Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_Date \_\_\_\_\_\_\_\_\_\_

**Biotic-Abiotic Relationships**

If you were asked to tell the difference between living and nonliving objects, you might immediately feel you have been asked an obvious question. We are alive and rocks are not, this is easy. For the biologist, however, the answer to the question is not so clear-cut. What about viruses? Viruses, when on their own, can exist as a crystal and do not grow, reproduce, or require any source of energy. When they invade a suitable host cell, though, they then use the cell’s energy and “machinery” for growth and reproduction. Are they alive? Are they alive sometimes and not at other times?

|  |  |  |
| --- | --- | --- |
| **Characteristics of All Living Things** | | |
| **#** | **Characteristic** | **Description of Characteristic** |
| 1 | Reproduce | The action or process of making a new organism. |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |

In the first column of the table, list the objects that are on the tray at your lab table. In the second column, classify the object as biotic or abiotic. In column 3, explain why it’s biotic or abiotic and include SPECIFIC characteristics of the object.

|  |  |  |
| --- | --- | --- |
| **Table 1: Biotic and Abiotic Classification of each Object** | | |
| **Name of object** | **Biotic or Abiotic?** | **Why?** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. Which of the objects were difficult to classify? Explain why.
2. Some groups in the past have decided that a bone is biotic. When a bone is a part of an animal, it is made up of cells that secrete a protein. Embedded in the protein are the elements calcium and phosphorus. It is the calcium and phosphorus that make the bones so hard. After the animal dies, the cells in the bone also die. Bacteria decompose the cells and the protein, leaving behind only the calcium and phosphorus.

a. Are calcium and phosphorus biotic or abiotic?

b. Can they be biotic at one time, abiotic at another time, then biotic again in the future? If so, does this mean they are alive, dead, then come back to life? Explain your answer.

c. Can you see the uncertainty of science within this lab? Explain why.