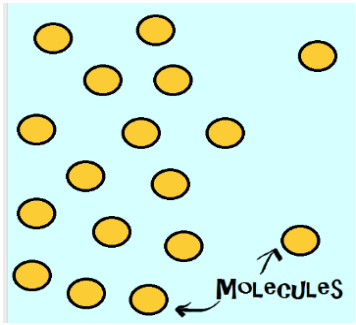
Amoeba Sisters Video Recap of *Osmosis*

1. The below picture represents **diffusion** of molecules. Place the following labels in the diagram**: high concentration**, **low concentration**, and **an arrow** showing the direction that the molecules would travel before equilibrium is reached.

high ----------> low



2. **Osmosis** is a type of diffusion, but it involves the movement of water. Similar to diffusion, osmosis is the movement of molecules (water molecules if osmosis) from a high concentration to a low concentration.

The video clip explains that you can also look at water as moving to a higher/ hypertonic concentration of **solute** molecules.

Why can it also be viewed this way?

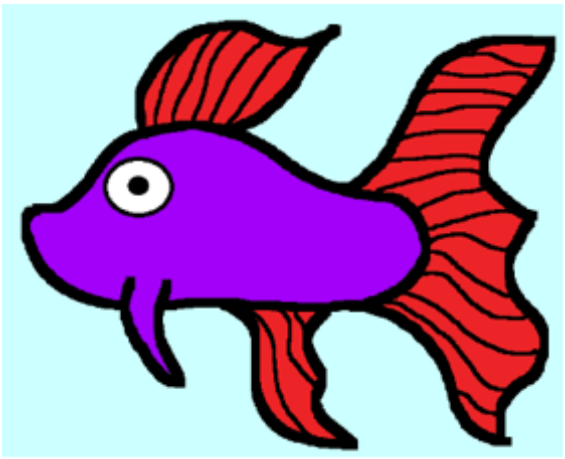
It can also be viewed this way because a higher concentration of solutes means there is less room for solvents. Osmosis is water evening out the solute distribution

3. **Osmosis Scenario:** The video clip mentioned a disaster scenario of a saltwater fish being placed in fresh water.

What would occur if, instead, a freshwater fish was placed in saltwater?

Your answer needs to have an **arrow** indicating the direction of water flow in osmosis, a label for "**hypertonic**," and a label for "**hypotonic**."

If a freshwater fish is placed in saltwater, it will become dehydrated and die as water moves out of the cells and into the hypertonic saltwater environment.
the fish (hypotonic)---------> environment (hypertonic)



4. **Osmosis Scenario:** Fluid movement into the brain after traumatic brain injury can result in dangerous brain swelling.

One treatment that can be used in some of these cases is adding a hypertonic saline. You need to decide whether this blank should be the word hypertonic or hypotonic. Remember, you are trying to reduce the excessive fluid in the brain.

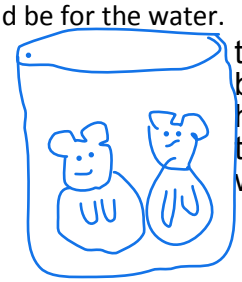
Explain your answer:

The hypertonic saline is used because it creates a higher solute concentration outside brain cells, drawing water out by osmosis.

The Gummy Bear Mystery

Do you like gummy bears? We do! They are one of our favorite snacks, though we (try to) eat them in moderation because they are high in sugar. Consider that your sister is in a foul mood and decides to dump your gummy bears in your ice water about 30 minutes before you get home.

The gummy bears are greatly enlarged by the time you get home! Your sister and some friends have different viewpoints for what happened. Draw a diagram below showing the enlarged gummy bears in a cup of water. Place the labels "**hypertonic**" and "**hypotonic**" in your diagram. One label should be for the gummy bears and one label should be for the water.

5. 
the gummy bears are hypertonic to the surrounding water (swelling)

Viewpoints:

A) Your sister said that the sugar left the gummy bears, because the gummy bears were **hypertonic** compared to the water.

B) Your friend Joe said that water traveled into the gummy bears, because the gummy bears were **hypertonic** compared to the water.

C) Your friend Suzy said the sugar went into the gummy bears, because the gummy bears were **hypotonic** compared to the water.

D) Your friend Will said that water traveled into the gummy bears by osmosis, because the gummy bears were **hypotonic** compared to the water.

6. Whose viewpoint is correct in the viewpoint column? A good answer has a good defense! **Defend your answer,** and also **give reasons why the other explanations are incorrect**.

Will's viewpoint is correct because water moved into the gummy bear by osmosis. The gummy bears are hypertonic to the water.

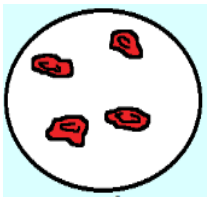
Sister is incorrect because sugar did not leave the gummy bears, water entered them causing them to swell. Joe is incorrect because though water did move into the bears, the bears are hypertonic to the water. Suzy was incorrect because it was water that moved into the gummy bears not sugar and the bears are hypertonic relative to the water.

Hypertonic, Hypotonic, or Isotonic? Oh My!

These red blood cells have all been placed in different solutions! Based on their appearance after being placed in these solutions for a period of time, place on each line (A) for **hypertonic**, (B) for **hypotonic**, or (C) for **isotonic**.

7. The cells are hypertonic compared to the hypotonic solution.

8. The cells are hypotonic compared to the hypertonic solution.



9. The cells are isotonic compared to the isotonic solution.