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CLASS 1

Act. 3, Feeling Fizzy. Provide a labeled plate with 1)baking soda, 2)baking powder, 3)cornstarch, and 4) as an empty space for the chalk .

Act. 3, Feeling Fizzy. Put the chalk in the empty space on the plate and using a pipette labeled with "V," take turns placing drops of vinegar on the powders and chalk. Watch as all but cornstarch fizz.

Act. 4, Snow Day. Examine the dry polymer crystals (left). Then pipette drops of water onto the polymer crystals and watch them expand (right).

Act. 4, Snow Day. Provide a brown plate, a 1oz paper cup with Instant Snow, and a plastic spoon.

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CLASS 1 (cont.)

Act. 4, Snow Day. Use the pipette to slowly drip water over the Instant Snow.

Act. 4, Snow Day. Observe how the Instant Snow expands to fill the plate. Interact with the Instant snow using the plastic spoon.

Act. 4, Snow Day. Pour the salt packets onto <u>half</u> of the snow. Watch for a minute of two.

Act. 4, Snow Day. Notice how the salt "melts" the snow. If desired use the spoon to stir the half of the snow that has salt on it.

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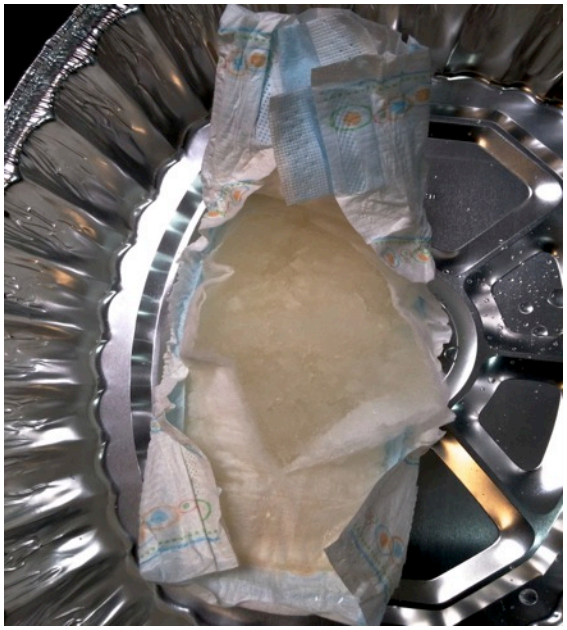
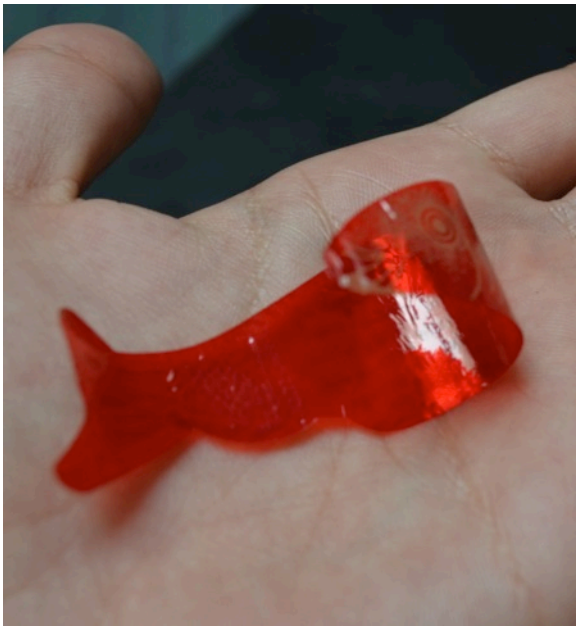
CLASS 1 (cont.)



Act. 4, Snow Day. Cut the disposable diaper and place it in the large, oval pan. Gradually pour 9oz cups of water into the diaper.



Act. 5, Flexible Fish. Put the fish flat in the palm of the hand and observe it start to curl and move.

Act. 5, Flexible Fish. Lay the wrapper flat on the palm and then put the fish on top of it. Observe that nothing happens.

Act. 5, Flexible Fish. Lay a damp paper towel flat on the table, then put the fish on top of it. Observe the fish move even more than before —moisture makes it curl!

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CLASS 2

Act. 2, Mix and Separate. Provide a 9oz cup with 1oz of corn starch inside, two pepper packets, and a plastic spoon (top left). Fill the cup halfway with water and add the pepper and a green color fizzer, then mix (top right, bottom left). Set aside and check back to see that it separates out (bottom right).

Act. 2, Mix and Separate. Provide an inflated balloon, a Styrofoam plate (taped down), and a 1/8 piece of paper that will be ripped up as shown above. Charge the balloon by rubbing it vigorously on the plate.

Act. 2, Mix and Separate. Hold the charged balloon above the paper. Move the balloon back and forth slightly to get as much as possible.

Act. 2, Mix and Separate. Repeat the activity this time skimming the tops of the puffed rice and bead mixture. The balloon will attract the rice.

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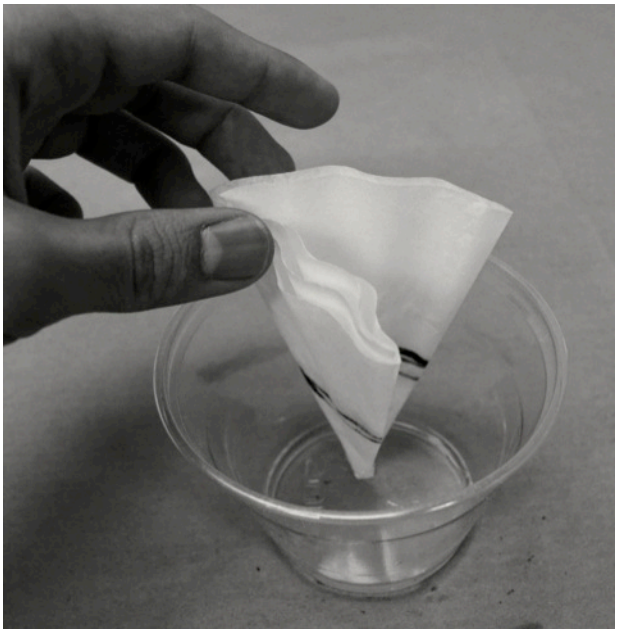
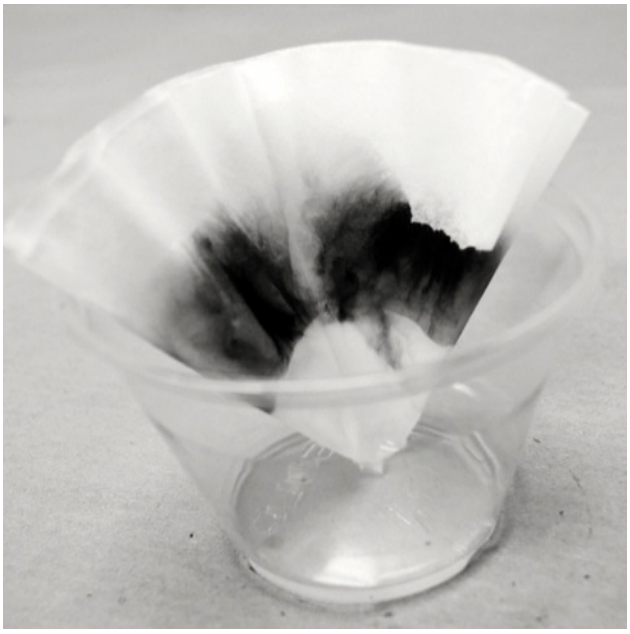
CLASS 2 (cont.)



Act. 3, Cool Chromatography. Place the folded coffee filter wedge in the cup, point down. The tip of the wedge will be submerged in the small amount of water in the cup.



Act. 3, Cool Chromatography. Water spreads up the filter and separates the ink into different colors.

Act. 3, Cool Chromatography. See the colors of a completed, dried filter.

Act. 4, Fun Filtration. Create a cone shape out of the filters by placing them on the pointer finger and squeezing the stack with the other hand.

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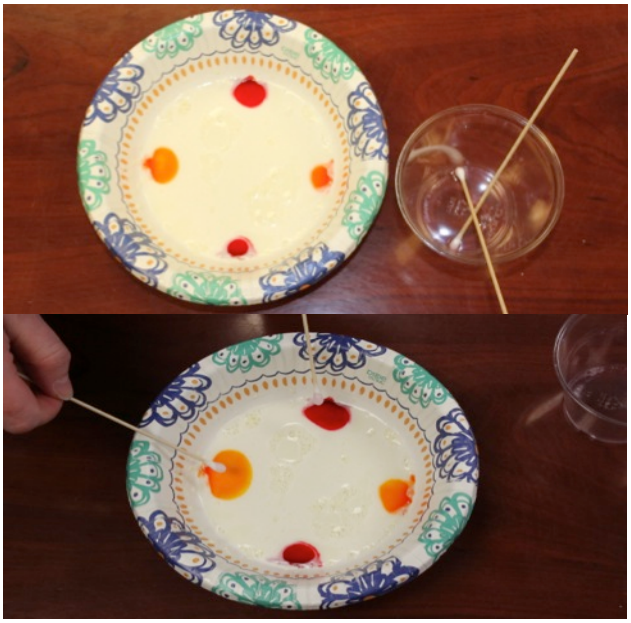
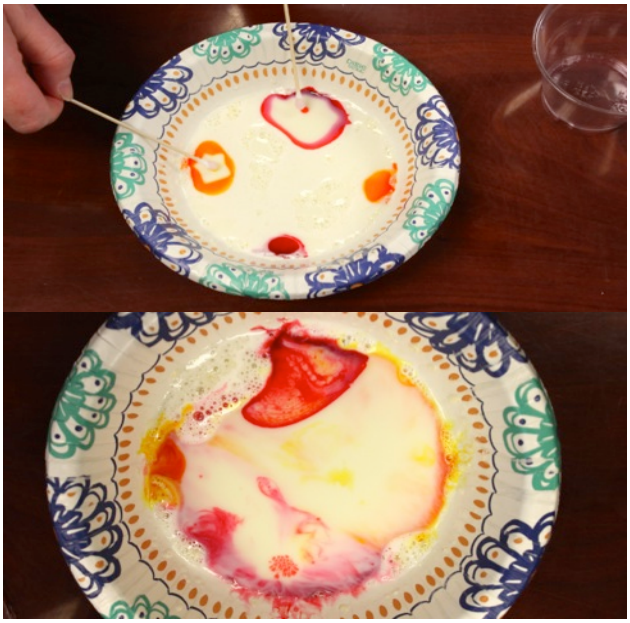
CLASS 2 (cont.)

Act. 4, Fun Filtration. Pour about half of the liquid into the filter-lined "funnel." The liquid that passed through the filter is much clearer than the liquid left in the first cup. (The coffee filters are hard to see in this photo and this used a blue color fizzer instead of green.)

Act. 4, Fun Filtration. Let a drop of iodine fall onto the filter near the edge, then re-dip the stir stick and let a drop of iodine fall onto the filter near the center. The drop near the center turns black, while the iodine near the edge stays brown.



Act. 5, Milk Motion. Provide two cotton swabs for the 9oz cup with soap and add two drops of one color across from each other and two drops of the other color perpendicular to the first (top). Note the colors will spread before the activity begins (bottom).



Act. 5, Milk Motion. Simultaneously place two soaped cotton swabs in the middle of two different dots of food coloring (top). Repeat multiple times and watch as the colors continue to spread (bottom).

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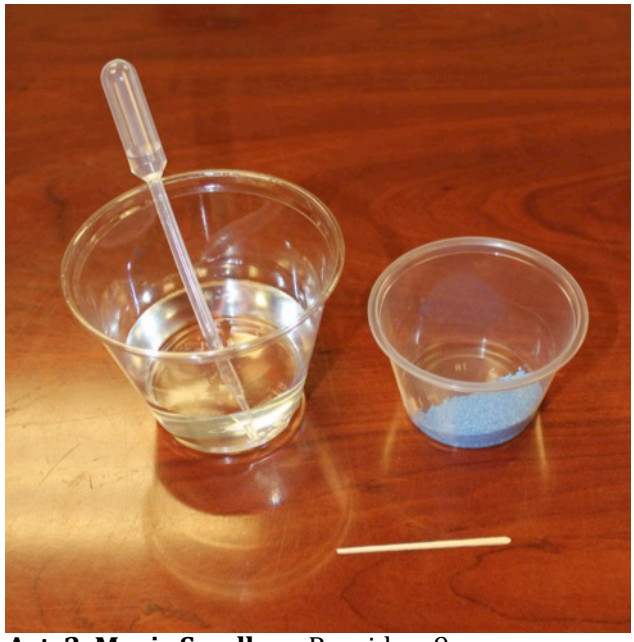
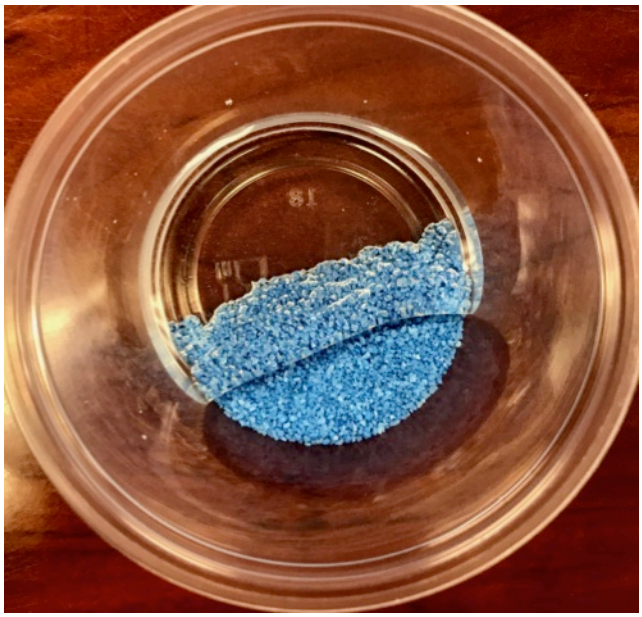
CLASS 3

Act. 2, Magic Sandbox. Empty the salt packet into one cup of water, stir, and observe how it dissolves (left). Sprinkle a half-spoonful of Magic Sand on top of the other cup of water (right), stir, and observe how it does not mix.



Act. 2, Magic Sandbox. Provide a 9oz cup half-full of water, a 4oz cup with Magic Sand, a pipette, and a toothpick. Push the sand to one side of the cup.



Act. 2, Magic Sandbox. Use the pipette to add water to the cup, starting with the side that does not have sand. Keep pipetting water in until the sand is covered

Act. 2, Magic Sandbox. Experiment moving and shaping the sand underwater using the toothpick or spoon as tools.

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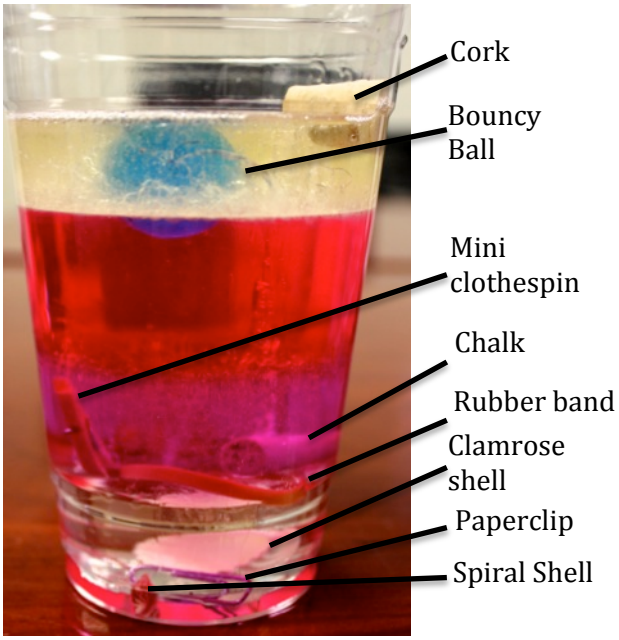
CLASS 3 (cont.)

Act. 3, Liquid Layers. Add the corn syrup, dish soap, water (with or without color fizzer), and oil to a 20oz cup.

Act. 3, Liquid Layers. The Liquid layer packs contain four of each of the following: mini-clothespins, bouncy balls, clamrose shells, cork, ¼ pieces of chalk, paperclips, spiral shells, and rubber bands.



Act. 3, Liquid Layers. One at a time, gently drop the 8 items into one liquid layer and observe where they fall. Some may take time to get to their final layer.

Act. 3, Liquid Layers. Use a plastic spoon to blend the layers, then discard the spoon. Set the stirred cup aside and examine later. Notice there are now only 3 layers as the water and soap stay blended.

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CLASS 3 (cont.)

Act. 4, Lava Lamp. Add water to each bottle so the total liquid is an adult finger width above the top indented line of the bottle.

Act. 4, Lava Lamp. Add a blue color fizzer to each bottle.

Act. 4, Lava Lamp. Break the Alka-Seltzer in half, then one piece in half again.

Act. 4, Lava Lamp. Drop a quarter piece of Alka-Seltzer into the bottle and observe your lava lamp. Repeat with the additional pieces of Alka-Seltzer.

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CLASS 4

Act. 2, Shine on You Crazy Penny. Provide a9oz cup labeled "Vinegar," a 9oz cup labeled "Vinegar +Salt", a Styrofoam plate, a paper towel, two spoons, four packets of salt and 12 pennies.

Act. 2, Shine on You Crazy Penny. Add four pennies to the "Vinegar" cup, four pennies to the "Vinegar+Salt" cup, and leave four as a control. Stir the pennies in the cups using the spoon and gloves.

Act. 2, Shine on You Crazy Penny. Keep track of which pennies came from which cup. Compare the pennies. Note how the "Vinegar and Salt" cup pennies are the cleanest.

Act. 3, Hot, Cold, Glow. Tear open the hand warmer package and shake it (top). Squeeze the cold pack firmly where indicated (bottom left). Bend the glow stick (bottom right).

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CLASS 4 (cont.)

Act. 4, Feel the Heat. Grip the bottoms of both cups in palms and pour 1oz of Epsom salt into one of the cups and notice any changes. The water should get subtlety colder. Switch roles and repeat.

Act. 4, Feel the Heat. Use a calibrated cup to add .5oz of hydrogen peroxide to each yeast cup. The mixture will bubble and foam, but will stay in the cup. Feel the cup periodically to feel the cup heat up with the reaction.

Act. 5, Elephant Toothpaste. Provide a 9in pan, a packet of yeast, a 1oz cup, a paper cup, and a plastic spoon. Mix the yeast and 1oz of warm water in the paper cup using the spoon. Let the yeast proof.

Act. 5, Elephant Toothpaste. Provide a small plastic water bottle with hydrogen peroxide inside. Add a large squeeze of soap into the bottle.

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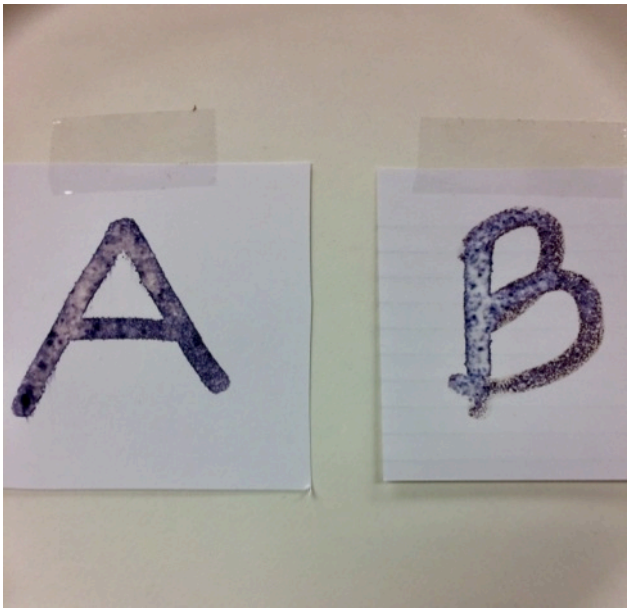
CLASS 4 (cont.)

Act. 5, Elephant Toothpaste. Squeeze the sides of the paper cup together to form a pour spout. Pour the proofed yeast mixture into the bottle with the hydrogen peroxide and soap.

Act. 5, Elephant Toothpaste. After a few seconds, the foam overflows from the bottle into the pan! (Students can touch the foam with gloved hands, but it needs to stay in the pan).

CLASS 5

Act. 2, Invisible Ink. Sprinkle salt evenly across the markings on both cards, then observe. The salt starts to turn yellow, and the clear markings start to darken. Wait 15 minutes.



Act. 2, Invisible Ink. Scrape the salt off of the cards. The markings that started our clear are now a dark bluish-purple color, and you can see some impressions made by the grains of salt.

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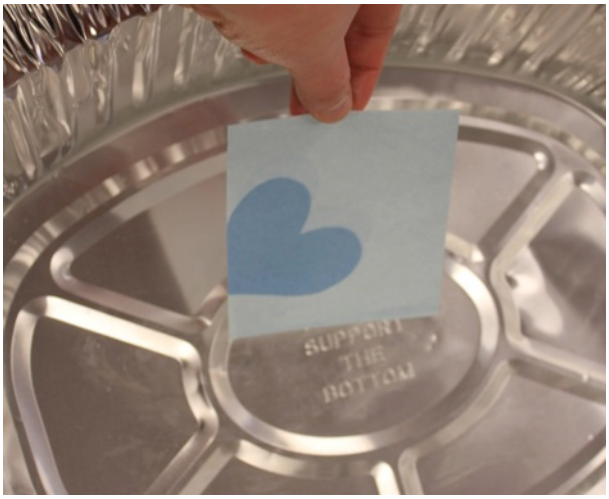
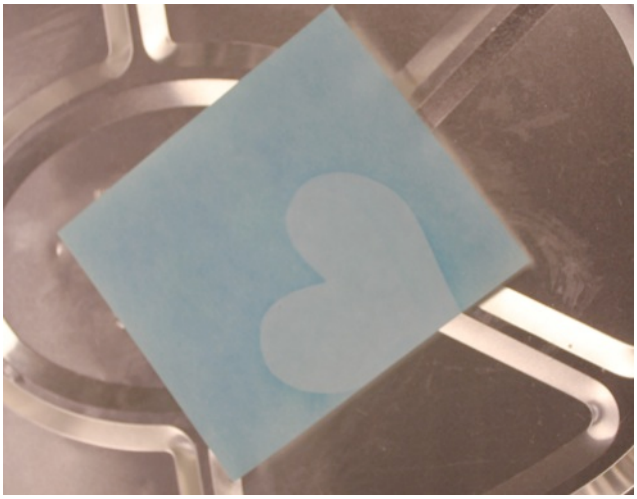
CLASS 5 (cont.)

Act. 3, Solar Art. Cut out a simple shape from an index card. Flip a Styrofoam plate upside down. With as little sunlight as possible, hand out solar graphics paper. Put the solar graphics paper on the bottom of the plate, then the cut out shape, then the transparency. Tape the transparency down on both sides. Tape one side of a 4x6in index card on top of the transparency.

Act. 3, Solar Art. Go stand in a sunny area and flip the 4x6in notecard back to expose the solar graphics paper. Leave the paper uncovered until it becomes a pale blue, then recover and bring to water pan to develop.



Act. 3 Solar Art. Remove the transparency and cut out shape. Take the solar graphics paper and submerge it in the water for one minute.



Act. 3, Solar Art. Watch the colors of the paper invert as the shape becomes lighter and lighter. After one minute set the paper on a paper towel to dry. It will continue to darken, leaving the exposed areas a dark blue, and the shape white.

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CLASS 5 (cont.)

Act. 4, Sunscreen Beads. Show what a UV bead looks like before exposing it to sunlight.

Act. 4, Sunscreen Beads. Place a bead or two by the window to show what happens when UV beads are exposed to natural light.

Act. 4 Sunscreen Beads. Put the two small bags of beads on a Styrofoam plate. Seal the bags and spread a thick layer of sunscreen on the top of one of the bags. Optional—place a piece of solar graphics paper into another bag and coat half with sunscreen. Cover this all with a second Styrofoam plate, to block the light.

Act. 4, Sunscreen Beads. Go outside. Uncover the bags of beads and solar graphics paper (optional). Expose to the light for 1-3 minutes, then flip the sunscreen-covered bag of beads over and immediately compare. The beads inside the bag with sunscreen will be significantly lighter in color.

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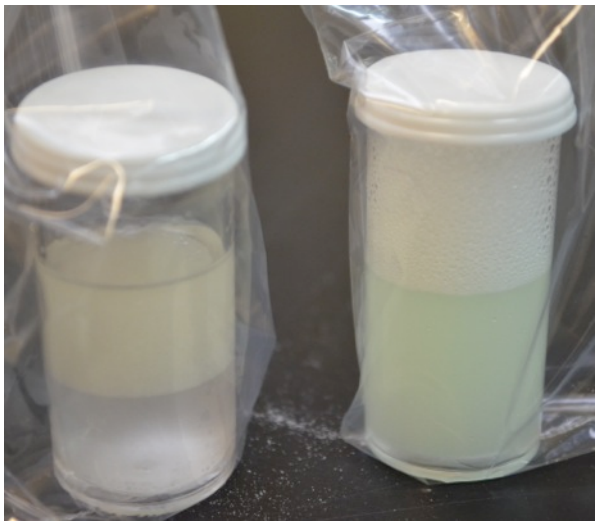
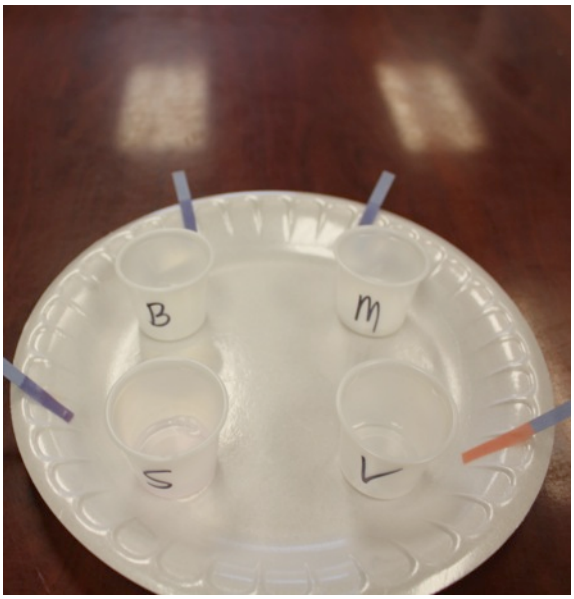
CLASS 6



Act. 2, Acid/Base Behavior. The vial with oil, water, and vinegar (left) separated out the same way as regular oil and water. The vial with oil, water, and soap (right) stayed mixed longer. (The top layer on the right is soap bubbles.)

Act. 2, Acid/Base Behavior. Add a large squeeze of soap into one of the 1oz cups with chalk in them (left) and observe that nothing happens. Add 5 drops of vinegar to the piece of chalk in the other 1oz cup. Watch as it reacts (right). Acids react to minerals like those found in chalk, while bases do not.

Act. 3, Colorful Cabbage. Create four stations all on Styrofoam plates: **1)**Baking soda, a spoon, and a cup of water with a pipette (top left). **2)**Milk of Magnesia, the "M" pipette, and a cup of water with a pipette (top right). **3)**Bottle of dish soap and a cup of water with a pipette (bottom right). **4)**Cup of Vinegar with a "V" pipette (bottom left).



Act. 3, Colorful Cabbage. Dip a piece of blue litmus paper in each of the four, labeled 1oz cups. Observe the color immediately after it's dipped as the color can shift. The strips dipped in B, M, and S will remain mostly blue. The strip dipped in V will turn pink. Of the liquids tested, vinegar is the only acid.

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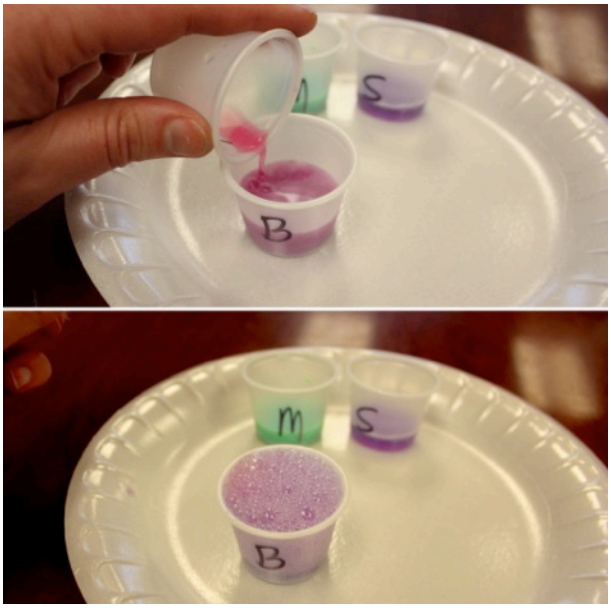
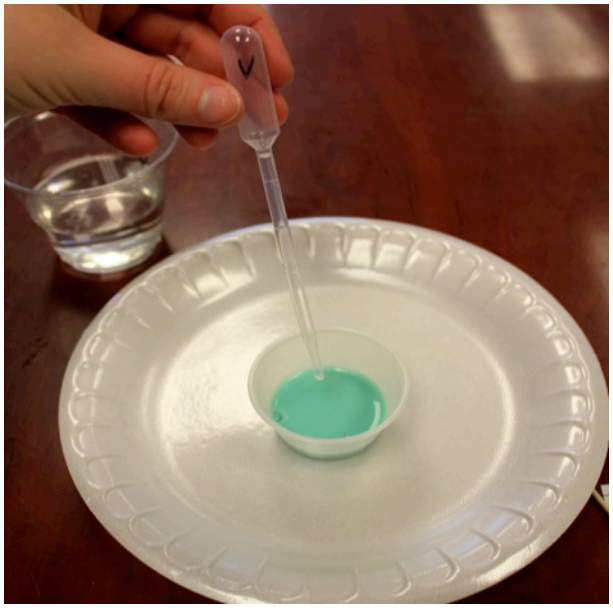
CLASS 6 (cont.)

Act. 3, Colorful Cabbage. Use a pipette to add two pipettes of cabbage juice indicator to each of the 1oz cups. While keeping the cup on the Styrofoam plate, gently swirl the indicator to ensure even color and mixing. Observe the color changes: baking soda is blue (top left), milk of magnesia is green (top right), soap is purple (bottom left), and vinegar is pink (bottom right).

Act. 3, Colorful Cabbage. Use the Cabbage Juice Indicator pH Scale to compare the colors of the liquids to the pH scale. Above the liquids are ranked from most basic(left) to acidic (right)in the following order: milk of magnesia (green), baking soda (blue), soap (purple), and vinegar (pink).



Act. 3, Colorful Cabbage. Slowly pour the 1oz cup of vinegar into the 1oz cup of baking soda. Watch the mixture bubble and fizz and combine to make a purple liquid, becoming more neutral.



Act. 3, Colorful Cabbage. Add two full pipettes of cabbage juice indicator to the 2oz cup with milk of magnesia. Mix well, then add one full pipette of vinegar to the cup. Observe what happens.

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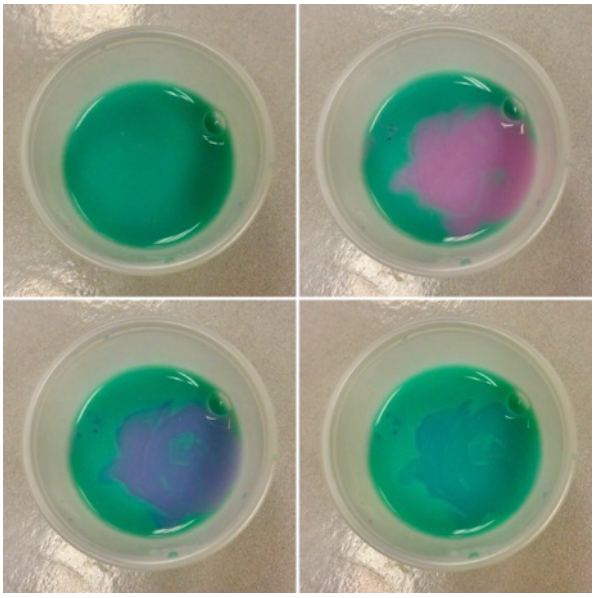
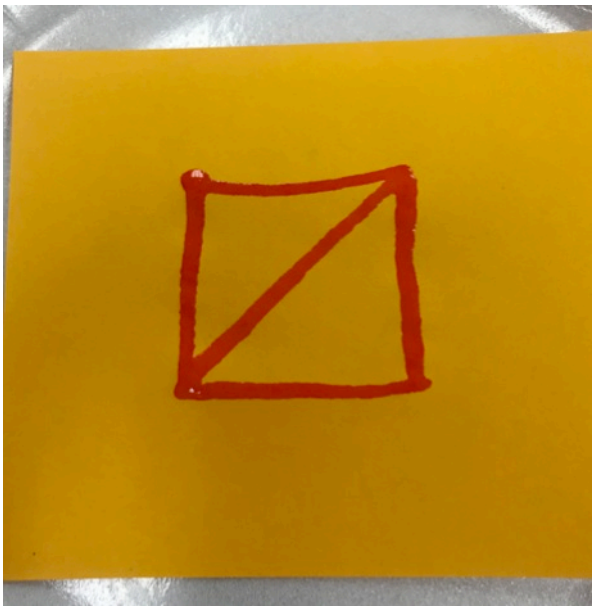
CLASS 6 (cont.)

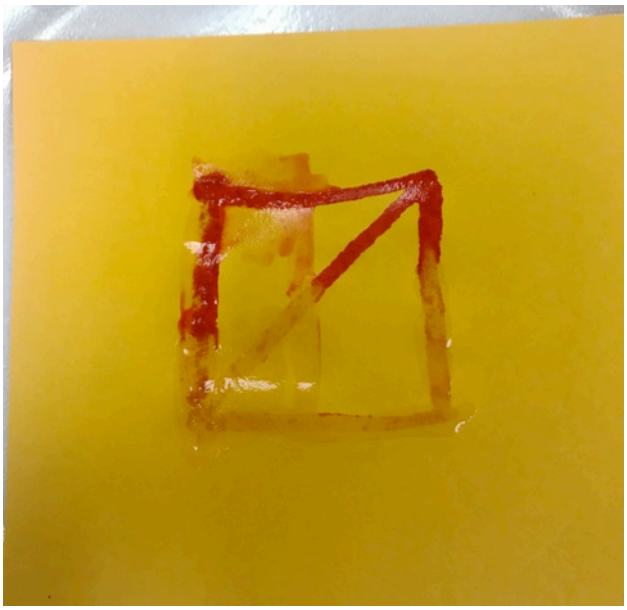


Act. 3, Colorful Cabbage. Observe the changes in the milk of magnesia. It starts green, then turns pink with the vinegar. It turns purple, blue, then back to green as milk of magnesia neutralizes the acid. Keep adding vinegar to see more changes.

Act. 4, Groovy Goldenrod. Provide a 9in pan (place the vinegar and baking soda solution inside), a Styrofoam plate, a quarter piece of goldenrod paper, and a cotton swab.



Act. 4, Groovy Goldenrod. Dip a cotton swab into the baking soda solution and make a test line or shape to see what happens. Watch as the design darkens for 1-2 minutes. Design a second shape on a different piece of goldenrod paper, which will go home.



Act. 4, Groovy Goldenrod. On the test paper dip a new cotton swab into the vinegar and retrace the lines made by the baking soda. Watch as the red lines turn back to yellow. Explore more shapes and liquids as time allows.

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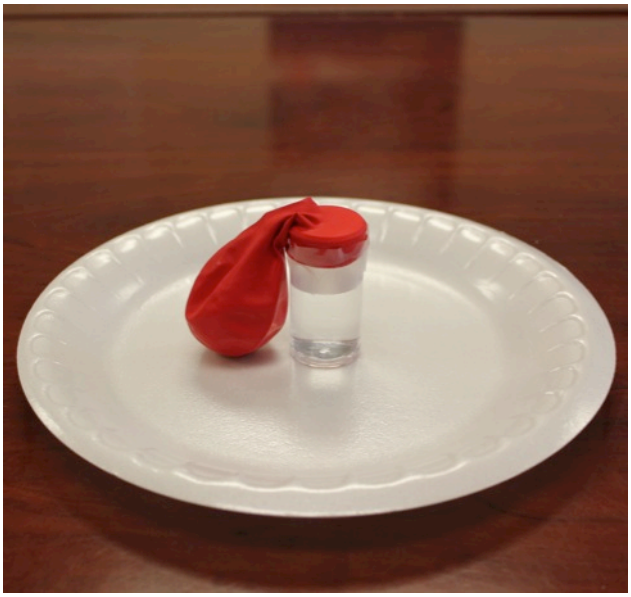
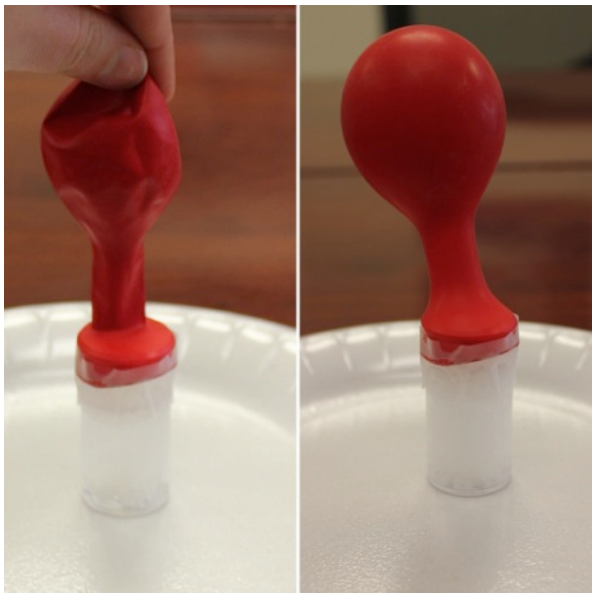
CLASS 7

Act. 2, Alka-Seltzer Balloon. Insert the small pieces of Alka-Seltzer into the balloon.



Act. 2, Alka-Seltzer Balloon. Without letting the Alka-Seltzer drop into the vial of water, stretch the balloon over the mouth of the vial and tape it part way around the vial.



Act. 2, Alka-Seltzer Balloon. Lift the balloon up so that all the Alka-Seltzer pieces fall into the vial. Step back. Don't touch the balloon or vial until the reaction stops. Watch as the balloon fills and the water in the vial bubbles and reacts with the Alka-Seltzer.

Act. 3, Foaming CO_2. Provide a 9in pan with two, 2oz cups with 1/8oz of baking soda. Spread the cups apart in the pan.

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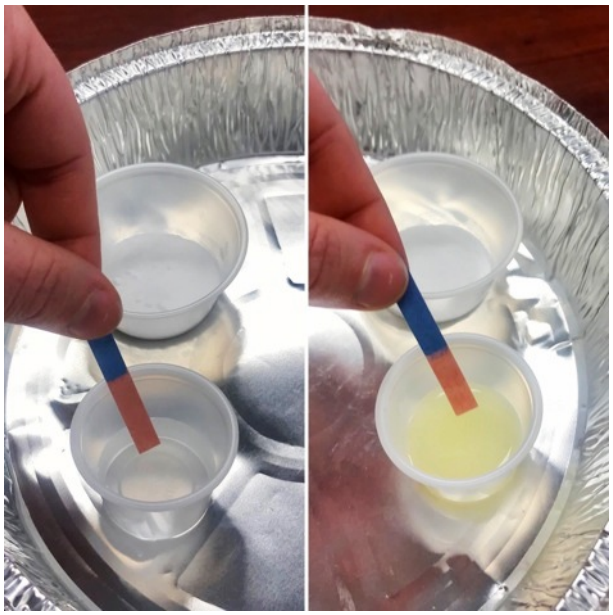
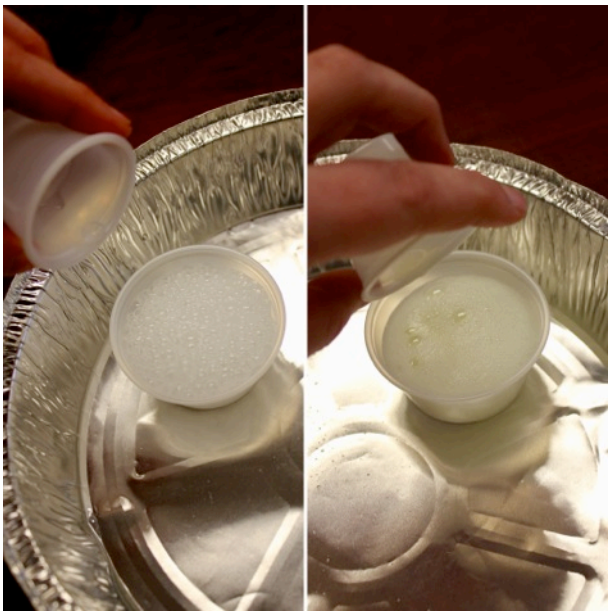
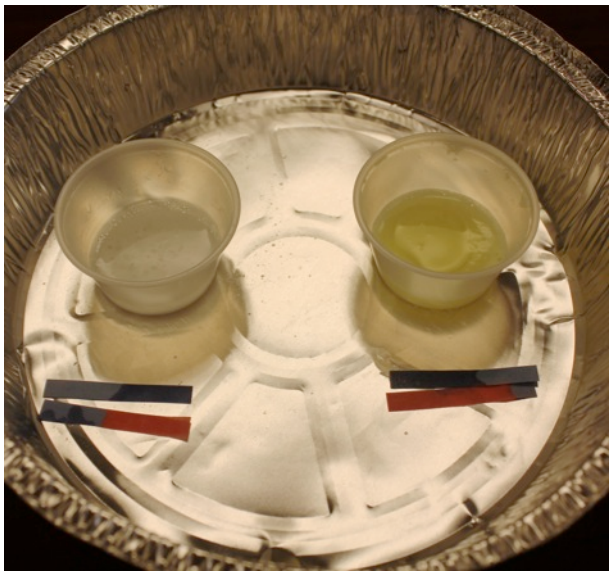
CLASS 7 (cont.)



Act. 3, Foaming CO_2. Provide the 1oz cups with vinegar and lemon juice in them and two pieces of litmus paper. Use the litmus paper to test the vinegar (left) and the lemon juice (right). Notice they both turn pink, demonstrating the liquids are acids. Save the litmus paper.



Act. 3, Foaming CO_2. Pour the .25oz of vinegar (right) into one cup of baking soda. Pour the . 25oz of lemon juice into the other cup (right). Notice that both reactions bubble and fizz.



Act. 3, Foaming CO_2. Use the two new pieces of litmus paper and test each of the reacted liquids. Compare these pieces to the first round of litmus paper. Notice the paper stays blue this time, so the liquids are neutral or basic. Add .25-.5oz more vinegar and lemon juice to determine which one it is—they're still basic.

Act. 2, Foaming CO_2. Provide two new 2oz cups of baking soda and repeat the experiment with a full ounce of both vinegar and lemon juice. Compare this reaction to first two and notice that this one is much larger than both of the previous ones.

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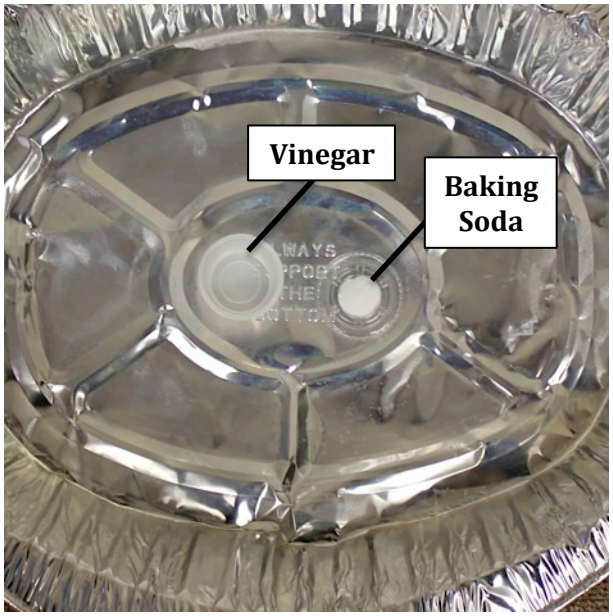
CLASS 7 (cont.)



Act. 4, Popping Canisters. Set the large, oval pan on the ground. Put the 1oz lid with baking soda upside down, so that the center full of baking soda is facing up. Place the 1oz cup quarter full of vinegar next to the lid.

Act. 4, Popping Canisters. Hook the edge of the lid onto the rim of the cup. Flip the lid into place securely on the cup, then flip the whole cup upside-down inside the pan, and stand back. Watch as it explodes upward and pops.

CLASS 8

Act. 2, Serious Surface Tension. Add one paperclip at a time to the Dixie cup very full of water. Notice how the "bubble" (curved dome of water) caused by surface tension rises higher about the rim of the cup as more paperclips are added. (This can be done on a plate or in a pan as pictured here.)

Act. 2, Serious Surface Tension. Provide a Styrofoam plate and two packets of pepper. Pour the water into the Styrofoam plate. Add the two packets of pepper to the water. Notice how the pepper moves.

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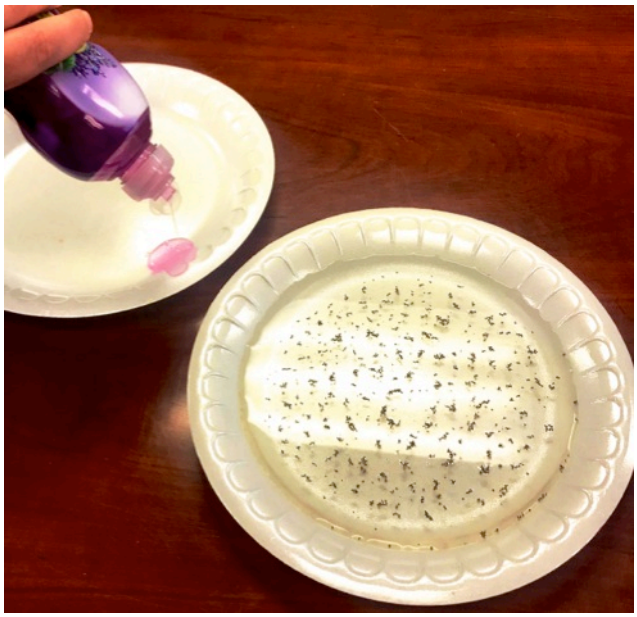
CLASS 8 (cont.)



Act. 2, Serious Surface Tension. Walk around with the soap and put a squeeze of soap onto the shared Styrofoam plate.

Act. 2, Serious Surface Tension. Touch the soap with the index finger so there is a small amount of soap on the fingertip. Touch the fingertip to the center of the water on the plate and observe as all the pepper rushes to the edges and sank down off of the surface.

Act. 3, Fantastic (Stretchy) Flubber. Provide a paper bowl and a 4oz bottle of glue.

Act. 3, Fantastic (Stretchy) Flubber. Empty the bottle of glue into the bowl. Provide a 1oz cup with baking soda and a jumbo popsicle stick. Add the baking soda to the glue and stir with the popsicle stick.

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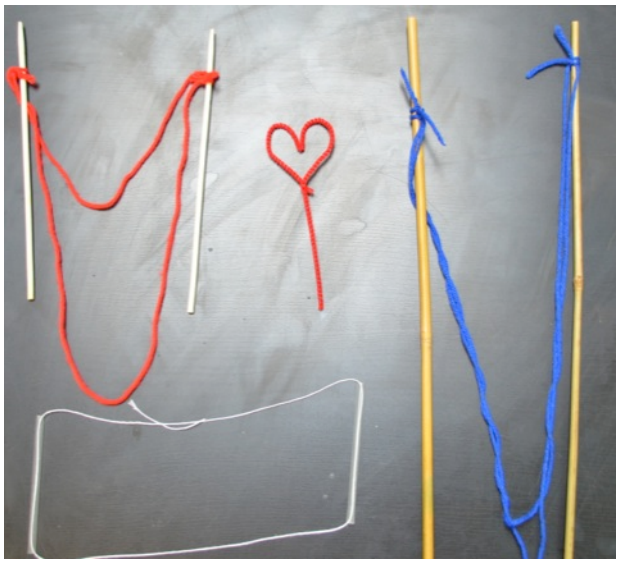
CLASS 8 (cont.)

Act. 3, Fantastic (Stretchy) Flubber. Pour the contact solution into the bowl. Stir the bowl until it starts to ball up and form a glob (within about 5 stirs). Let the mixture sit for about 60 seconds without stirring. Then, resume stirring until the mix only sticks to each other and not the bowl—you have flubber!

Act. 3, Fantastic (Stretchy) Flubber. When ready the flubber will not stick to the bowl anymore. Take turns playing with the flubber. Start by rolling it in the hands to help it not stick to the skin.



Act. 4, Bubble Mania. Make different kinds of bubble wands using the materials provided such as chopsticks and yarn, pipe cleaners, string, and straws.

Act. 4, Bubble Mania. Lift the sticks out of the bubble solution, then slowly and gently spread them apart from each other so that the loop of yarn opens up between them. Move forward or backward to allow the bubble to emerge, then gently bring the sticks back together. (Your sticks are shorter than the ones shown here.)