Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Gobstopper Lab**

The purpose of this lab is to help us understand that all matter is made of particles that are constantly moving. You will also see how heat affects the motion of particles. You will test to see how long it takes for gobstoppers to dissolve in water. Your experiment will help answer the question below.

**Problem:** How does temperature affect the motion of the particles of matter?

**Experiment:** Start by listing all of the variables involved in this experiment. Circle the variable that we are testing. Fill out the table below.

Independent Variable:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dependent Variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Control Variables: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hypothesis:** Write a hypothesis as an if...then statement.

**Data:**

Drop one Gobstopper in a beaker of cold water and one in a beaker of warm water. Write down or sketch what you see every 2 minutes for 20 minutes for both beakers.

Beaker 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0 Min. | 2 Min. | 4 Min. | 6 Min. | 8 Min |
|  |  |  |  |  |
| 10 Min | 12 Min | 14 Min | 16 Min | 18 Min |
|  |  |  |  |  |

General observations:

Beaker 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0 Min. | 2 Min. | 4 Min. | 6 Min. | 8 Min |
|  |  |  |  |  |
| 10 Min | 12 Min | 14 Min | 16 Min | 18 Min |
|  |  |  |  |  |

General observations:

**Conclusion:**

1. How does temperature affect the motion of particles? (How does decreasing or increasing the temperature speed up or slow down the motion of particles?)
2. Do you actually see the particles speed up or slow down?
3. What are you basing your conclusion on?

**Questions:**

1. How did your results compare to your hypothesis?
2. All matter is made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that are constantly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. What do you think happens to the space between molecules when you heat them up?
4. What do you think happens to the density of the water when you heat it up?
5. Why are the gobstoppers dissolving?
6. What is diffusion?
7. Why do substances diffuse?
8. Compare the motion (speed) and density of cold air particles and hot air particles in the table below.
9. How could this explain why basements in a house are colder than upstairs?