**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_**

**Convection Lab**

**Question**: What happens to hot or cold food colored water when placed in room temperature water?

**Make a prediction:** What do you think will happen? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hypothesis**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Independent (manipulated variable**): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Dependent (responding variable)**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Materials**:

2 colors of food coloring  
Ice tray (or small container to freeze food colored water)  
Small bottle or flask  
Large clear container  
Hot Plate  
Freezer

**Procedure**:

1. Freeze small amount of food colored water.
2. Heat small amount of food colored (another color) water in a small bottle or flask.
3. Fill a large clear container with room temperature water.
4. Place the container with the hot food colored water in the bottom of the container containing the room temperature water.
5. Place the food colored ice cube at the top of the container with the room temperature water.
6. Carefully observe what is happening.
7. Make three drawings.
   1. One 1 minute after the food colored water is added.
   2. One 2 minutes later.
   3. One 10 minutes later.

**Drawings/Written observations**

1 minute 2 minutes later 10 minutes later

**Qualitative observations

**Conclusion** (be sure to use the terms convection, thermal energy and thermal equilibrium

Things to include in your conclusion…

* Was the hypothesis correct?
* What type of energy transfer took place?
* What was the end result?
* What observations did you record?

**Convection Lab (Teacher Sheet/Notes)**

**Question**: What happens to hot food colored water when placed in room temperature water?   
**OR**  
What happens to cold food colored water when placed in room temperature water?

**Make a prediction:** What do you think will happen?

**Hypothesis**: If hot food colored water is placed in room temperature water then it will (sink or float or mix evenly) in room temperature water.   
**OR**   
If cold food colored water is placed in room temperature water then it will (sink or float or mix evenly) in room temperature water.   
**OR**  
If food colored water at different temperatures is placed in room temperature water then the food colored water will go to different levels in the room temperature water.

**Independent (manipulated variable**): Colored water temperature

**Dependent (responding variable)**: Level of hot/cold food colored water

**Materials**:

2 colors of food coloring  
Ice tray (or small container to freeze food colored water)  
Small bottle or flask  
Large clear container  
Hot Plate  
Freezer

**Procedure**:

1. Freeze small amount of food colored water.
2. Heat small amount of food colored (another color) water in a small bottle or flask.
3. Fill a large clear container with room temperature water.
4. Place the container with the hot food colored water in the bottom of the container containing the room temperature water.
5. Place the food colored ice cube at the top of the container with the room temperature water.
6. Carefully observe what is happening.
7. Make three drawings.
   1. One 1 minute after the food colored water is added.
   2. One 3 minutes later.
   3. One 5 minutes later.

**Drawings/Written observations**

1 minute 2 minutes later 5 minutes later

**Written observations

**Conclusion** (be sure to use the terms convection, thermal energy and thermal equilibrium