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

**Observing Osmosis**

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

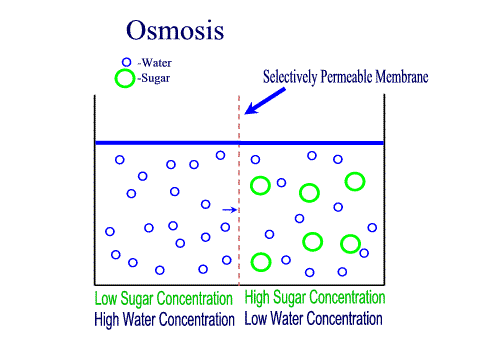
Diffusion is defined as the movement of molecules from an area of high concentration to an area of low concentration.

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

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

Movement through membranes is called transport.

Diffusion and osmosis are passive forms of transport; this means that do not need energy to move areas of high concentration to areas of low concentration. Active transport requires energy to transport molecules from low concentration to high concentration.



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, and sugar.

**Question**: How will soaking Gummy Bear candies in water affect the size of the candy? How will the same experiment go when using salt water?

**Prediction**:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Materials**:

* 2 Beakers
* Salt water
* Fresh Water
* 2 Gummy bears
* Ruler
* Masking tape
* Paper towel
* Calculator

**Procedure**:

1. Use the masking tape to label your beakers with your names & class period. Label one beaker Fresh Water and the other Salt Water.
2. Use the ruler to find the height & width of your candy bear.
3. Record descriptive observations about the candy bear.
4. Fill your beakers ½ way full with the appropriate type of water.
5. Put your candy bear in the water.
6. Set the beaker aside for one day.
7. 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.
8. Repeat steps 2 – 4.

**Data**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Fresh Water** | | **Salt Water** | |
| Before Soaking in Water | After Soaking in Water | Before Soaking in Water | After Soaking in Water |
| Height | Height | Height | Height |
| Width | Width | Width | Width |
| Descriptive Observations | Descriptive Observations | Descriptive Observations | Descriptive Observations |

Calculate the percent change in the size of the candy:

Fresh Water Gummy Bear:

% 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 = \_\_\_\_\_%

Salt Water Gummy Bear:

% 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 = \_\_\_\_\_%

Graph the percent changes on a bar graph. Remember to title and label both axes.

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**Questions & Analysis**:

1. What happened to the candy after soaking in fresh water overnight?
2. Why did you get these results?
3. What happened to the candy after soaking in salt water overnight?
4. Why do you think there are differences in the results between the fresh water and salt water? Explain using the words concentration, diffusion and osmosis.

**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.