

Biodiversity ITEM POOL

Science is easier to understand if you can make connections between what you know now and the new ideas you are studying. This is a test that will help us know what you know now.

Please answer these questions as carefully and completely as you can. If you aren't sure of the answer, please write 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 these boxes:
Also put your initials on the top of each page.

First	Middle	Last

Date _____

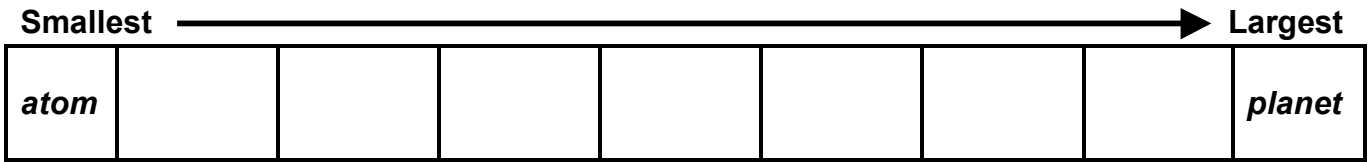
Class _____ Teacher _____



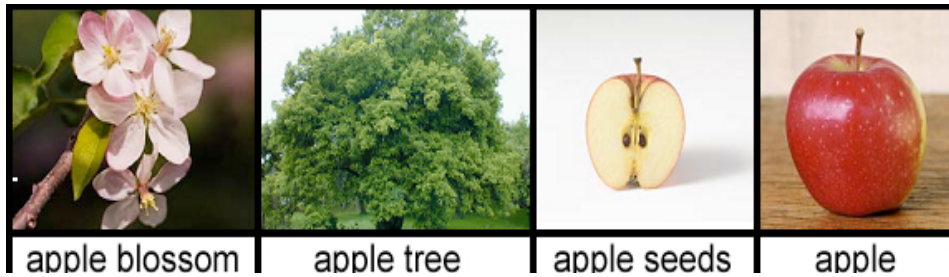
1. Farmers often use pesticides to help prevent insects from eating their crops. Over time, the insects slowly become resistant to these pesticides, and so the farmers have to use different pesticides to protect their crops. Tell a story about how the insects become resistant to the pesticides.

2. Put the following items in the boxes below, going from the smallest (on the left) to the largest (on the right). Be sure to include all the terms.


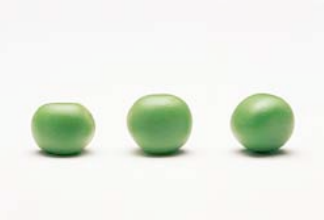



- Population**
- Gene**
- Species**
- DNA**
- Ecosystem**
- Dog**
- Chromosome**



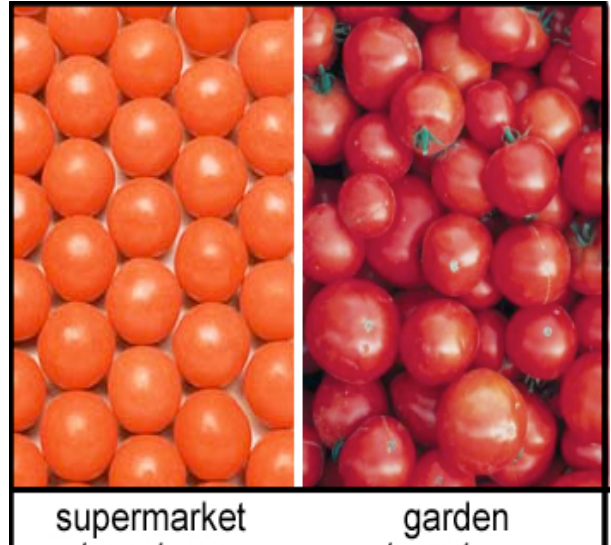
3. Tell a “science story” connecting the four objects the in the image below.



4. All of the different fruits and vegetables found in grocery stores are parts of plants. For each of the fruits and vegetables below, describe why plants might produce them. The example of 'apples' is completed for you.

	<p>example: apples.</p> <p><i>Apples are the fruit of the apple tree. They develop from the flowers of the apple tree. They contain the apple tree's seeds. The tree produces apples to spread its seeds.</i></p>
	<p>peas</p>
	<p>pumpkins</p>
	<p>mushrooms</p>
	<p>potatoes</p>

5. To the right are pictures of some tomatoes from the supermarket and some tomatoes grown in my garden. The supermarket tomatoes are all very similar, whereas the garden tomatoes are all different shapes and sizes. Below, give three reasons why the supermarket tomatoes are more alike than the garden tomatoes.

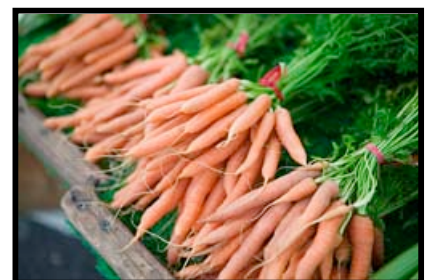


1.
2.
3.

6a. The strawberries in the picture all grew **in large field on the same farm**, but they all look a little different. Why do you think they all look a little different?



6b. The carrots in the picture all grew **in a greenhouse under identical conditions**, but they all look a little different. Why do you think they all look a little different?





“During their lives, giraffes stretch their necks to reach leaves high in trees. This process gradually strengthens and lengthens their necks. Those giraffes that stretched the most have offspring with slightly longer necks.

7. Above is a description of how giraffes came to have long necks. Do you think that this a good explanation?

Circle one:

Yes	No
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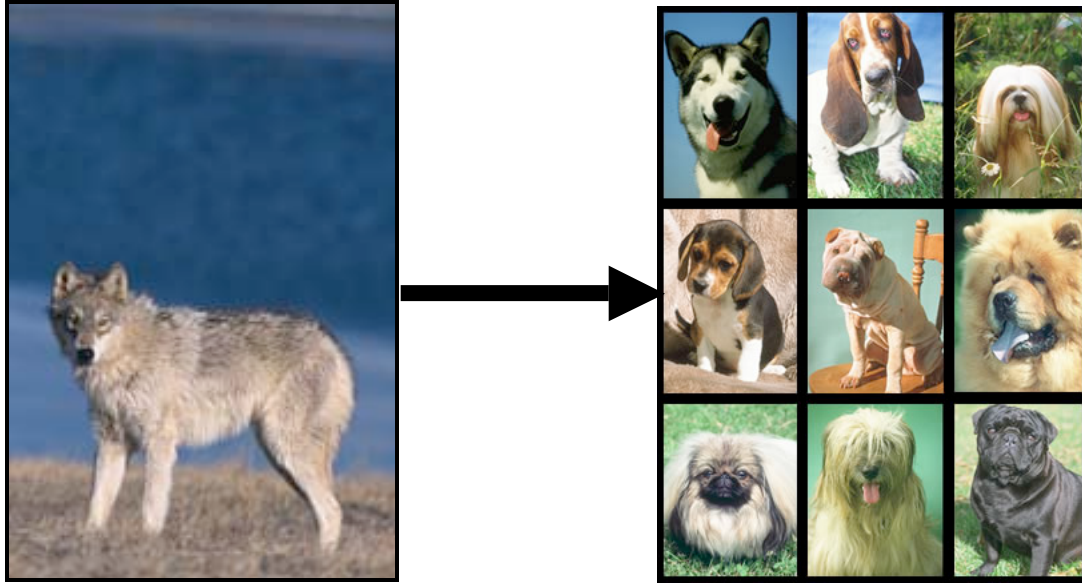
Explain why you chose your answer:



8. Above are pictures of twins, sisters and friends.

Why do the twins look more alike than the sisters?

Why do the sisters look more alike than the friends?



9. Evidence indicates that all modern dogs are descended from a wolf ancestor. In the box below, describe how all of the different breeds of dogs that we see today could have come from a single wolf ancestor.

10. Imagine two groups of 30 elephants. Group A contains elephants that are all slightly different, while Group B contains elephants that are all identical. Which of the two groups do you think is most likely to survive if there was a severe drought?

Circle one:

Group A	Group B	Both have an equal chance of surviving
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Explain why you chose your answer:

11. 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 selected the biggest and best type of potatoes (shown in the picture on the right), took that back to Europe, and planted fields containing just this one type of potato.



Peruvian fields



European fields

What are the advantages and disadvantages of these two ways of growing potatoes?

	Peruvian way	European way
Advantages		
Disadvantages		

12. Imagine a group of hundreds of tropical fish from a single species. Which statement below best describes the appearance of a group of fish such as this? Circle your answer below:

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



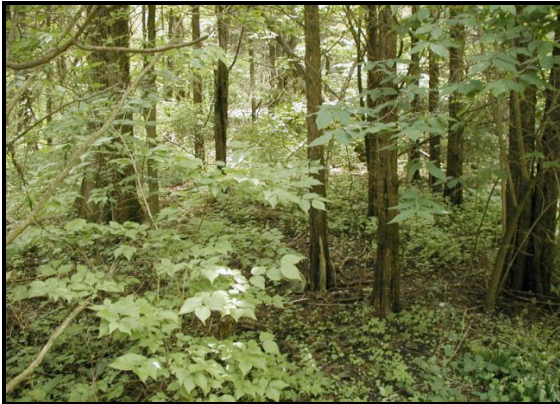
Explain why you chose your answer:

13. There are so few of some endangered species like the giant panda, that many of the remaining individuals live in zoos and wildlife sanctuaries, where scientists try to help endangered species in captive breeding programs. One of the goals of these breeding programs is to try to increase the genetic diversity in the remaining population of pandas.



Why do you think these breeding programs want to increase genetic diversity in the remaining population of pandas?

How could these breeding programs go about increasing genetic diversity in the remaining panda population?



Forest



Corn Field

14a. Above are pictures of a Michigan forest and a Michigan corn field. Explain why you think these places are similar and different:

Ways they are similar:

Ways they are different:

14b. Do you think more kinds of living things are living in the forest or in the cornfield?

Circle one:

Forest	Cornfield	The same in both
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Explain why you think this:

14c. What differences do you think you would see in the soils of the corn field and the soils of the forest? An example is given for you

Difference	Forest soil	Corn field soil	Explanation
<i>Type of plant material</i>	<i>Tree leaves, bark, twigs</i>	<i>Corn stems and leaves</i>	<i>When trees and plants die or leaves fall in a forest, they become part of the soil while dead corn plants become part of the soil in the corn field</i>

14d. A farmer decided to cut down the forest, remove all of the tree stumps and plant corn, but the corn did not grow very well during the first year after cutting down the forest. Why do you think this might happen?



Wild Grassland

Strawberry Field

15. A wild grassland is turned into a managed strawberry field. In the boxes below, describe what happened to the plant, animal and soil communities as a result of this transformation.

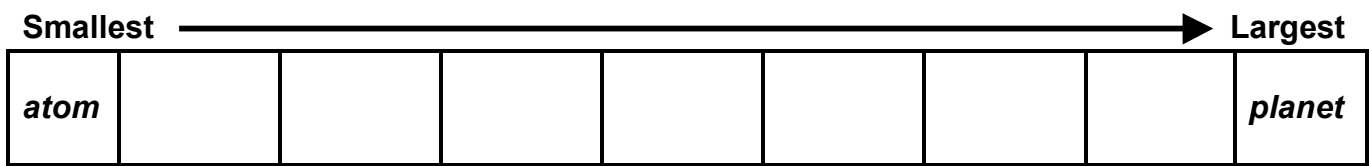
What happened to the plant community?
What happened to the animal community?
What happened to the soil community?

16. If a scientist wanted to measure the diversity of species in a given area, what types of data might she collect?

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17. Put the following items in the boxes below, going from the smallest (on the left) to the largest (on the right). Be sure to include all the terms.

- Population
- Gene
- Species
- DNA
- Ecosystem
- Dog
- Chromosome



18a. In the boxes below, describe the soil in your school lawn in as much detail as you can:

What is the soil made up of? Name as many things as you can.
Where did all the parts of the soil come from?
How deep is the soil? _____ How does the soil change as you dig deeper?

18b. If you were to use a microscope to look at the soil in your school yard, what might it look like? Use the box to the right to draw what you might see, and be sure to label everything you draw.

19. To the right is a picture of a soccer field. What would happen if people stop mowing and taking care of the soccer field? In the boxes below describe what the soccer field might look like, and all of the things that might be living there.



	What might it look like?	What might be living there?
In 1 year		
In 10 years		
In 100 years		

OR

20. To the right is a picture of a farmer’s field. What would happen if the farmer abandoned this field and no longer continued to care for it? In the boxes below describe what the field might look like, and all of the things that might be living there.



	What might it look like?	What might be living there?
In 1 year		
In 10 years		
In 100 years		



Zebra Mussels

Purple Loosestrife

20. In Michigan, zebra mussels, and a plant called Purple Loosestrife have been introduced from different parts of the world. Their populations have rapidly expanded, and they are now taking up large areas of Michigan that were once home to other native species. We call species like zebra mussels and purple loosestrife “invasive species”.

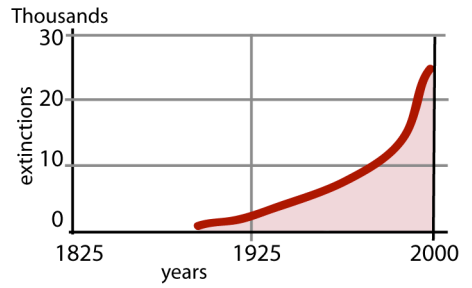
a. Why do you think that these two species have done so well in their new environments?

b. Why do you think invasive species like these might be a problem in new ecosystems?

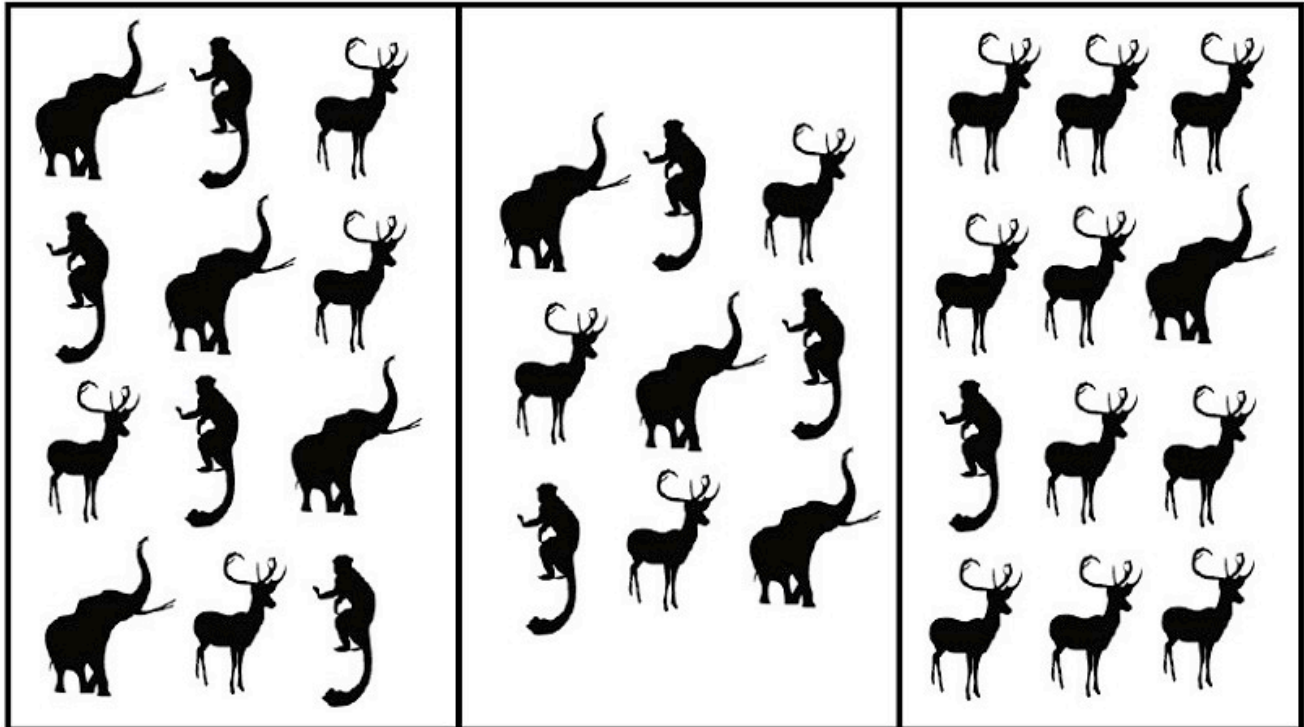
21. The graph to the right shows a rapid increase in the number of species going extinct over the last 100 years. Why do you think more species are going extinct each year?

In the boxes below, describe three possible reasons for the increase in species extinctions and decline in biodiversity.

SPECIES EXTINCTIONS



Reason	How would this cause species to go extinct?
1.	
2.	
3.	



Ecosystem 1

Ecosystem 2

Ecosystem 3

22a. Do all of the three ecosystems shown above have the same species diversity?

Circle one:

Yes	No
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Explain why you chose your answer:

22b. Many scientists say that it is important that we try to keep ecosystems as diverse as possible. Why do you think this is important?