**Heat, Energy and the States of Matter**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Predictions:**

1. Describe how atoms of a solid differ from atoms of a liquid. Include an illustration.
2. Describe how atoms of a liquid appear compared to a gas. Include an illustration.
3. What happens to atoms when you add heat to them?
4.  

**Great questions from kids** (still predictions for this assignment):

1. Do you think air can freeze?
2. Can all substances change into solid, liquid and gas form?

**Investigation:** Open the *States of Matter* PhET simulation: http://PhET.colorado.edu

Play around with the first tab for awhile, trying everything out.

1. How does solid Neon or Argon look compared to liquid Neon or Argon?
2. How about liquid Neon or Argon versus gas Neon or Argon?
3. How do the Oxygen and Water molecules compare to Neon and Argon? Draw each. Why do you think that could be?
4. What is the white part of each water molecule and what are the red parts of the water molecules? Include an illustration (black and white is fine)
5. Have you heard that ice takes up more space than water? If your pipes freeze, they split!! Can you see why that is the case? Include an illustration.
6. How about the other molecules, do they take up more space as a liquid or as a solid? Include an Illustration.

***Class Discussion***

1. Can you get the molecules to stop wiggling? If so, how?
2. What happens to the molecules when heat is added?
3. What is in the bubbles of boiling water?

Open the PhET simulation *Friction* and play around.

1. Describe what you observe.
2. What happens to the energy you put into rubbing the books together?

***Class Discussion***