Names: _____

Observing Osmosis with Gummies

<u>**Background Information**</u>: Molecules are in constant motion, and tend to move from areas of higher concentrations to lesser concentrations.

DIFFUSION is defined as the movement of molecules from an area of high concentration to an area of low concentration.

The diffusion of **water** molecules through a selectively permeable membrane is known as **OSMOSIS**.

Semipermeable means that some molecules can move through the membrane while others cannot.

Movement through membranes is called **transport**.

Diffusion and osmosis are forms of **passive transport**.
- This means that things do not need energy to move from areas of high concentration to areas of low concentration.
- HIGH → LOW

The opposite of passive transport is, **active transport**.
- This requires energy to transport molecules from low concentration to high concentration.
- LOW → HIGH
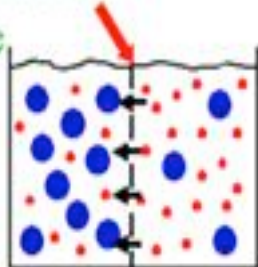
Osmosis is the movement (transport) of water (small dots) through a selectively permeable membrane from an area of HIGH concentration to an area of LOW concentration.

Gummy Bears are popular candies made of gelatin, starch, sugar and a <u>small</u> amount of water.

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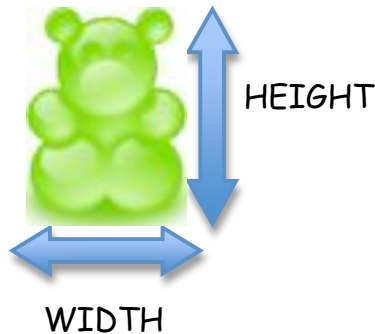
Prediction (explain your prediction based on the background information):

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Materials:
- Beaker
- Distilled water
- Gummy bear
- Ruler

- Masking tape
- Triple Beam Balance

- Wax paper
- Paper towels
- Calculator

Procedure:
1. Use the masking tape to label your beaker with your names & class period.
2. Use the ruler to find the height & width of your candy bear.

HEIGHT

WIDTH

3. Use a triple beam balance to find the mass of your candy bear.
    a. Use a piece of wax paper to protect the pan of the balance.
    b. Remember to subtract the mass of the wax paper.
4. Record descriptive observations about the candy bear.
5. Fill your beaker ½ way full with distilled water.
6. Put your candy bear in the water.
7. Set the beaker aside for one day.
8. After the candy bear has been in the distilled water overnight, **gently** take it out of the water and pat it dry. Be very careful because the candy is now extremely breakable.
9. Repeat steps 2 – 4.

Data: (be sure to include units with any measurements)

Before soaking in water	After soaking in water
Height:	Height:
Width:	Width:
Mass:	Mass:
Descriptive Observations:	Descriptive Observations:

Calculate the percent change in the size of the candy:

% CHANGE IN HEIGHT =
(Height after soaking – Height before soaking / Height before soaking) x 100

(_____ - _____ / _____) x 100 = _____%

% CHANGE IN WIDTH =
(Width after soaking – Width before soaking / Width before soaking) x 100

(_____ - _____ / _____) x 100 = _____%

% CHANGE IN MASS =
(Mass after soaking – Mass before soaking / Mass before soaking) x 100

(_____ - _____ / _____) x 100 = _____%

Questions & Analysis:

1. What happened to the candy after soaking in distilled water overnight?

_____

_____

2. Why did you get these results?

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3. What do you think would happen to the candy if you let it soak in salt water overnight? Explain your answer.

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Conclusion:

Write a short paragraph to explain the results of this investigation using the concept of osmosis. Include **specific data** to support what you say.

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