Stations for Osmosis & Diffusion, Microscopes & Cell Types

The following stations will be set up for grade 8s to work through. They have a background knowledge of what diffusion and osmosis are.

There will be two handouts to give each student – one entitled Osmosis and Diffusion Examples, the other Microscope Lab Directions and requirements. The description for each station will include which parts of the handouts the students are to refer to. They will need a writing utensil, a piece of paper and the two handouts. They will NOT need goggles, gloves or labcoats.

I will set up all materials with station descriptions in the classroom before you get there. I have also included a copy of the station descriptions with this document.

***Pre-teaching* – Before students move to the stations, there is a beaker with starch in water and a small dropper bottle with iodine. Please show the students what happens when the iodine comes in contact with the starch. This will be important for station 1. Students should note what the starch and water mixture looked like BEFORE iodine was added for question 1 at this station.**

Have students work in their table groups from science – they know who these are but I will also give you a school zone printout in case they try to be sneaky.

There are 5 stations and there are 2 of each station – this means 10 groups can move between stations . There are 14 groups (if everyone is here). If students are not at a station, they can be at a table – away from other groups – and working on their analysis and extension questions that are part of each station in the handouts. IF they are getting unruly, I have printed a THIRD handout that they can also complete in their "spare" time. If they do not finish all stations today, that is ok. We can carry it over to Monday.

I will set up stations around the room but I suggest that when students tart, they have a station, then a "work" station, then a station and so on…

Each station SHOULD only need 5-7 minutes to do the actual work at the station – they might not finish all questions but they should be able to record the data. Questions can be completed while they wait for a station.

Station 1: Cornstarch and Iodine

Materials:
One large beaker containing iodine and water
One ziplock sandwich baggie containing starch and water
Osmosis and Diffusion Examples worksheet – Example 1
Pencil

Instructions:
Read the instructions for Example #1: Cornstarch and Iodine on your handout and answer the questionsrelated to the beaker and baggie at the station.

NOTE: For the questions that ask for observations BEFORE the experiment, recall what the mixture of starch and sugar looked like before your teacher added iodine at the start of the class.

Caution – please do NOT touch iodine with your bare hands as it will stain skin and clothing.

Clean Up:
None required. Leave the station ready for the next group.

Station 2: Cucumbers in Water

Materials:
Container A – contains slices of cucumber soaked in distilled water overnight
Container B – contains slices of cucumber soaked in salt water overnight
Osmosis and Diffusion Examples worksheet – Example #2
Paper towels (for clean up)

Instructions:
Read the instructions for Example #2: Cucumbers in Water on your handout and answer the questions.
You may take cucumbers out of the containers to observe and compare how they feel. Please do NOT break cucumbers or switch their containers.

Do NOT eat the cucumbers.

Clean Up:
Wipe up any spills or water droplets. Leave the station ready for the next group.

Station 3: Osmosis in an Egg Shell

Materials:
Egg, with shell removed, soaked in water
Egg, with shell removed, soaked in corn syrup
Osmosis and Diffusion Examples worksheet – Example #3
Paper Towels for clean up
Gloves (optional)
Hypothesis from last class

Instructions:
In the space provided in your worksheet, draw your observations for each egg in the last two sections of the table (do not record anything in the first two columns).
You MAY touch the eggs but ONLY with gloves on (we will re-use these so do not throw them out). Please do NOT pop the eggs.

Answer the two questions immediately following the table.
Look at your hypothesis from last class. In the space provided on the final page (under the extension questions) write a conclusion statement about this experiment. Be sure to include what we were examining, how we tried to observe it and what the final observations were. Also include a sentence about whether or not your hypothesis was correct.
Finally, use the information you have gathered from stations 1-3 to answer the extension questions on this page. (if you began at station 3, you might not be able to answer these yet)

Clean Up:
Wipe up any spills with paper towels. If you used the gloves, please wash and dry them at a sink and leave them for the next person. Wash your hands after using the gloves.

Station 4: Microscope – Human Skin Cell

Materials:
Microscope with slide in stage clips
Microscope Labe Directions and Requirements – Observing Specialized Cells

Instructions:
Turn microscope light source on and observe the prepared slide. You should see small blue cells with a dark coloured nucleus. These are cells from the inside of the cheek of a human.
Follow the directions in the Observing Specialized Cells section. You will not be able to make the comparison with the onion skin cells until you have completed station 5.
Make sure your drawings are in pencil, with a circular field of view, and that the cells take up the appropriate amount of space in the circle.

DO NOT move the slide. DO NOT take apart the slide.

Clean Up:
Turn off the light source. DO NOT MOVE THE SLIDE.

Station 5: Microscope – Onion Skin Cell

Materials:
Microscope with slide in stage clips
Microscope Labe Directions and Requirements – Observing Specialized Cells

Instructions:
Turn microscope light source on and observe the prepared slide. You should see yellow brick-like cells with a dark yellow/brown nucleus. These are cells from the skin of an onion.
Follow the directions in the Observing Specialized Cells section. You will not be able to make the comparison with the onion skin cells until you have completed station 4.
Make sure your drawings are in pencil, with a circular field of view, and that the cells take up the appropriate amount of space in the circle.

DO NOT move the slide. DO NOT take apart the slide.

Clean Up:
Turn off the light source. DO NOT MOVE THE SLIDE.