Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_

**What’s in the Box?**

Scientists often study things that they cannot observe directly. These things may be either too small, too big, too far away, or beyond our current means for direct study. Scientists instead make indirect observations, draw inferences, and construct models to represent the phenomena they are studying. In this activity, you will observe enclosed boxes with different contents. Without opening the boxes, use your five senses to make observations and inferences about the contents. Sketch a model for the contents of each box you observe. You will have the opportunity to study five different boxes and then compare your findings with the rest of the class.

***Procedure***:

1. In your lab table group, examine a box. Record the box number below. What’s inside it? How do you know? Complete the table below with your observations. Sketch a model of the contents based on your observations.

|  |  |  |  |
| --- | --- | --- | --- |
| **Box Number** | **Observations** | **Content descriptions based on observations** | **Model** |
|  |  |  |  |

1. Switch boxes with another table. Examine the new box. Record the box number below. What’s inside it? How do you know? Complete the table below with your observations. Sketch a model of the contents based on your observations.

|  |  |  |  |
| --- | --- | --- | --- |
| **Box Number** | **Observations** | **Content descriptions based on observations** | **Model** |
|  |  |  |  |

1. Switch boxes again. Repeat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Box Number** | **Observations** | **Content descriptions based on observations** | **Model** |
|  |  |  |  |

Analysis Questions:

1. What limitations did you encounter in making your observations (what things could you observe, and what could you not)?
2. How do your limitations affect the model that you sketched?
3. Stop and wait for group presentations. How do your models compare with those of other groups? Were they the same or different? Which one is correct?
4. What can you infer from your experience with this activity to models of the structure of atoms and molecules?