

## Modeling the States of Matter

Name \_\_\_\_\_ Per \_\_\_\_ Score \_\_\_\_\_

Everything around us is made up of matter, from our skin that makes up our body, to the pop you drink, to the air we breathe. All this matter in turn is made up of particles we call atoms and molecules. If we had microscopes that could look close enough we would be able to see how these small particles are arranged in the stuff around us. These arrangements can be very different depending on whether the “stuff” is a solid, liquid, or gas. Warming it up and cooling it down can also change how these particles are arranged. Since we can’t zoom in and look at the real thing, we are going to blow it up instead where you are going to be the particles.

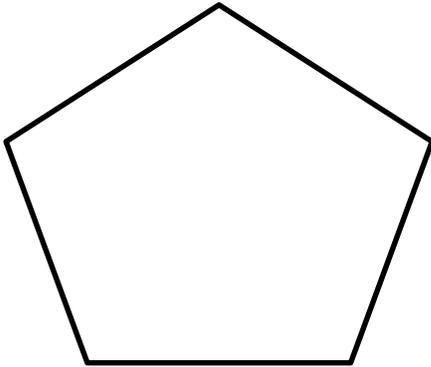
### Prediction:

1. Which takes up the most space: solids, liquids, or gases? \_\_\_\_\_
2. Which takes up the least space: solids, liquids, or gases? \_\_\_\_\_
3. What molecules move fastest: solids, liquids or gases? \_\_\_\_\_
4. What molecules move the slowest: solid, liquids or gases? \_\_\_\_\_

### Procedures: Act out the model

5. After acting it out as a class, draw a diagram of our “classroom container” and how the molecules were arranged. Then *describe* the arrangement and motion of the “student particles.” **Keep your particle sizes the same.**

SOLIDS



---

---

---

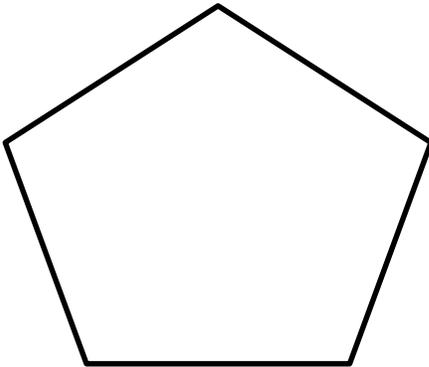
---

---

---

---

LIQUIDS



---

---

---

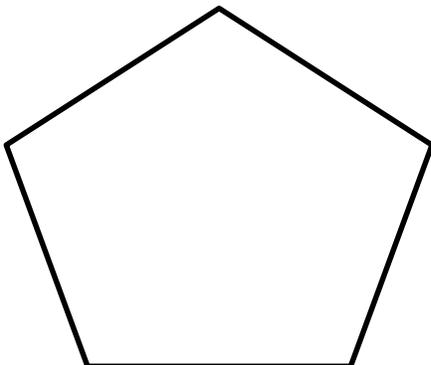
---

---

---

---

GAS



---

---

---

---

---

---

---

**Analysis:**

6. Which takes up the most space: solids, liquids, or gases?
7. Which takes up the least space: solids, liquids, or gases?
8. What molecules move fastest: solids, liquids or gases?
9. What molecules move the slowest: solid, liquids or gases?
10. How does the temperature of the particles affect the volume (amount of space it takes up) of the substance?
11. Does changing the temperature create a change in mass?
12. Why or why not?
13. Does changing the temperature create a change in density?
14. Why or why not?
15. When a gas is formed, do molecules themselves get bigger? Explain.
16. If atoms NEVER stop moving, explain what happens to them when they become a solid.
17. Explain how Gold can be a solid, liquid or a gas.

Vocabulary: Define in your own words

18. Solid:
19. Liquid:
20. Gas:
21. Temperature:
22. Volume:
23. Density:
24. Thermometer:
25. Celsius:
26. Contraction:
27. Expansion: