

Name:

Date:

Color:

## Osmosis in Gummy Bears Lab



### Background Information:

The term **[osmosis]** refers to the movement of water molecules, usually across a membrane. The molecules move from a region of **[high]** concentration to **[low]** concentration.

Cells, like other living things have to do certain things to survive. Two examples are acquiring **[food, water]** and removing **[waste]**. These actions use chemical reactions that require water. In plants, one chemical reaction that uses water is called **[photosynthesis]**.

In plants, water is stored in vacuoles. The rigid cell **[wall]** prevents the cell from bursting. Some protists have an organelle called a **[contractile vacuole]** that squeezes the water out. Many animal **[cells]** have no good way for regulating water. They swell up when too much water moves in, and can shrivel up if the cell loses water.

Today, we will **[use gummy bears]** to model the cell, and see how they manage environments with different sugar **[concentrations]**. We will place the gummy bears in 2 different baths. One cup will have a liquid with a high sugar concentration and the other cup will have a liquid with a low sugar concentration. We will measure the length, width, and height of each gummy bear to determine its approximate **[volume]**.

Identify the variables:

1. Independent variable: **sugar concentration**

(what is different about the environment that the two gummy bears are in?)

2. Dependent variable: **volume of the gummy bear**

(what data are you collecting?)

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**List of Constants:**

(How will you keep both gummy bear treatments equal? You may add more than A-D):

- a. cups are the same
- b. same brand of gummy bear (ingredients)
- c. temperature
- d. amount of liquid

**Hypotheses:**

1. **If** the gummy bear is placed in the liquid with high sugar concentration, **then** it will \_\_\_\_\_.
2. **If** the gummy bear is placed in the liquid with low sugar concentration, **then** it will \_\_\_\_\_.

Response:

I think my first hypothesis will be proven because:

I think my second hypothesis will be proven because:

**Materials:**

- 2 small plastic cups
- 2 different-colored gummy bears
- liquid with high sugar concentration
- liquid with low sugar concentration
- sharpies
- metric ruler
- plastic spoon (day 2)
- paper towel

**Procedure:**

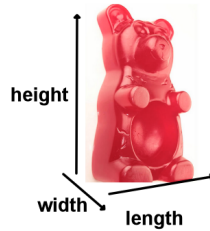
1. Collect 2 plastic cups, a ruler, and 2 different-colored gummy bears

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2. Label one cup high sugar concentration, your class color and initials.
3. Label one cup low sugar concentration, your class color and initials.
4. Measure the height, width, and length of each gummy bear (they might be different!).  
Record your measurements in the table.



5. Pour 10mL of liquid with low sugar concentration in one cup, place one gummy bear in the cup.
6. Pour 10mL of liquid with high sugar concentration in one cup, place one gummy bear in the cup.
7. Cover both cups with saran wrap
8. Place the cups on your color's tray [MAKE SURE YOU LABELLED THEM!]
9. Allow the bears to soak overnight.
10. **On Day 2**, use a plastic spoon to GENTLY place the bear from the liquid with low sugar concentration on a paper towel.
11. Measure the height, width, and length of the gummy bear. Record your measurements in the table.
12. Use a plastic spoon to GENTLY place the bear from the liquid with high sugar concentration on a paper towel.
13. Measure the height, width, and length of the gummy bear. Record your measurements in the table.

**Data Table:** Use metric units.

BEFORE	Low Sugar Concentration Bear Color:	High Sugar Concentration Bear color:
length	10 mm	mm
width	mm	mm

Name:

Date:

Color:

height	mm	mm
volume	mm <sup>3</sup>	mm <sup>3</sup>

AFTER	Low Sugar Concentration Bear	High Sugar Concentration Bear
length	20 mm	
width		
height		
volume		

Data Analysis (after -- before = change) (change/before x 100 = percent change)

$20-10=10$       $10/10*100=$

PERCENT CHANGE	Low Sugar Concentration Bear	High Sugar Concentration Bear
length	100%	
width		
height		
volume		

**Questions to answer to brainstorm for your conclusions:**

What change did you notice?

Why do you think this happened?

How does this experiment demonstrate osmosis?

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What could have affected your results?

Name:

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### GUMMY BEAR OSMOSIS LAB RUBRIC

Item	Points	Self-Assess	Earned	Comment
<b>Title</b> Is in the format "Gummy Bear Osmosis by First Last (color)	<b>5</b>			
<b>Hypothesis:</b> Has two parts, is in "if/then..." format. Explains prediction.	<b>5</b>			
<b>Introduction</b> Explains the important vocabulary, briefly explains experiment and purpose	<b>10</b>			
<b>Procedure:</b> is numbered and could be replicated. Describes how data is collected	<b>5</b>			
<b>Materials:</b> is bulleted, may be copied from lab sheet	<b>5</b>			
<b>Results/Analysis:</b> Describes the data observed in gummy bears, <u>does not</u> give reasons why yet.	<b>10</b>			
<b>Conclusion:</b> Restates purpose, results, and if hypothesis was proven. Asks further questions.	<b>20</b>			
<b>Data Table:</b> is attached, is neat, shows metric units.	<b>10</b>			
<b>Neatness/Spelling:</b> No funny fonts or emoticons. Follows editing checklist.	<b>5</b>			
<b>Self-assessment on rubric</b>	<b>5</b>			
<b>Total</b>				

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- Does each sentence begin with a capital letter?
- Check all ending punctuation.
- Is every sentence a complete sentence with a noun and a verb?
- Is every word spelled correctly?
- Are all proper nouns capitalized?
- Are any word misused? (it's/its, your/you're, etc.)
- Is all text in the same font style and size?
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