

Biology

Name: \_\_\_\_\_

“Egg” cellent Osmosis

Date: \_\_\_\_\_ Hour: \_\_\_\_\_

Question:

What will happen to an egg when placed in vinegar, blue food coloring, molasses and corn syrup solutions?

Hypothesis:

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Research Questions:

1. What is the shell of an egg made of?

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2. What is another name for vinegar? What is its chemical formula? \_\_\_\_\_

3. What are two main ingredients in molasses?

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4. What are two main ingredients in corn syrup?

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5. What does it mean to say “the concentration of a solution”?

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6. Define isotonic solution and draw a diagram of the particles in an isotonic solution: \_\_\_\_\_

\_\_\_\_\_ Diagram:

7. Define hypotonic solution and draw a diagram of the particles in a hypotonic solution: \_\_\_\_\_

\_\_\_\_\_ Diagram:

8. Define hypertonic solution and draw a diagram of the particles in a hypertonic solution: \_\_\_\_\_

\_\_\_\_\_ Diagram:

9. How do you think the shell of an egg is similar to the plasma membrane? \_\_\_\_\_

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Materials:

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|-----------------------|---------------------------------|
| 4 fresh eggs          | 150 mL blue food coloring/water |
| 150 mL Molasses       | 150 mL corn syrup               |
| 150 mL Vinegar        | 4 plastic cups                  |
| 4 rubber bands        | 4 pieces of plastic wrap        |
| Permanent marker      | balance                         |
| Ruler or tape measure | 4 250 mL beakers                |

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Hazards:

Standard student safety contract applies.

Procedure:

1. Clean and dry beakers
2. Label beakers “vinegar”, “blue food coloring”, “corn syrup”, and “molasses”
3. Repeat step 2 with plastic cups

4. Measure 150 mL of vinegar into graduated cylinder
5. Pour measured vinegar into “vinegar” plastic cup
6. Repeat steps 4-5 for each remaining liquid and plastic cup using a new graduated cylinder for each liquid
7. Obtain 4 fresh eggs
8. Place eggs on table being careful they do not roll off and break
9. Repeat step 2 with eggs
10. Place “vinegar” egg on balance
11. Record mass of egg in data table
12. Repeat steps 10-11 for remaining eggs
13. Using the tape measure, measure the circumference of the “vinegar” egg
14. Record the circumference in data table
15. Repeat steps 13-14 for remaining eggs
16. Using the ruler, measure the length of “vinegar” egg
17. Record length in data table
18. Repeat steps 16-17 for remaining eggs
19. Carefully place “vinegar” egg in plastic cup labeled “vinegar” making sure any liquid does not splash out of the cup
20. Repeat step 19 for remaining eggs and correctly labeled plastic cups
21. Place a piece of plastic wrap around any plastic cup
22. Secure the plastic wrap with a rubber band
23. Repeat steps 21-22 for remaining cups
24. Bring all 4 cups to the front counter to be put in the refrigerator overnight
25. Clean all materials, making sure to scrub off all labels on glassware
26. Return all materials to correct locations
27. Get teacher clean signature for day #1 in data

Day #2

28. Obtain your 4 cups from the teacher
29. Record observations of each egg in data table
30. Remove rubber band and plastic wrap from first plastic cup
31. Carefully remove egg and place on paper towel
32. Carefully pat egg dry
33. Repeat steps 10-18
34. Pour liquid into appropriate waste container
35. Throw egg in trash
36. Repeat steps 30-35 for all remaining eggs
37. Return all materials to correct locations
38. Get teacher clean signature for day #2 in data

Data:

<b>Egg</b>	<b>Day #1 Appearance</b>	<b>Mass Day #1</b>	<b>Circumference Day #1</b>	<b>Length Day #1</b>
<b>vinegar</b>				

<b>Blue food coloring/water</b>				
<b>molasses</b>				
<b>Corn syrup</b>				

Clean signature Day #1:

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<b>Egg</b>	<b>Day #2 Appearance</b>	<b>Mass Day #2</b>	<b>Circumference Day #2</b>	<b>Length Day #2</b>
<b>vinegar</b>				
<b>Blue food coloring/water</b>				
<b>molasses</b>				
<b>Corn syrup</b>				

Additional space for data to be recorded:

Clean signature Day #2:

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