Sci 8 **Gummy Bear and Osmosis Lab**  Name:

 (Skills: Predicting, identifying variables, Explaining) Partner:

**Question:** **How does tonicity affect a Gummy Bear?**

**Hypothesis A:** If a Gummy Bear is placed in a solution containing only water then water will flow \_\_\_\_\_\_\_\_\_\_ the gummy bear because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hypothesis B**: If a Gummy Bear is placed in a solution containing salt water then water will flow \_\_\_\_\_\_\_\_\_\_ the gummy bear because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Independent Variable (what will be manipulated): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dependent Variable (what is being measured): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Control Variables (what variables stay the same): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Materials:** gummy bears, distilled water, salt water, beakers, ruler, balance, tape

**Procedure:** DAY 1

1. Obtain 2 Gummy Bears of the SAME colour.
2. **Measure length,** width, and depth of each. Record your measurements in **“Day 1 Observations”** Data Table
3. **Measure mass** of each gummy bear and record in same table.
4. Obtain two 100ml beakers. Label both beakers with your group name and block number. Label one beaker “distilled water”, and the other “salt water”.
5. Add 80ml distilled water to the distilled water beaker. Add 80ml salt water to the other beaker.
6. Place ONE Gummy Bear in EACH beaker. Set aside.

DAY 2

1. Observe each gummy bear in the beakers. Record your observations.
2. Carefully pour off the water and slip gummy bear onto paper towel. Record measurements in data table.
3. Calculate percent change in volume and mass of each gummy.
4. Clean up and put everything away.

**Day 1 Observation Data Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| Gummy | Length x Width x Height (mm) | Volume (mm3) | Mass (g) |
| 1  | Tap WaterGummy |  |  |  |
| 2 | Salt WaterGummy |  |  |  |

**Day 2 Observations:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Gummy | Observations (size, colour, texture) | Length x Width x Height (mm) | Volume(cm3) | Mass (g) |
| 1  | Tap Water |  |  |  |  |
| 2 | Salt Water |  |  |  |  |

**Calculate Percent change in volume**:

|  |  |
| --- | --- |
| Gummy | (Day 2 volume – Day 1 volume) X 100 = % change in Volume Day 1 volume |
| 1  | Tap Water |  |
| 2 | Salt Water |  |

**Calculate % Change in Mass**

|  |  |
| --- | --- |
| Gummy | (Day 2 Mass – Day 1 Mass) X 100 = % change in MassDay 1 Mass |
| 1  | Tap Water |  |
| 2 | Salt Water |  |

**Analysis:**

1. Why was it necessary to record measurements of your Gummy Bears before beginning the experiment?
2. Using concepts like **concentration** and **osmosis**, explain which way the water moved in the Water Gummy and Why.
3. Using terms like ***tonicity*** and ***concentration***, explain why your Salt Gummy was smaller than the Water Gummy.
4. **Predict** what would happen if the Salt Gummy bear was placed in fresh water overnight. **Explain** your reasoning.
5. **Predict** what would happen to the Water Gummy if you placed it in salt water. **Explain** your reasoning.
6. Compare your percent change to two other groups. How can you account for the differences?
7. Summarize what you learned from this experiment.
8. Extending: Do you think sugar from the Gummy moved out of the bear? Why? Is there any evidence? How could you test this?