Name Period Date

**Hot and Cold**

**STARTER: Watch the video loop that is playing, read the information below, and answer the question. Use information you learn in the text to support your answer.**

Matter exists in three states or phases: solid, liquid, and gas. A combination of the motion of molecules and their attraction for one another determines whether a substance is a solid, liquid, or gas. Adding heat energy increases the motion of molecules. Removing heat energy, or cooling, decreases the motion of molecules. If heat is added to a solid, the molecules can move fast enough to change from a solid to a liquid (Melting). If heat is added to a liquid, the molecules can move fast enough to change from a liquid to a gas (Evaporation). If heat is removed from a gas, the molecules can slow down enough to change from a gas to a liquid (Condensation). If heat is removed from a liquid, the molecules can slow down enough to change from a liquid to a solid (Freezing). Heat always moves from an object at a higher temperature to an object at a lower temperature.

* **If you put food coloring in cups of hot and cold water, the food coloring mixes faster in the hot water than the cold.**
* **Why does this happen?**

Observations from class: You will be recording observations and inferences in a data table. Since this is the first data table we have done this year, some of the setup has been done for you. A grading rubric for the data table can be found at the end of this document.

Title for table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Situation** | **Hot** | **Cold** | **Inferences** |
| **Food coloring in water** |  |  |  |
| **Loose cap on bottle** |  |  |  |
| **Bubble solution on open bottle** |  |  |  |

Grading Rubric for Data Table:

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 points | 1 point | 2 points |
| Neatness | Needs a lot of fine-tuning | Needs some fine-tuning | Extremely tidy and easy to read |
| Title | No title | Has a title but it is not descriptive of what is in the table | Has a title and it describes what is in the table |
| Organization | Not set up as a data table | Attempted to set up a data table | Has separate rows or columns for each test tube and separate rows or columns for each time increment |
| Data | The data collected is not useful | The data collected is somewhat useful in helping to answer the research question | The data collected is useful and helps answer the research question |

**Conclusions from today:**