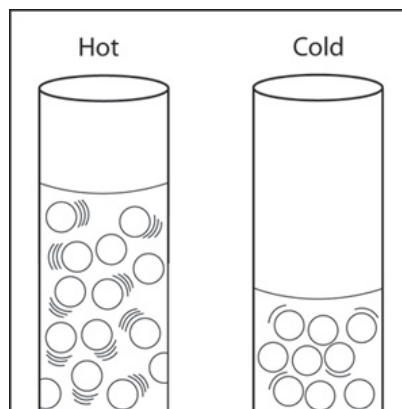


M6.1 Heating and Cooling Air Lab (FOSS Chemistry 4.1)

Note this image...
 What do you observe about the molecule drawings in each setup?
 What does this mean?
 (This will help you on your last question in the packet!)



Question: What happens to a volume of air when it is heated and cooled?

Background Information: Your mission is to figure out a demonstration to show a group of 4th graders what happens to air when it is heated and cooled. You must draw and label your setup. You must write a description of what happens to air when it gets hot and when it gets cold. Make sure it is simple enough to be understood by 4th graders.

EXTRA CREDIT: You get +1 extra credit for every additional way you can show how to demonstrate this same process. There are MANY ways!

1. Hypothesis:

Materials (you do not need to use all of them):

- 1 vinegar bottle & cap
- 2 Styrofoam cups
- 2 large clear plastic cups
- 1 rubber stopper
- 1 plastic tubing
- 1 balloon
- 1 cup of bubble solution in a plastic cup
- hot water
- cold water

IMPORTANT NOTES:

- Do NOT put any substance or liquid inside the vinegar bottle.
- Do NOT scrunch or change the shape of the vinegar bottle.
- Only fill water to lowest "fill line" on large clear plastic cups.
- Hot water should not exceed 70 degrees Celsius (otherwise will melt the cups!).

4. Explain what happens to happens to air as it is heated and cooled:

5. Explain what happens at the molecular level when air is heated/cooled:

- Imagine that you could see the air particles in the bottle.
- Explain what happens to the particles when the air is heated and cooled.
- Use drawings/labels to illustrate how the molecules look inside the bottles.

