

One sentence summary of the week's lessons / learning goals: start exploring high school topics such as the different properties of water and mixtures.

	MONDAY TEACH PERIODS 5-6 (TESTING 1-4)	TUESDAY TEACH MONDAY'S LP TO PERIODS 1-4, (LEAVE EARLY FOR CLASS)	WEDNESDAY N/A (NOT COMING IN)	THURSDAY TEACH 4 CLASS PERIODS, OBSERVE NEW CLASS FOR 2	FRIDAY TEACH 4 CLASS PERIODS, OBSERVE NEW CLASS FOR 2
(Include times for each part of your lesson)	Objective(s): SWBAT *make snow using baking soda and shaving cream *explore the meaning of the word mixture and different types of mixtures *explore surface tension and capillary action as properties of water MAFS/NGSSS: SC.912.E.6.2- Connect surface features to surface processes that are responsible for their formation. SC.8.P.8.9- Distinguish among mixtures (including solutions) and pure substances.	Objective(s): SWBAT * * * MAFS/NGSSS:	Objective(s): SWBAT * * * MAFS/NGSSS:	Objective(s): SWBAT *make ice cream from ice and salt *finish our discussion on mixtures *explore properties of ice MAFS/NGSSS: SC.912.E.6.2- Connect surface features to surface processes that are responsible for their formation. SC.8.P.8.9- Distinguish among mixtures (including solutions) and pure substances. SC.912.L.18.12- Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.	Objective(s): SWBAT *explore capillary action using food dye. * see how capillary action is relevant in the real world, in plants and in human body systems * MAFS/NGSSS: SC.912.L.18.12- Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.

P	Engage: 5 minutes Use the Scientific Terminology Inventory Probe to examine student understanding of some of the vocab words that we will talk about.  STIPTemplate (1).pdf this will be done individually	Engage	Engage	Engage: 5 min Use the “look back” formative assessment to recall student knowledge about what we learned about solutions and mixtures. “look back on a type of mixture we learned about and explain how you learned about it” Have the students share some responses with the class.	Engage: 10 minutes As a class, we will make a list of adjectives students can think of that would describe water. Then, we would explore what makes those adjectives true in terms of cohesion, adhesion, surface tension and capillary action. We will go through and talk about what all these words mean.
L A	Explore 10 min Discuss the introduced vocab word from the engage section. Make a graphic organizer on the board with definitions and examples of each term, and ask the students to come up with their own examples. Then, I will present pictures of different items and we will categorize them based on which term they match up with.  pictures for LP Explain 25 min Students will get in groups of 3-4 and do a lab using baking soda: Lab from https://www.sciencefun.org/kidszone/experiments/snow-fluffy/ Pour the cup of cornstarch into a bowl. Use a spoon to		Explore Explain Elaborate	Explore: 25 minutes To start the lesson, each student will be given a bag, ice, salt, and pre-measured orange juice or creamer. We will go through the instructions provided on this website: https://www.sciencebuddies.org/stem-activities/ice-cream-bag to make ice cream in a bag together as a class: In each small sealable bag, place the liquid. Seal bags well. Add four cups of ice cubes to one of the large, gallon-sized bags. Then add ½ cup of salt to the bag. Ask: what do you think the salt will do? Put one of the small bags you prepared into the large bag with the ice cubes. Put on oven mitts or wrap the bag in a small towel and then shake the bag for five minutes. Feel the smaller bag every couple of minutes	Explore: 10 min I will do this lab with the students: https://www.sciencebuddies.org/stem-activities/walking-water they will split into groups of 2 and each group will get cups and food coloring, paper towels and water. Line up all your glasses in a row. Starting with a glass on one end, fill every other glass with water. Put a few drops of food coloring in each water-filled glass. You can choose what colors to use, but don't use the same color twice in a row. Fold each half-sheet paper towel (except the one you used to clean the spoon) into a narrow strip about one inch wide. Fold each paper towel in half lengthwise to form a "V" shape. The V should be

scoop the shaving cream on top of it. Put 5-10 drops of food coloring on top. Stir to mix. When the mixture looks like grated cheese, use your hands to squish the mixture even more. Pretty soon the shaving cream and corn starch will form a ball, about the same texture as dough. If your mixture is really wet and sticky after mixing, it needs a little more corn starch. If it won't stick together and falls into pieces, add a little more shaving cream. That's it! Try sculpting snow angels, snowmen, or make a tiny snow fort! Students will answer the following questions: 1. What type of mixture did you make? 2. What role did surface tension play? Elaborate 5 min Ask the students to share what they learned from the lab, and their answers to the questions. As a class, explain the reasoning behind the lab to the students: The tiny pieces of corn starch get mixed into the shaving cream and suspended in the mixture. Shaving cream is made of tiny bubbles, and the surface tension on the surface			while you shake it, and take a peek at it. Ask the students to make observations about the temperature of the bag and what is happening inside. At the same time the students do this, I will make one bag that does not use salt and show it to them. Explain: 10 minutes As a class on the board, make a list of observations we noticed during our experiment. Also ask the class their predictions on the following: Which froze faster: the orange juice or the creamer? Why? Why did we use salt? What was our independent/dependent variable? Elaborate 5 min Explain the science behind our experiment, and relate it back to their real life experiences: This extra-cold mixture of salt and ice is able to freeze the ingredients in the ice cream machine (and in the bags you used in this activity) and turn them into ice cream. (This is the same process that goes on when icy roads have salt spread on them to melt the	only slightly taller than your glasses. If necessary, rip or cut a little bit off each end of the V to make it shorter. Use one paper towel to connect each pair of adjacent glasses. (Flip the V shape upside-down and put one end in each cup.) Look closely at the ends of the paper towels that are in the glasses with water. What do you notice? Take a break! This experiment goes very slowly. Come back in 15 or 20 minutes. What do you see now? Explain 10 min While we are waiting for the lab to take place, I will ask the students to make predictions about what will happen to the paper towels. I will then ask them to draw a model on their papers with captions describing what is happening in the cups of water (in their pairs). Elaborate 10 min Regroup and see what happened to the paper towels. Explain how this relates to capillary action, and also have students present their drawings to see if their predictions were correct. I will then discuss how capillary action is found in
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	of the bubbles helps ‘float’ the corn starch particles when the two mix.		ice.) Ice is the crystallized form of water. In order for the crystals to form, the water molecules have to slow down and carefully line up in an orderly pattern. The warmer the surrounding temperature the more the molecules bounce around, and the harder it is to get them to line up. Basically they act like excited kids! As it gets colder the molecules slow down, their slower movements allow them to line up more carefully and thus form ice crystals. Even after ice is formed two things are constantly happening at the surface of the ice. One, the ice at the surface is melting. Two, the melted water is re-freezing. The rate at which these two things happen determines what you see. As the ice cubes start to melt a little bit the water molecules mix with the salt molecules. Now you have salt and water molecules moving around together, the mixture makes it harder for the water molecules to make an orderly pattern — the salt molecules keep interfering. This means that the rate of the ice re-freezing at the surface goes down. So, overall the ice cubes start melting faster. As it is melting, the ice absorbs heat and thus lowers the temperature. As a result, the temperature inside the bag with ice and salt is colder than the temperature inside the bag with just the ice.	our body through the circulatory system, and also found in plants to get water to their leaves. I will ask them where else they think we can see capillary action.
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				In creating your ice cream you also made an emulsion. Emulsions are the combination of two liquids that normally do not mix well like fats and water. In your ice cream the fat molecules in the cream are perfectly mixed with water, ice crystals, sugar, and small pockets of air to form a delicious cold treat.	
N	Evaluate and Summary 5 min Do a Think Pair Share: Students get into pairs, and they talk about which ways they can see surface tension in the real world, then share with the class.	Evaluate and Summary	Evaluate and Summary	Evaluate and Summary: 5 min Muddiest point formative assessment: Students individually identify their muddiest point from what we learned about today, and turn it in for me to assess.	Evaluate and Summary 10 min Students will do the feedback survey and I will thank them for letting me teach them, since this will be their last day of school.
Resources:	https://drive.google.com/file/d/1JhPhPHRCqtkeQc0ZGCAImFwmSmh43--b/view?usp=sharing https://docs.google.com/presentation/d/1YoMTVeIgWtDBnoVSIO2Hoqu1C5XgG_mvJFoS8VaOZnM/edit?usp=sharing https://www.sciencefun.org/kidzone/experiments/snow-fluff/			https://www.sciencebuddies.org/stem-activities/ice-cream-bag	https://www.sciencebuddies.org/stem-activities/walking-water

Questions to ask students during lesson: What type of mixture did you make?

What role did surface tension play?

Which froze faster: the orange juice or the creamer? Why?

Why did we use salt?

What was our independent/dependent variable?

Misconceptions or identified areas where students will struggle:

Students might have a hard time identifying the physical chemistry concepts behind why salt changes the freezing point of water.