



Name _____
Partner's Name _____
Date of Lab _____

OBSERVING OSMOSIS (GUMMY BEAR LAB)

Essential Question: How is the movement of water regulated (in cells)?

Background Information:

- A Gummy Bear will be used as a model for the Cell. Gummy Bears are made of gelatin and sugar. Gelatin is a polymer that forms 3-dimensional matrices which give structural support to jams, jellies, and Jell-O, and lots of other everyday things.
- Membranes are SELECTIVELY PERMEABLE which means that some _____ can move through the membrane while others cannot (depending on their size).
- Molecules want to move from an area of _____ to an area of lower concentration.
- When molecules move from high concentration to low concentration through a membrane, it is called PASSIVE TRANSPORT and it requires NO ENERGY AT ALL. There are 2 different types.
 - _____ is the movement of any molecule from high to low concentration
 - _____ is the diffusion of water molecules from high to low concentration

Purpose: To observe the changes that occur when a Gummy Bear is soaked in different solutions.

Prediction #1:

Explain what you think will happen to Gummy Bears when soaked in pure water. **Justify your prediction.**

Prediction #2:

Explain what you think will happen to Gummy Bears when soaked in salt water. **Justify your prediction.**

Materials:

Beaker
Water

Salt solution
Gummy bear

Ruler
Masking tape

Procedure:



Day One:

1. Use the tape to label your Beakers with your name & partner's name.
One beaker will be labeled "water" and the other beaker "salt water"
2. Use the ruler to find the length (TOP TO BOTTOM), width (SIDE TO SIDE), and height (FRONT to BACK) of each gummy bear.
(Use cm and be sure to report decimal places).
3. Calculate the Volume of the Bear. What units would the volume be expressed in?
4. Place each bear, on its back, inside the bottom of each beaker.
5. Pour the correct liquid into each labeled beaker, ensuring that the liquid level JUST covers the gummy bear (not too much, not too little).
6. Store the beakers in the cupboard, as directed by the teacher.

Day Two:

1. Be very careful...your bear may be fragile!! If possible, pour the liquid out and gently slide the bear onto a clean paper towel.
Measure its length, width, and height (in cm). (If the bear is REALLY falling apart, you may have to measure it while it is still in the beaker.)
2. Calculate the Volume of the Bear.

THERE IS NOTHING TO WRITE ON THIS PAGE.

RECORD YOUR DATA AND OBSERVATIONS ON THE NEXT PAGE.

Data: BEAR # 1 in WATER

Solution	Length (cm)	Width (cm)	Height (cm)	VOLUME (cm ³)
Day 1: Initial (no solution)				
Day 2: Final (after soaking)				

Observations:

	BEFORE SOAKING IN WATER	AFTER SOAKING IN WATER
DIAGRAM (Include COLOUR!)		
DESCRIPTIONS (point form words)		

Data: BEAR # 2 in SALT WATER

Solution	Length (cm)	Width (cm)	Height (cm)	VOLUME (cm ³)
Day 1: Initial (no solution)				
Day 2: Final (after soaking)				

Observations:

	BEFORE SOAKING IN SALT WATER	AFTER SOAKING IN SALT WATER
DIAGRAM (Include COLOUR!)		
DESCRIPTIONS (point form words)		

Experimental Analysis and Questions: (FULL SENTENCE ANSWERS!!!!)

You may write your answers under each question, or attach an additional page with your answers.

1. What was the change in the volume of the Gummy Bear that was soaked in water?
Did the Volume increase, decrease, or stay the same?

2. Explain the change(s) in the Gummy Bear that was soaked in water,, using the terminology from our notes (you may also use the "Background Information" in this lab handout). Be thorough in explaining the THEORY behind the change(s) that you have witnessed.

3. What was the change in the volume of the Gummy Bear **that was soaked in SALT water**?
Did the Volume increase, decrease, or stay the same?

4. Explain the change(s) in the Gummy Bear **that was soaked in SALT water**, using the terminology from our notes (you may also use the "Background Information" in this lab handout).
Be thorough in explaining the THEORY behind the change(s) that you have witnessed.

5. What do you think would happen if a 3rd Gummy Bear was placed in a Beaker that contained SUGAR WATER?
Justify your prediction, thoroughly explaining. Use Theory and Terminology discussed in class. Include a diagram showing the movement of molecules inside and outside the 'cell' (Gummy Bear). Label your diagram thoroughly with the terms we used in our notes.

6. Describe another experiment you could set up to demonstrate the concepts of Diffusion and/ or Osmosis. Be sure to clearly outline your procedure, the data you would collect, and what your results could prove.

7. **Diffusion or Osmosis?** Which word is best used to describe the Changes you witnessed in this lab? Defend your answer by showing your clear understanding of the terminology.

CONCLUSION:

One sentence that re-states the Purpose.

⇒ *In this lab, we investigated...*

One sentence that summarizes your findings.

⇒

GUMMY BEAR EXPERIMENT

Processing and analyzing data and information

- Seek patterns and connections in data from their own investigations
- Use scientific understandings to identify relationships and draw conclusions

COMPLETED ALL PARTS OF THE LAB

Filled in all blanks and completed all sections on every page	/2
Filled in the data table with decimals and with units	/2
Qualitative Observations of Bears before and after (Diagram and description gives clear indication of the change that occurred.)	/2
Full Sentence Answers	/1
Clear Conclusion. Summarizes the experiment well.	/2
Followed Instructions during lab activity and worked independently and confidently	/2

Is able to answer questions about what happened when the bear was kept in distilled water and salt water.	/2
Uses the terms Concentration, Diffusion, and Osmosis, Semi / Selectively Permeable Membrane**	/2
Talks about the particles (molecules) that move from an area of high concentration to an area of low concentration**.	/1
Is able to present and defend an inference of what would happen if the gummy bear was placed in sugary water, using the terms listed above**.	/2
Is able to propose how to conduct an additional experiment to demonstrate the concept of movement of molecules across a permeable membrane.	/2

DEVELOPING

“C”

Is not able to explain all of the changes to the bear in the salt water, distilled water, and predictions about sugary water.	
Not using the terminology** correctly.	

BEGINNING

“1”

Did not complete all of the questions	
Did not attempt to use the terminology to explain the Science behind what happened	
Had difficulty explaining the changes that occurred	

OVERALL GRADE _____

Beginning skills. Not meeting requirements of rubric.	Developing competency. Not meeting all requirements of rubric.	Meeting Grade Level Expectations and meeting all rubric requirements.	Extends on Concepts. Effectively uses scientific understandings to identify relationships and draw conclusions.
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