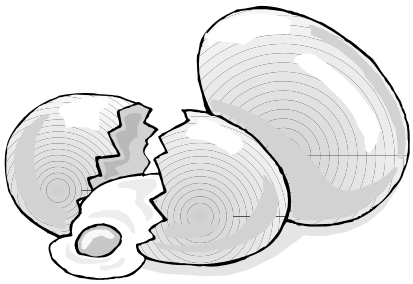
Name_____

Egg Osmosis



Goggles must be worn during this activity. Do all pouring over the trays – keep your work area clean!

Problem: To observe osmosis in a cell

Background Information: ***Osmosis*** is the diffusion of water across a selectively permeable membrane. This means that water can go through membranes from areas where there are a lot of water molecules to areas where there are not so many water molecules. To perform their functions, cells must keep an internal ***steady state*** even when the environment outside of the cell is changing. This steady state is called ***homeostasis***. Homeostasis maintained in part by controlling the movement of materials into and out of the cell. To achieve this control, cells are surrounded by a membrane that can tell different substances apart, and can slow down or stop the movement of some substances while allowing others to pass through freely. Because not all substances can go through the cell membrane equally well, the membrane is said to be **differentially**, or ***selectively permeable***.

Selectively permeable membranes are those that have openings called ***pores*** that let water, oxygen, carbon dioxide and certain other small molecules go through the membrane.

Cells in the human body need a constant supply of oxygen and water. They are also making carbon dioxide as a waste, and this needs to be removed from the cell. These substances can move into and out of a selectively permeable membrane around a cell through the process of ***osmosis***.

Materials:

1 raw egg	Large beaker	Vinegar
Graduated cylinder	Spoon	Corn syrup
Distilled water	Masking tape	Triple beam balance

Procedure:

Day 1 –

1. Observe the egg. Record your observations.
2. Use the triple beam balance to find the mass of your egg. Record.
3. Use the masking tape to label your beaker.
4. Pour 200 mL of vinegar into the beaker.
5. Gently set your egg into the beaker.
6. Set the beaker aside.

Day 2 –

1. Observe the egg. Record your observations.
2. Use the spoon to remove the egg from the beaker. Be EXTREMELY careful. The egg is *very, very fragile* now.
3. GENTLY rinse the egg and find its mass. Record.

4. Using the graduated cylinder, measure the amount of vinegar left in the beaker. Record.
5. Rinse the beaker.
6. Pour 200 mL of corn syrup into the beaker.
7. GENTLY place the egg into the syrup,
8. Set the beaker aside.
9. Rinse the graduated cylinder.

Day 3 –

1. Observe the egg. Record your observations.
2. Use the spoon to remove the egg from the beaker. Be EXTREMELY careful. The egg is still very, very fragile.
3. GENTLY rinse the egg and find its mass. Record.
4. Using the graduated cylinder, measure the amount of liquid in the beaker. Record.
5. Rinse the beaker.
6. Pour 200 mL of water into the beaker.
7. GENTLY place the egg into the water,
8. Set the beaker aside.
9. Rinse the graduated cylinder.

Day 4 –

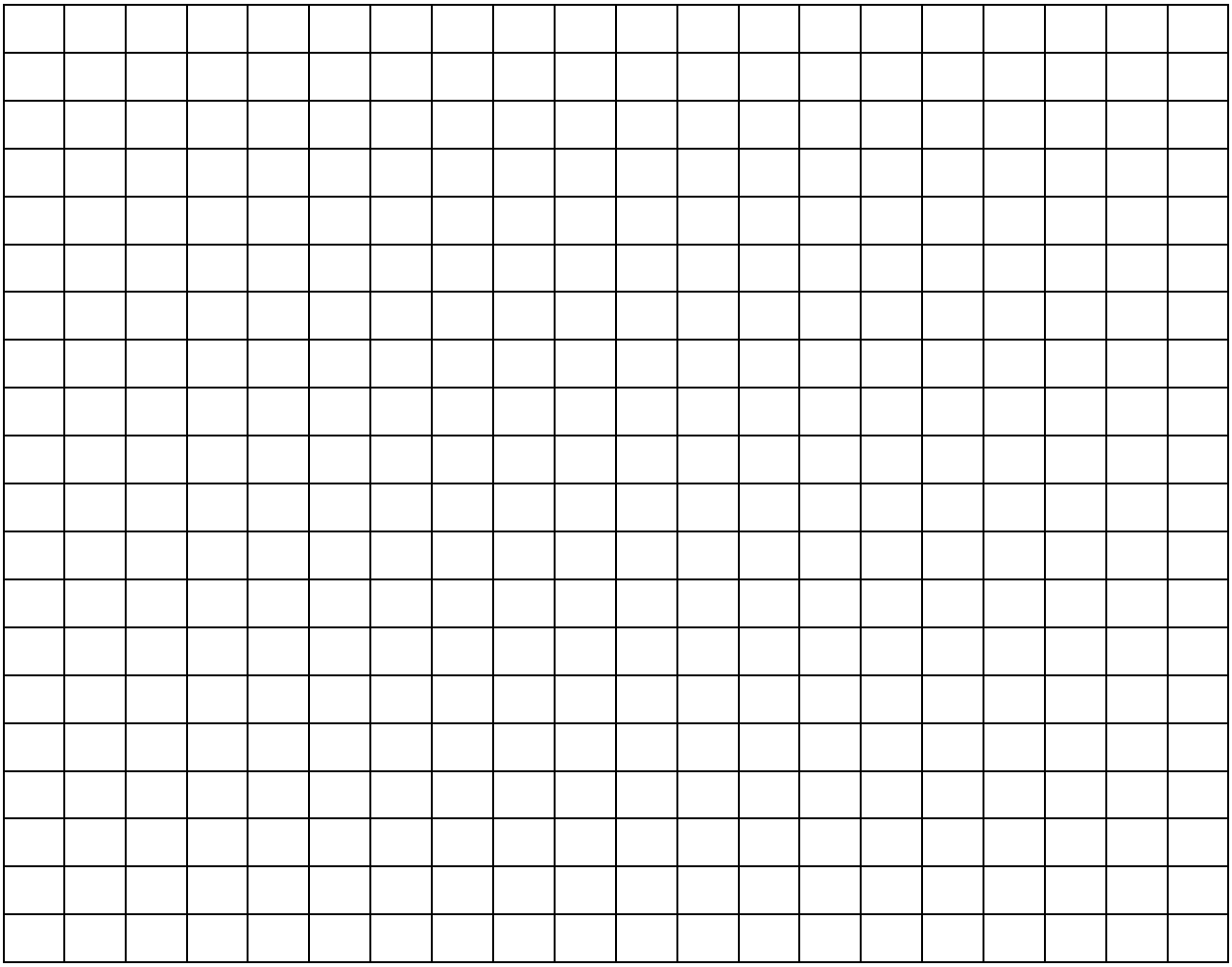
1. Observe the egg. Record your observations.
2. Use the spoon to remove the egg from the beaker. Be EXTREMELY careful. The egg is still very, very fragile.
3. GENTLY rinse the egg and find its mass. Record.
4. Using the graduated cylinder, measure the amount of liquid in the beaker. Record.
5. Dispose of the egg according to instructions.
6. Clean all equipment.

Data:

Day	Mass of egg (g)	Volume of liquid in jar (mL)	Observations of egg
1		200	
2			
3			

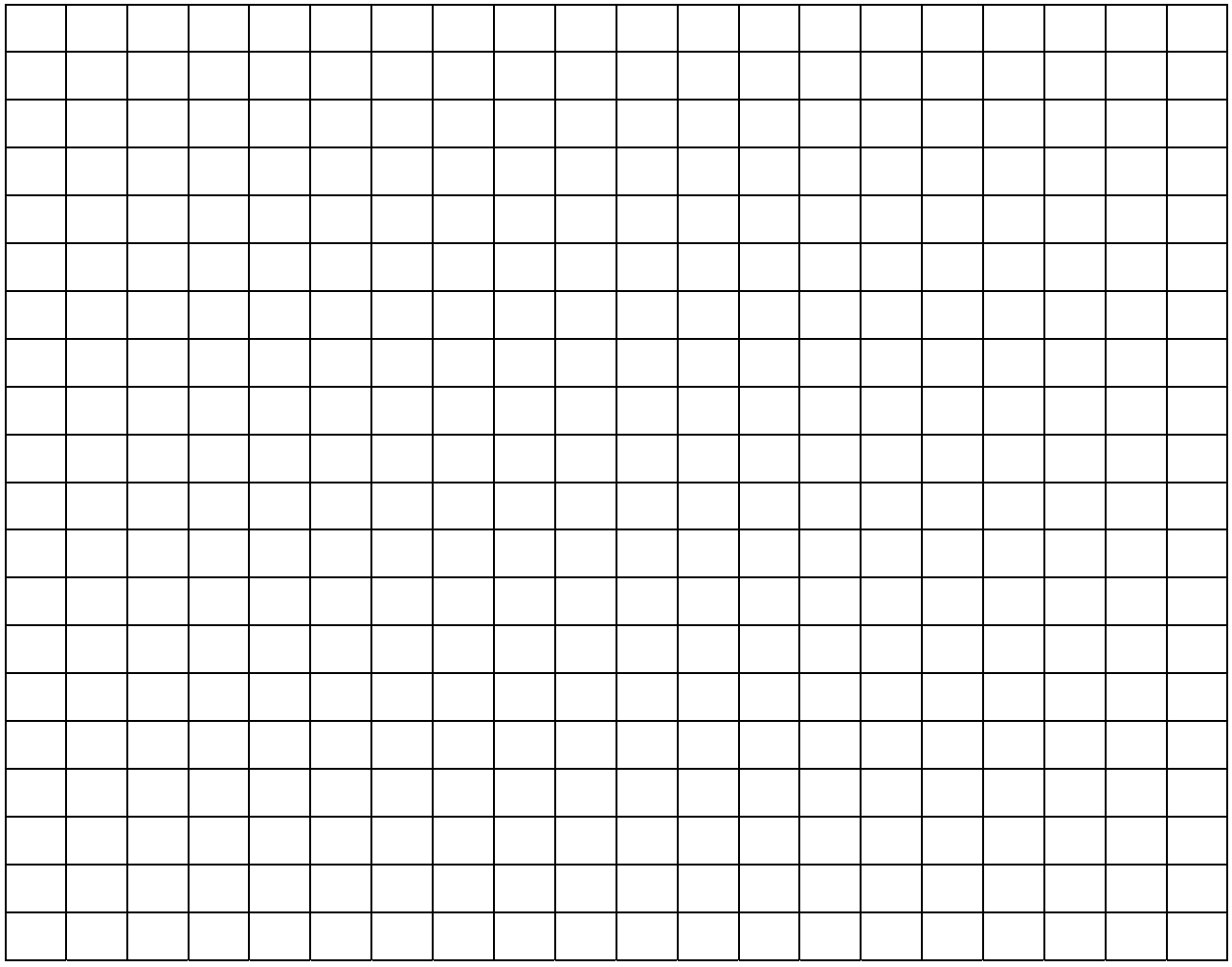
Data Analysis:

Make a BAR GRAPH to *compare* the change in the egg's **mass** as the type of liquid changed. Remember title & labels.



Describe the relationship shown in this graph:

Make a LINE GRAPH to show the *change* in the volume of the liquid from day to day. Remember title & labels.



Describe the relationship shown in this graph:

Questions & Conclusions:

1. When the egg was placed in the water, which direction did the water molecules move? Explain your answer.

2. Explain the volume of liquid remaining when the egg was removed from the syrup.

3. Why do grocery stores spray their fresh produce with water?

4. If a shipwrecked crew drank salt water, they could die. Explain why.

5. If a bowl of fresh strawberries is sprinkled with sugar, a few minutes later they will be covered with juice. Explain why this happens.