Name: **Date:**

HANDS-ON LAB

Investigating Osmosis

In this investigation, you will determine whether different solutions are hypotonic, isotonic, or hypertonic relative to the inside of a chicken egg. Your teacher has already soaked the eggs in vinegar, which removes calcium from the shell. This allows the egg to act as a single cell encased in a selectively permeable membrane, thus allowing molecules in solution to move across the membrane.

PREDICT

What do you think will happen to an egg placed in each solution?

_____

_____

_____

_____

_____

MATERIALS

- balance
- beaker, 500 mL
- corn syrup
- cup, plastic, 8 oz (3)
- marker
- NaCl solution (5%)
- plastic wrap, 20 cm piece
- rubber band, medium-sized (3)
- tape, masking, 10 cm
- vinegar-soaked chicken eggs (3)
- water (to rinse eggs)
- water, distilled

PROCEDURE

1. Obtain three vinegar-soaked chicken eggs. Thoroughly rinse each egg, weigh them, and record their masses in the data table.
2. Place an equal amount of each of these solutions in three separate cups: distilled water, corn syrup, and salt water (5% NaCl solution).
3. Label each cup with the appropriate solution name. Place each egg in separate plastic cups and cover them with one of the solutions you are testing.
4. Cover each cup with plastic wrap, securing it with a rubber band. Soak the eggs overnight.
5. The next day, find the mass of each egg and note any changes in appearance. Record your findings in the data table.

DATA TABLE: CHANGES IN EGG MASS

	DISTILLED WATER	CORN SYRUP	SALT WATER
Initial mass of egg (g)			
Mass of egg after soaking in solution (g)			
Changes in egg appearance			
Type of solution			

ANALYZE

1. Calculate the changes in the mass of the eggs by subtracting the initial mass of the egg from the mass of the egg after soaking.

   Change in mass of egg in distilled water _____ g

   Change in mass of egg in corn syrup _____ g

   Change in mass of egg in salt water _____ g

2. How did you conclude whether the solutions you tested were hypotonic, isotonic, or hypertonic relative to the inside of a chicken egg?

   _____

   _____

   _____

3. What process caused the eggs to change size? In this process, which material moves across the membrane? Which materials do not move across the membrane?

   _____

   _____

   _____

   _____

4. In the space below, draw a diagram to show how materials were moving across the egg membrane in each cup.

Name: **Date:**

EXPLAIN

Explain which direction water moved in each of your experimental setups. Use the following format for your explainations.

Claim For each solution, explain whether water moved into the egg, out of the egg, or did not change in amount.

Evidence Give evidence from your data and analysis to support your claim.

Reasoning Explain how the evidence you cited supports your claim. How do you know that water was moving in the direction you claimed? How does the evidence support your ideas?