

Chemistry Concept Challenge #1

September 1, 2006

Due: Friday, September 8 at 9 a.m. (in your TA's mailbox)

Name: _____

Lab Section #: _____

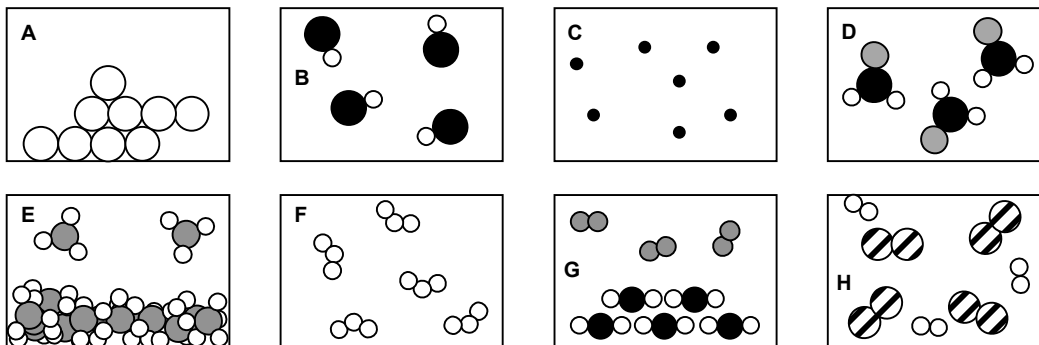
The concepts addressed in this week's Challenge most closely relate to these sections in your textbook:

Chapter 1.1 Chapter 2.1, 2.5, 2.6 (and beginning of 2.7)

Be sure to read the top paragraph on page 5 ("The Central Theme in Chemistry"), which sets the stage for this Challenge.

Submicroscopic Representations of Matter

Adapted from University of New Hampshire PLTL Materials Library (Bauer, Rickert, Langdon)



In each of the above representations: Each circle is an atom. All atoms are shown.

Match the submicroscopic representation with the following descriptions.

There may be NO representations that match. If that is the case, **draw your own** representation that matches the description.

There may be more than one that matches. Treat each item independently. Circle the letter(s) that match.

For each description, **write at least two questions** you have to ask yourself in order to evaluate the representations (see example).

1. Could contain hydrogen at room temperature <u>Questions:</u> Does the representation include at least one element depicted as diatomic molecules? Does the picture show the elemental diatomic molecules in the gas phase?	A B C D E F G H	None (draw your own representation)
2. A pure substance <u>Questions:</u>	A B C D E F G H	None (draw your own representation)
3. A pure compound <u>Questions:</u>	A B C D E F G H	None (draw your own representation)
4. A mixture of two compounds <u>Questions:</u>	A B C D E F G H	None (draw your own representation)
5. Could represent a piece of aluminum foil at room temperature <u>Questions:</u>	A B C D E F G H	None (draw your own representation)
6. Sublimation of dry ice (recall Aug. 29 lecture demo) <u>Questions:</u>	A B C D E F G H	None (draw your own representation)

7. These representations—and those in your textbook—are **models** of matter at the submicroscopic level. All models have limitations. Based on what you know about atoms, molecules, and the three states of matter, describe two limitations of the representations above. (In what ways do they not correspond to reality? How might you improve them?)