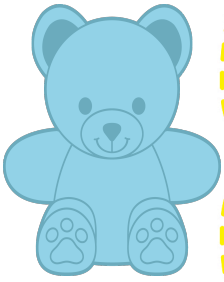
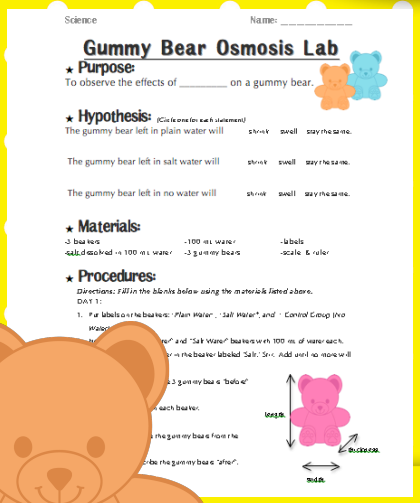
Middle Madness : A Middle School Survival Guide

# Gummy Bear Osmosis

Plain Water



Salt Water



Science Name: _____

## Gummy Bear Osmosis Lab

★ **Purpose:**
To observe the effects of _____ on a gummy bear.

★ **Hypothesis:** (Circle one for each statement)
The gummy bear left in plain water will shrink swell stay the same.

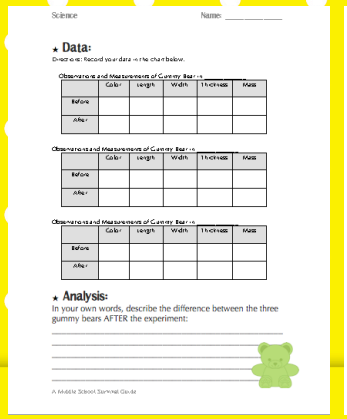
The gummy bear left in salt water will shrink swell stay the same.

The gummy bear left in no water will shrink swell stay the same.

★ **Materials:**
-3 beakers -100 mL water -labels
-salt dissolved in 100 mL water -3 gummy bears -scale & ruler

★ **Procedures:**
*Directions: Fill in the blanks below using the materials listed above.*
DAY 1:
1. Put labels on the beakers: "Plain Water", "Salt Water", and "Control Group (no Water)".
2. Pour 100 mL of water into the "Plain Water" and "Salt Water" beakers with 100 mL of water each.
3. Pour the salt water into the beaker labeled "Salt Water". Add until no more will dissolve.
4. Measure and record the mass of the 3 gummy bears "before".
5. Place one gummy bear in each beaker.
6. Remove the gummy bears from the beakers.
7. Measure and record the mass of the gummy bears "after".



Science Name: _____

★ **Data:**
Directions: Record your data in the chart below.

Observations and Measurements of Gummy Bear #

| | Color | Length | Width | Thickness | Mass |
|---|---|---|---|---|---|
| Before | | | | | |
| After | | | | | |

Observations and Measurements of Gummy Bear #

| | Color | Length | Width | Thickness | Mass |
|---|---|---|---|---|---|
| Before | | | | | |
| After | | | | | |

Observations and Measurements of Gummy Bear #

| | Color | Length | Width | Thickness | Mass |
|---|---|---|---|---|---|
| Before | | | | | |
| After | | | | | |

★ **Analysis:**
In your own words, describe the difference between the three gummy bears AFTER the experiment:

_____
_____
_____
_____
_____



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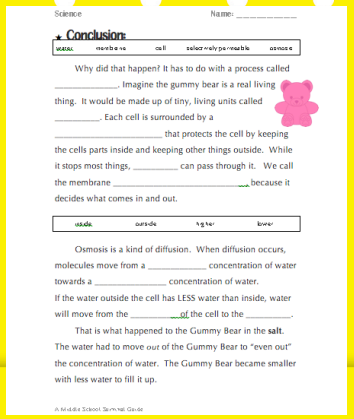

Science Name: _____

★ **Conclusion:**

| water | membrane | cell | selectively permeable | osmosis |
|---|---|---|---|---|

Why did that happen? It has to do with a process called _____. Imagine the gummy bear is a real living thing. It would be made up of tiny, living units called _____. Each cell is surrounded by a _____ that protects the cell by keeping the cells parts inside and keeping other things outside. While it stops most things, _____ can pass through it. We call the membrane _____ because it decides what comes in and out.

| inside | outside | higher | lower |
|---|---|---|---|

Osmosis is a kind of diffusion. When diffusion occurs, molecules move from a _____ concentration of water towards a _____ concentration of water.
If the water outside the cell has LESS water than inside, water will move from the _____ of the cell to the _____.

That is what happened to the Gummy Bear in the **salt**. The water had to move *out* of the Gummy Bear to "even out" the concentration of water. The Gummy Bear became smaller with less water to fill it up.



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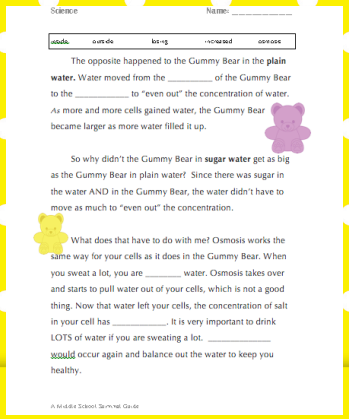

Science Name: _____

| inside | outside | losing | increased | osmosis |
|---|---|---|---|---|

The opposite happened to the Gummy Bear in the **plain water.** Water moved from the _____ of the Gummy Bear to the _____ to "even out" the concentration of water. As more and more cells gained water, the Gummy Bear became larger as more water filled it up.



So why didn't the Gummy Bear in **sugar water** get as big as the Gummy Bear in plain water? Since there was sugar in the water AND in the Gummy Bear, the water didn't have to move as much to "even out" the concentration.



What does that have to do with me? Osmosis works the same way for your cells as it does in the Gummy Bear. When you sweat a lot, you are _____ water. Osmosis takes over and starts to pull water out of your cells, which is not a good thing. Now that water left your cells, the concentration of salt in your cell has _____. It is very important to drink LOTS of water if you are sweating a lot. _____ would occur again and balance out the water to keep you healthy.

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Science Name: _____

# Gummy Bear Osmosis Lab

## ★ Purpose:

To observe the effects of _____ on a gummy bear.

## ★ Hypothesis: *(Circle one for each statement)*

The gummy bear left in plain water will shrink swell stay the same.

The gummy bear left in salt water will shrink swell stay the same.

The gummy bear left in no water will shrink swell stay the same.

## ★ Materials:

-3 beakers
-salt dissolved in 100 mL water
-100 mL water
-3 gummy bears
-labels
-scale & ruler

## ★ Procedures:

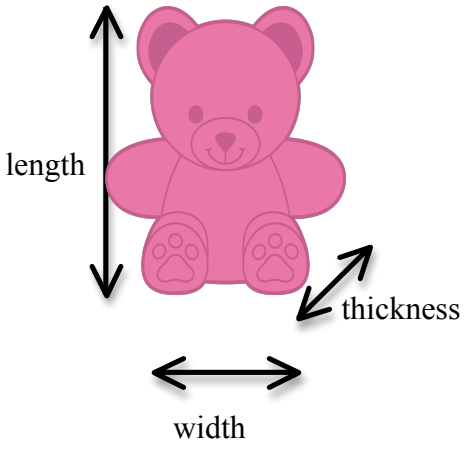
***Directions: Fill in the blanks below using the materials listed above.***

DAY 1:

1. Put labels on the beakers: *"Plain Water", "Salt Water", and " Control Group (No Water)"*
2. Next, fill the "Plain Water" and "Salt Water" beakers with 100 mL of water each.
3. Next, add salt to the water in the beaker labeled "Salt." Stir. Add until no more will dissolve.
4. Measure and describe the 3 gummy bears "before" using a scale and ruler.
5. Place a gummy bear in each beaker.

DAY 2:

1. CAREFULLY remove the gummy bears from the beakers.
2. Measure and describe the gummy bears "after".



**Science** **Name:** _____

# ★ Data:

Directions: Record your data in the chart below.

Observations and Measurements of Gummy Bear in _____

| | Color | Length | Width | Thickness | Mass |
|---|---|---|---|---|---|
| Before | | | | | |
| After | | | | | |

Observations and Measurements of Gummy Bear in _____

| | Color | Length | Width | Thickness | Mass |
|---|---|---|---|---|---|
| Before | | | | | |
| After | | | | | |

Observations and Measurements of Gummy Bear in _____

| | Color | Length | Width | Thickness | Mass |
|---|---|---|---|---|---|
| Before | | | | | |
| After | | | | | |

# ★ Analysis:

In your own words, describe the difference between the three gummy bears AFTER the experiment:

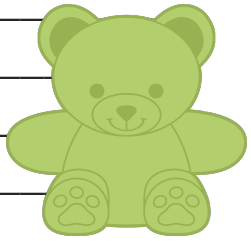
_____

_____

_____

_____

_____



**Science** **Name:** _____

## ★ Conclusion:

| | | | | |
|---|---|---|---|---|
| water | membrane | cell | selectively permeable | osmosis |

Why did that happen? It has to do with a process called _____. Imagine the gummy bear is a real living thing. It would be made up of tiny, living units called _____. Each cell is surrounded by a _____ that protects the cell by keeping the cells parts inside and keeping other things outside. While it stops most things, _____ can pass through it. We call the membrane _____ , because it decides what comes in and out.

| | | | |
|---|---|---|---|
| inside | outside | higher | lower |

Osmosis is a kind of diffusion. When diffusion occurs, molecules move from a _____ concentration of water towards a _____ concentration of water.
If the water outside the cell has LESS water than inside, water will move from the _____ of the cell to the _____.

That is what happened to the Gummy Bear in the **salt**. The water had to move *out* of the Gummy Bear to "even out" the concentration of water. The Gummy Bear became smaller with less water to fill it up.

**Science** **Name:** _____

| inside | outside | losing | increased | osmosis |
|---|---|---|---|---|

The opposite happened to the Gummy Bear in the **plain water.** Water moved from the _____ of the Gummy Bear to the _____ to "even out" the concentration of water. *As* more and more cells gained water, the Gummy Bear became larger as more water filled it up.

So why didn't the Gummy Bear in **salt water** get as big as the Gummy Bear in plain water? Since there was salt in the water AND in the Gummy Bear, the water didn't have to move as much to "even out" the concentration.

What does that have to do with me? Osmosis works the same way for your cells as it does in the Gummy Bear. When you sweat a lot, you are _____ water. Osmosis takes over and starts to pull water out of your cells, which is not a good thing. Now that water left your cells, the concentration of salt in your cell has _____. It is very important to drink LOTS of water if you are sweating a lot. _____ would occur again and balance out the water to keep you healthy.

# ★ Conclusion: ANSWER KEY

| | | | | |
|---|---|---|---|---|
| water | membrane | cell | selectively permeable | osmosis |

Why did that happen? It has to do with a process called osmosis. Imagine the gummy bear is a real living thing. It would be made up of tiny, living units called cells. Each cell is surrounded by a membrane that protects the cell by keeping the cells parts inside and keeping other things outside. While it stops most things, water can pass through it. We call the membrane selectively permeable because it decides what comes in and out.

| | | | |
|---|---|---|---|
| inside | outside | higher | lower |

Osmosis is a kind of diffusion. When diffusion occurs, molecules move from a higher concentration of water towards a lower concentration of water. If the water outside the cell has LESS water than inside, water will move from the inside of the cell to the outside. That is what happened to the Gummy Bear in the **salt**. The water had to move *out* of the Gummy Bear to "even out" the concentration of water. The Gummy Bear became smaller with less water to fill it up.

| | | | | |
|---|---|---|---|---|
| inside | outside | losing | increased | osmosis |

The opposite happened to the Gummy Bear in the **plain water.** Water moved from the outside of the Gummy Bear to the inside to "even out" the concentration of water. *As* more and more cells gained water, the Gummy Bear became larger as more water filled it up.

So why didn't the Gummy Bear in **salt water** get as big as the Gummy Bear in plain water? Since there was sugar in the water AND in the Gummy Bear, the water didn't have to move as much to "even out" the concentration.

What does that have to do with me? Osmosis works the same way for your cells as it does in the Gummy Bear. When you sweat a lot, you are losing water. Osmosis takes over and starts to pull water out of your cells, which is not a good thing. Now that water left your cells, the concentration of salt in your cell has increased. It is very important to drink LOTS of water if you are sweating a lot. Osmosis would occur again and balance out the water to keep you healthy.

Science Name: _____

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