

## 22.4: Procedures

You will observe the movement of molecules in hot and cold water.

1. Draw a table in which to record temperature data. **Do not fill in data until you have read the instructions for obtaining that data.**

Table 22.4.1: Temperature Data

Temperature	
Hot Water	
Cold Water	
Predicted Combined Water	
Measured Combined Water	

2. Add 100 mL of water to each 250 mL beaker. Place one of the beakers of water on the heat source, cover it with the foil, and heat until it boils. Once the water is boiling, turn off the heat source and remove the foil lid.
3. Add 2 drops of food coloring to each beaker (cold and hot) at the same time. Record your observations.

### Warnings

- Do not allow thermometer to come into contact with the bottom of the beaker while the beaker is on the heat source.
- Always assume your heat source is hot, even if it is off.

4. Remove the beaker of hot water from the heat source. Place a thermometer in each beaker and record the temperature of the water in each beaker.
5. Predict what the temperature will be when the water from the two beakers (cold and hot) is combined. Record your predicted temperature of the combined hot and cold water.
6. Remove both thermometers, and pour the water from the two small beakers into the large beaker. Place both thermometers into the large beaker and determine the average "final" temperature; this should be an average of the temperature shown on each thermometer after the thermometers have settled. Record your average measured temperature of the combined hot and cold water.

### Clean up

- Wash and dry all glassware
- Wash and dry thermometers

### Contributors and Attributions

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