

## What is *that* Matter? (An introduction to classification)

**Target audience:** year 1 college prep chemistry

**Chemsense user level:** beginning

**Chemsense tools used:** drawing, modeling; text notes- labeling, explaining; feedback- between peers

**Objective:** Students will draw and compare elements, compounds and mixtures.

**Time:** one 50 minute class period ; **Grouping:** in pairs ; **Activity Type:** guided drawing, classification and modeling activity.

**Prerequisite chemistry concepts:** introduction to elements, compounds, molecules, mixtures

**Chemistry concepts in Activity:** theme of *aggregation*, grouping, arrangement of atoms, *Connectivity, geometry* of units of atoms/ molecules

### Activity summary:

#### Part 1

1. Introduce notes, concept map describing elements, pure substances, compounds and mixtures. (The frame of the screen represents a beaker )For each of these drawings, save to your “stuff” file under LeBoy class 6 . Then make a sketch in your chem. notebook and label each drawing!
2. In student pairs, draw three monatomic aluminum atoms and label them with their correct chemical symbol. Use the text notes to classify this drawing using any of these terms that apply: *mixture, molecule, element, compound, pure substance*.
3. Draw a diatomic hydrogen ( $H_2$  gas) (remember HONCIBrIF) . Use the text notes to classify this drawing using any of these terms that apply: *mixture, molecule, element, compound, pure substance*.
4. Draw a diatomic oxygen ( $O_2$  gas) ....Use the text notes to classify this drawing using any of these terms that apply: *mixture, molecule, element, compound, pure substance*.
5. Draw a *mixture* of hydrogen gas and oxygen gas. Is the hydrogen still diatomic? Compare with a neighbor.
6. Now draw three waters.... don't forget to attach both hydrogens with a bond to oxygen. Label it with the proper chemical formula. Use the text notes to classify this drawing using any of these terms that apply: *mixture, molecule, element, compound, pure substance*.
7. Draw Carbon dioxide ( $CO_2$ ) . Use the text notes to classify this drawing using any of these terms that apply: *mixture, molecule, element, compound, pure substance*.
8. Use the text notes to summarize what you've learned. Explain the difference between a mixture and a compound. How are elements and pure substances similar?

#### Part 2

Now that you have practiced drawing molecules, let's learn how to review your classmates work. In the browser area, look at another pairs work on the above compounds. Sometimes,

you may need to “reload” to see new work if it just got added. To do this, click on the item in *your* class period, then click **Item/ reload Selected** .

Open another group’s drawing by double clicking it in the item list. Look at the drawing and give constructive suggestions or comments. To do this, you need to **build on** with a **text note**: Select your group name in the item browser, and choose **Item/ Build on selected**. Select **Text tool** and write your comment , along with your names attached.

**Application:** This activity could easily be used in a geology/ earth science or intro biology course as an introduction to classification of matter.

**Rubric for Scoring:**

**Insufficient Mastery :** Students have less than 4 models drawn of the 6 given molecules and mixtures.

**Basic Mastery:** Students have 4-5 models drawn with 4 correctly labeled .

**Exceptional Mastery:** Students have 5 or more correctly labeled drawings and all questions answered.