

**SCIENCE 8**  
**OSMOSIS and GUMMY BEARS**  
**LAB**

Name: \_\_\_\_\_

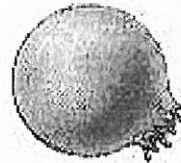
Date: \_\_\_\_\_ Pd: \_\_\_\_\_

**Background:**

Molecules are always moving. Remember that **DIFFUSION** is the movement of molecules from an area that is highly crowded to an area that is less crowded.

OSMOSIS is a form of DIFFUSION. OSMOSIS is the diffusion of water molecules through a selectively permeable membrane (a selectively permeable means some molecules can move through the membrane while others cannot.)

Cells use osmosis to move particles that it needs into and out of the cell.



Normal cell

**Hypertonic**

The concentration of solutes outside is higher than it is inside the cell.

**Isotonic**

The concentration of solutes outside the cell is equal to that inside the cell.

**Hypotonic**

The concentration of solutes outside is lower than it is inside the cell.

**Very Hypotonic**

This cell has burst due to the large amount of water entering it.

**Answer these questions BEFORE the lab:**

1) What is diffusion? (2 pts)

\_\_\_\_\_

\_\_\_\_\_

2) What is osmosis? (2pts)

\_\_\_\_\_

\_\_\_\_\_

3) What does **selectively permeable** mean? (2 pts)

\_\_\_\_\_

\_\_\_\_\_

4) Prediction: How will soaking Gummy Bear candies in distilled water affect the size of the candy? (explain your prediction based on the background information) (6 pts)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Materials:**

<b>1- 100 ml Beaker</b>	<b>2- Gummy bears</b>
<b>80 mL distilled water</b>	<b>Marker</b>
<b>Ruler</b>	<b>Paper Towel</b>
<b>80 mL Salt water</b>	<b>Calculator</b>
<b>Scale</b>	<b>2 dixie cups</b>

**PROCEDURE DAY 1:**

- 1) Gather: 1 – 100mL beakers, 2 - gummy bears, 2- dixie cups, a ruler, and a marker.
- 2) Label your cups with your group name.
- 3) Label one “distilled water” and the other “salt water.”
- 4) Fill each cup with 80 mL of the designated water from the labeled beakers.
- 5) Measure both of your gummy bear’s height, width and length in **centimeters** and record it in the data table below.
- 6) Using the digital scale, find both gummy bear’s mass in **grams** and record it in the table below.
- 7) Draw all the details of your gummy bear in the data table below. Be sure to draw it the size it really is!

<b><u>BEFORE SOAKING IN DISTILLED WATER</u></b> Day 1 (4pts)	<b><u>AFTER SOAKING IN DISTILLED WATER</u></b> Day 2 (4pts)
HEIGHT:	HEIGHT:
WIDTH:	WIDTH:
LENGTH:	LENGTH:
MASS:	MASS:
DRAWING/DESCRIPTION	DRAWING/DESCRIPTION
<b><u>BEFORE SOAKING IN SALT WATER</u></b> Day 1 (4 pts)	<b><u>AFTER SOAKING IN SALT WATER</u></b> Day 2 (4 pts)
HEIGHT:	HEIGHT:
WIDTH:	WIDTH:
LENGTH:	LENGTH:
MASS:	MASS:
DRAWING/DESCRIPTION	DRAWING/DESCRIPTION

**PROCEDURE DAY 2:**

- 1) Find your group's beakers. Gently pour the water out into the designated receptacle.
- 2) Carefully transfer the gummy bear onto the paper towel. Be careful not to break the gummy bear.
- 3) Using your ruler and the scale, take the correct measurements to fill out the rest of your data table.
- 4) Calculate the **percent change** in the size of the candy using the formulas below:

**Distilled Water - % Change (6pts)**

% CHANGE IN HEIGHT=  
(AFTER SOAKING HEIGHT- BEFORE SOAKING HEIGHT/ BEFORE SOAKING HEIGHT) x 100

( \_\_\_\_\_ - \_\_\_\_\_ / \_\_\_\_\_ x 100 = \_\_\_\_\_ %

% CHANGE IN WIDTH=  
(AFTER SOAKING WIDTH- BEFORE SOAKING WIDTH/ BEFORE SOAKING WIDTH) x 100

( \_\_\_\_\_ - \_\_\_\_\_ / \_\_\_\_\_ x 100 = \_\_\_\_\_ %

% CHANGE IN LENGTH=  
(AFTER SOAKING LENGTH- BEFORE SOAKING LENGTH/ BEFORE SOAKING LENGTH) x 100

% CHANGE IN MASS=  
(AFTER SOAKING MASS- BEFORE SOAKING MASS/ BEFORE SOAKING MASS) x 100

( \_\_\_\_\_ - \_\_\_\_\_ / \_\_\_\_\_ x 100 = \_\_\_\_\_ %

**Salt Water - % Change (6pts)**

% CHANGE IN HEIGHT=  
(AFTER SOAKING HEIGHT- BEFORE SOAKING HEIGHT/ BEFORE SOAKING HEIGHT) x 100

( \_\_\_\_\_ - \_\_\_\_\_ / \_\_\_\_\_ x 100 = \_\_\_\_\_ %

% CHANGE IN WIDTH=  
(AFTER SOAKING WIDTH- BEFORE SOAKING WIDTH/ BEFORE SOAKING WIDTH) x 100

( \_\_\_\_\_ - \_\_\_\_\_ / \_\_\_\_\_ x 100 = \_\_\_\_\_ %

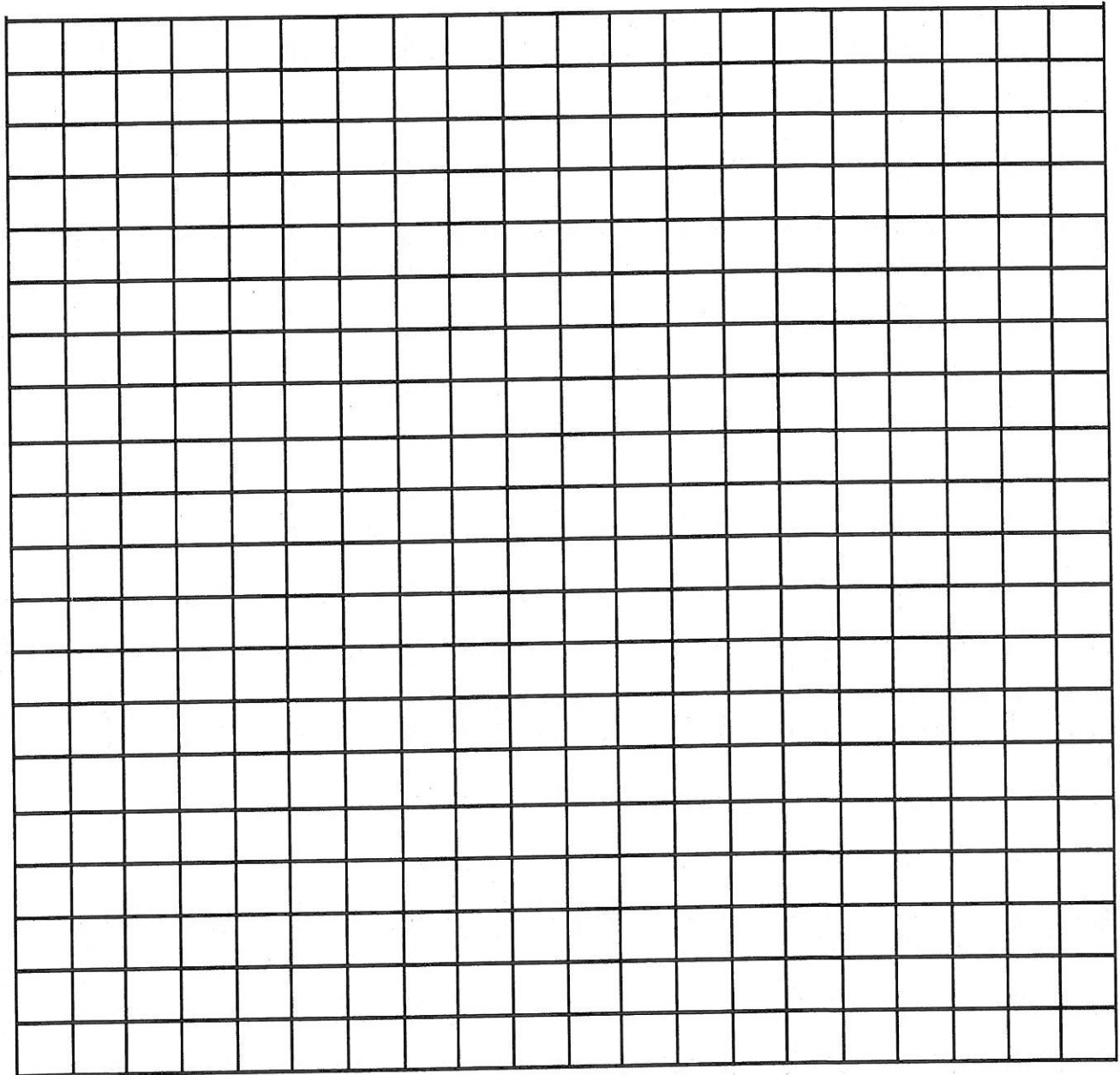
% CHANGE IN LENGTH=  
(AFTER SOAKING LENGTH- BEFORE SOAKING LENGTH/ BEFORE SOAKING LENGTH) x 100

% CHANGE IN MASS=  
(AFTER SOAKING MASS- BEFORE SOAKING MASS/ BEFORE SOAKING MASS) x 100

( \_\_\_\_\_ - \_\_\_\_\_ / \_\_\_\_\_ x 100 = \_\_\_\_\_ %

**GRAPH: (10pts)**

Graph the **percent changes** in height, width, length and mass for both gummy bears as bar graphs. Make sure to write a **title** and to **label both axes**.



**POST LAB QUESTIONS:**

1. Describe what happened to your gummy bear after soaking it in distilled water over night: (4pts)
2. What changed the most, the height, width, length or mass of your distilled water gummy bear? (2pts)
3. Did the gummy bear soaked in distilled water have a hypotonic, hypertonic or isotonic reaction? (2pts)
4. Describe what happened to your gummy bear after soaking it in salt water over night: (4pts)
5. What changed the most, the height, width, length or mass of your salt water gummy bear? (2pts)
6. Did the gummy bear soaked in salt water have a hypotonic, hypertonic or isotonic reaction? (2pts)

