvian potatoes.



Peruvian fields



European fields

--	--	--

Initials

6a. What do you think the Europeans did to get their big, uniform potatoes from smaller, more variable Peruvian potatoes?

6b. In the mid 1800's, the potato blight killed most of the potato crop in Ireland, a European country, resulting in starvation and the death of about one million people. How was this related to their decision to plant only one type of potato?

7. Farmers often spray their crops to help prevent bugs from eating their crops. Over time, the bugs slowly become resistant to these sprays, and so the farmers have to use different sprays to protect their crops. Tell a story about how the bugs become resistant to the sprays.



--	--	--

Initials


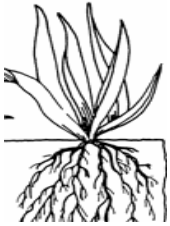



8. Farmers till the soil (stir it up with machines) to get rid of weeds. Why are weeds bad for crops?

--	--	--

Initials

9. The pictures below show characteristics of some different plants and animals. Describe how the characteristics might help the plants or animals to survive and reproduce.

	Apples: Why are they round and sweet?
	Grass: Why does grass have long roots that grow deep into the ground?
	Cow Tongue: Why is it long and tough?

10a. This corn plant has been genetically modified so that it produces a toxin called BT that kills insects when they eat the corn plant. Why would a farmer choose to plant this genetically modified variety of corn?



--

--	--	--

Initials

10b. Genetically modified corn is banned in Europe. What is it about genetically modified organisms that Europeans might be worried about?

10c. All farmers plant special varieties of corn that have been developed by humans. What is the difference between genetically modified corn and those other special varieties?

11. To the right is a photo of flock of sheep. Which of the statements below best describes the group of sheep? Circle your answer below:

- a) The sheep are all identical to each other.
- b) The sheep are all identical on the inside, but have many differences in appearance.
- c) The sheep are all identical in appearance, but are all different on the inside.
- d) The sheep share many characteristics, but also vary in many features.
- e) The sheep are all completely unique and share no features with other sheep.



--	--	--

Initials

Explain your answer. How are the sheep alike and how are they different?

Alike:

Different:



Photo A
Corn Field



Photo B
20 years later



Photo C
80 years later

12a. A farmer stopped planting his corn field. The photos above show what the corn field looks like 20 and 80 years after he stopped planting. During the 20 years after the farmer stopped planting, the number of plant species increases. Why do think this happens?

--	--	--

Initials

12b. After 80 years, most of the smaller plants have been replaced by trees. Why do you think this happens?

13. Below is a picture of a Michigan forest next to a soybean field. A herd of deer live in the area. Why are the deer sometimes found in the forest and sometimes found in the field?

