Name:_____

Observing Osmosis in Grapes

Period:_____

Objective: Using grapes as a cell model, you will observe osmosis and measure the net movement of water in three aqueous solutions.

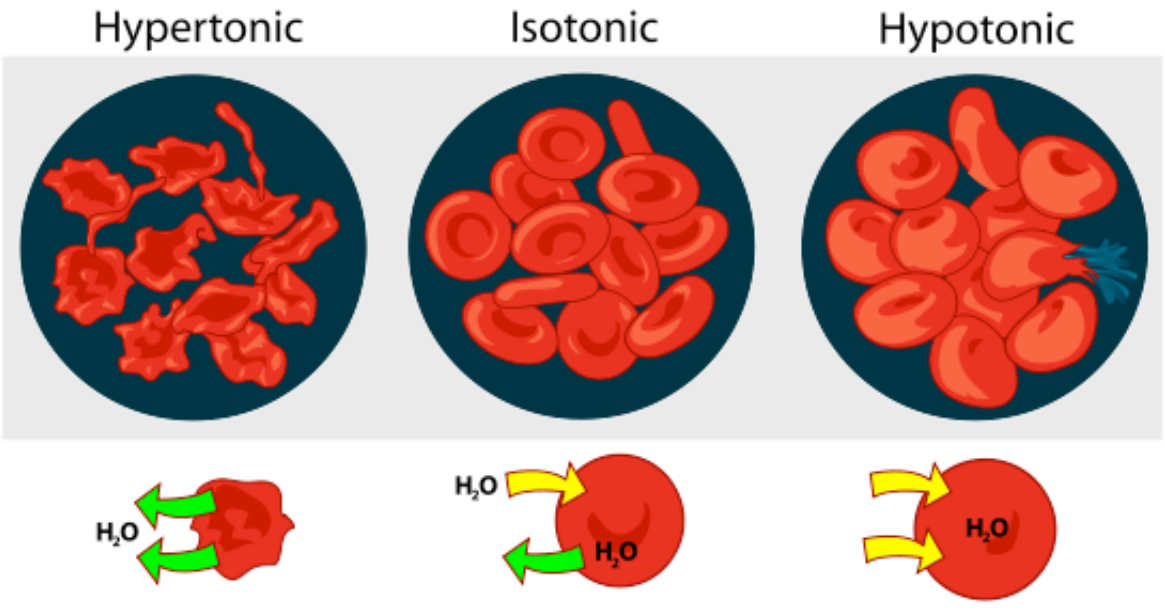
Outcomes: 1. By studying the percent mass change you will be able identify the movement of water into and out of the cell identifying which solution was *hypotonic, isotonic* and *hypertonic* relative to the cells of the grapes.

2. You will make a visual model that describes the net movement of water from the grape cells in the three solutions.

Materials: Each group of three students will need - Three 5 oz paper cups and 12-15 grapes

Class Stations – Solution tables with grape juice, water and corn syrup
Massing stations electronic balances will be used to find mass of items

Please read and understand all the lab procedures before you begin to answer the pre-lab questions.



Prelab Questions:

1. Describe the chemicals you would expect to find in the juices of a typical grape (and grape cells).

2. Of the following solutions, tap water, grape juice and corn syrup, which would have the greatest concentration of sugar and which the least? Explain.

Procedures day 1:
1. Use a sharpie marker to label the side of each cup with one of your student names, your period, and the name of the solution you will put in it (water, juice, syrup).
2. Dry 4 or 5 grapes and place them on the balance. Record the mass of these grapes in the data table for day one. Place these in the empty "water" cup. Repeat until all cups have grapes weighed and
3. Take your cups and go to the solutions station. At the solutions station, place just enough solution to cover the grapes in each cup.
4. Record your observations of the grapes in each solution.
5. Place these cups on the large table in the back of the room. Find your class blotter paper and place them there.

Procedures Day 2:
1. Find your three cups at the back table and return to your seats with them.
2. Record observations of how the grapes have changed over the time they sat in each solution.
3. Carefully remove the grapes from the cup of water. Pat them dry them with a paper towel. 4. Place each set on the balance to find their mass. Wipe the balance clean and dry between each use.
5. Repeat with the grapes in the grape juice and corn syrup. Be careful with the corn syrup as you dry the grapes do not tear open the grapes.

Disposal. After you checked your values and agree that they are reasonable, dispose of the grapes, cups and paper towels in the trashcan. Wipe the balance pan with a damp paper towel before returning this.

DATA TABLE for GRAPES

Water	*Mass (grams)*	*Grape Juice*	*Mass (grams)*	*Corn Syrup*	*Mass (grams)*
Grapes Day 1		Grapes Day 1		Grapes Day 1	
Grapes Day 2		Grapes Day 2		Grapes Day 2	
Change in Water Mass		Change in Water Mass		Change in Water Mass	

Water	Grape Juice	Corn Syrup
Day 1 Observations:	Observations:	Observations:
Day 2 Observations:	Observations:	Observations:

Post Lab Analysis
Answers to Osmosis in Grapes Lab
Q1. What does change in water mass mean if it is a positive value?

Q2. What does change in water mass mean if it is a negative value?

Q4. Based on the Water Gain/Loss values recorded in the table, identify the three solutions "tonicity" (hypotonic, isotonic, & hypertonic)

Grape Juice _____ Water _____

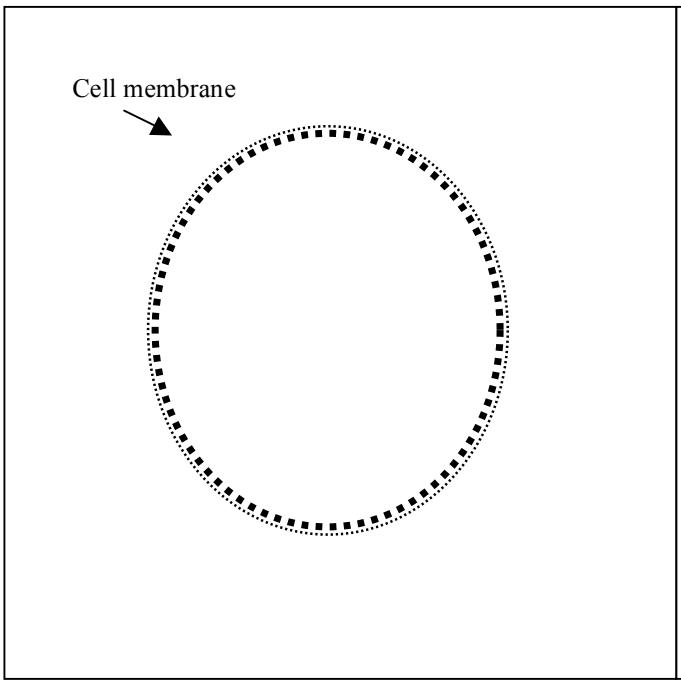
Corn Syrup _____

Q3. A grape cell is a obviously a plant cell. Why did the grape cells in corn syrup not continue to lose water and shrivel until they collapse. See video on youtube *Plants and Osmosis*
http://www.youtube.com/watch?v=GOxouJUtEhE

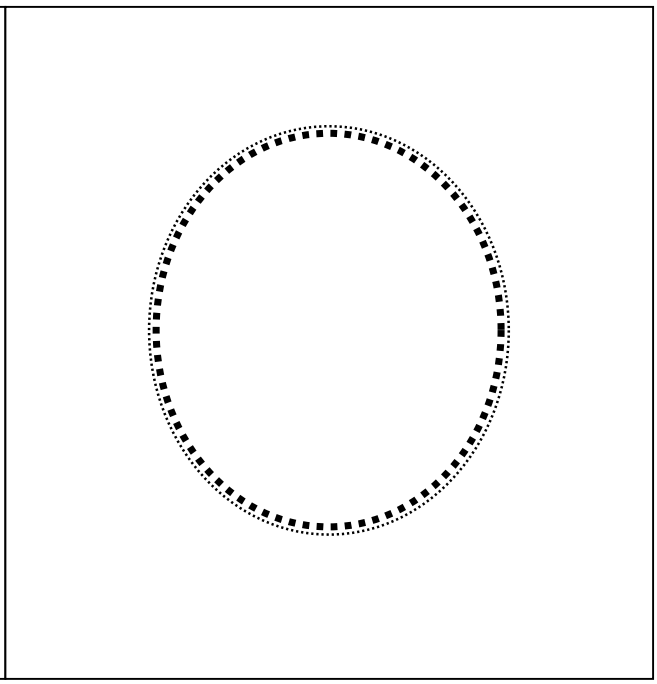
Q4. Using the following symbols as a key, make a visual model for on of the grape's cells at the **start** of their time in each of the three solutions. Include arrows to demonstrate the direction of water movement across the membrane. Outside the cell you will have one of the three solutions and inside the cell you will the cytoplasm as your solution.

△ sugar ● water movement of water ⇨

ISOTONIC



HYPERTONIC



HYPOTONIC