OBSERVING OSMOSIS ACTIVITY SHEET

NAME (each group member): _____

CLASS: _____ DATE: _____

I. PROBLEM: How does osmosis occur in an egg cell?

II. HYPOTHESIS: (Write as an "if - then" statement; i.e.: If the bread is placed in the dark for five days, then it will not have mold growth.)

III. PROCEDURE:

1. **Put on safety goggles and lab aprons.**
2. Using the graduated cylinder, measure 250 ml of white vinegar and pour it into the 500 ml container. Record the beginning volume of vinegar in the table, "VOLUME DATA."
3. Carefully place the egg in the container and cover.
4. Observe the egg after 30 minutes, then record the egg's appearance in the table, "EGG OBSERVATIONS." Place the eggs in an area where they will not be disturbed.
5. After 2 days, observe the egg and record the egg's appearance in the table, "EGG OBSERVATIONS."
6. Remove the container's cover and carefully remove the egg from the liquid using the spoon. Gently rinse the egg under a slow steam of cool tap water. Set egg aside for day 3.
7. Using the graduated cylinder, measure the volume of the liquid remaining in the container. Record in the "VOLUME DATA" table.
8. After designing an experiment to reverse the osmosis, record data in the tables below.

IV. DATA:

VOLUME DATA

	BEGINNING VOLUME	ENDING VOLUME
Vinegar Day 2		
Day 3		

EGG OBSERVATIONS

AFTER 30 MINUTES	
After 2 days	
After 3 days	

V. CONCLUSION: (Write a conclusion. Tell what you discovered and if it agrees or disagrees with your hypothesis; i.e.: After sitting in the dark for five days, the bread exhibited no mold growth. These results support my hypothesis.)

Comment:

ASSESSMENT

When students have completed the OBSERVING OSMOSIS ACTIVITY SHEET, students are to design an experiment demonstrating reverse osmosis. Students will write the steps of the scientific method on the back of the activity sheet, modeling the experiment done with vinegar – they must choose a liquid that will cause fluid in the egg to diffuse out of the egg. Students then perform the experiment, allowing the egg to sit in the chosen liquid overnight (day 3). They will record the chosen liquid, observations, & beginning and ending volume of liquid in the data tables on the OBSERVING OSMOSIS ACTIVITY SHEET.
After completing the lab, have students write and respond to the following:

1.) Explain the changes in volume that occurred. (Answer: More water was outside the egg than in the vinegar causing the water to diffuse into the egg after day 2. After day 3, the water moved out of the egg into the chosen liquid because there was more water inside the egg than in the chosen liquid.)
2.) Calculate the amount of water that moved into and out of the egg. (Answer: will vary; but about 30 ml of liquid will move into the egg from the vinegar.)

3.) Infer what part of the egg controlled the movement of liquid into and out of the cell. (Answer: the cell membrane.)

*Use the rubric to formatively assess the students understanding of osmosis as shown by their experiment design, performance, and activity sheet.

RUBRIC

	3	2	1	0
Experiment Design	Followed steps of scientific method exactly	Followed most steps of scientific method	Steps of scientific method not followed &/or out of order	Students did not attempt to design an osmosis experiment
Experiment Content	Hypothesis is an "if-then" statement; procedure is appropriately arranged; conclusion concise and reflects hypothesis; analysis stated completely	Hypothesis, procedure, data, conclusion, analysis incomplete	Hypothesis, procedure, data, conclusion, &/or analysis missing	Students did not attempt experiment
Performance	Students worked cooperatively in lab groups; completed lab and activity sheet	Students worked cooperatively some of the time; incomplete activity sheet	Students did not work cooperatively; lab not completed; incomplete activity sheet	Students did not attempt experiment