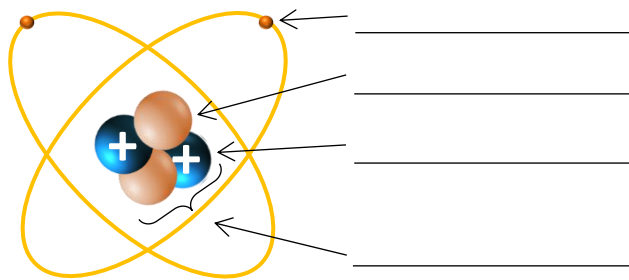


## Shedding Light on Heat Episode 2: Changes of State

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

Part B  
Part A

- On Earth, substances are commonly found in 3 states: \_\_\_\_\_; \_\_\_\_\_; and \_\_\_\_\_.
- Label the diagram of the atom on the right.
- Protons have a \_\_\_\_\_ charge and electrons have a \_\_\_\_\_ charge.
- The force of attraction between protons and electrons is called an \_\_\_\_\_ force.
- Briefly describe (at the atomic level) what a solid is.



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Describe (at the atomic level), what melting is. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- Describe (at the atomic level) what a liquid is. \_\_\_\_\_
- Tin melts at 232°C, but iron melts at 1538°C. What does this suggest about the size of the electrostatic force between tin atoms compared to the electrostatic force between iron atoms? \_\_\_\_\_

Part C

- Describe what happens to the water molecules in water when it is heated and it reaches boiling point. \_\_\_\_\_
- Describe (at the atomic level) what a gas is. \_\_\_\_\_
- Why is it easy to compress gasses, but very difficult to compress solids and liquids? \_\_\_\_\_

- When a gas is cooled it will eventually c\_\_\_\_\_ and form a liquid. The process is called \_\_\_\_\_.
- What are clouds? \_\_\_\_\_

Part D

- Dry ice is solid \_\_\_\_\_.
- Dry ice doesn't melt but \_\_\_\_\_ directly into a gas.
- The mist that forms when dry ice is placed in water is not carbon dioxide. What is it? \_\_\_\_\_
- Use the information in the table to answer the following.

Substance	Melting Point (°C)	Boiling Point (°C)
water	0	100
ethanol (alcohol)	-114.5	78.5
iron	1538	2862

- At a temperature of 57°C, water exists as a \_\_\_\_\_.
- At a temperature of 122°C, water exists as a \_\_\_\_\_.
- At a temperature of 89°C, ethanol exists as a \_\_\_\_\_.
- At a temperature of -100°C, ethanol exists as a \_\_\_\_\_.
- At a temperature of 1400°C, iron exists as a \_\_\_\_\_.
- At a temperature of 2600°C, iron exists as a \_\_\_\_\_.