Station 1: pH and Chemical Reactions

1. Using the pH test strips determine the pH of the vinegar and record your results in the *Water and pH Notebook*
2. Using the pH test strips determine the pH of the baking soda solution and record your results in the *Water and pH Notebook*
3. Add 10 ml of baking soda solution to the test tube
4. Observe the temperature of the test tube containing the baking soda and record your results in the *Water and pH Notebook*
5. Using the plunger, add 10 ml of vinegar to the test tube
6. Observe the reaction that takes place and record your results in the *Water and pH Notebook*
7. Observe any temperature changes that occur and record your results in the *Water and pH Notebook*
8. Pour all of your test tubes into the beaker and use the pH meter to determine the pH of the mixture, record your results in the *Water and pH Notebook*
9. Cleanup
    - Rinse the test tubes and return them to the rack
    - Dump all waste water into the bucket
    - Wipe down the table
10. Answer the following questions
    - How much more acidic is vinegar than baking soda
    - When the vinegar and baking soda reacted, did the pH end up exactly in the middle
    - What happened to the temperature of the reaction? Was this endothermic or exothermic (think about what the prefixes mean)

Station 2: Sampling the pH of stuff

1. Using the test strips, sample each solution, determine their approximate pH and record your results in the *Water and pH Notebook*
2. *Add 10 ml of red cabbage juice to a beaker*
3. *Add one squirt of baking soda solution to the beaker and* record your observations in the *Water and pH Notebook*
4. Rinse the beaker
5. *Add 10 ml of red cabbage juice to the beaker*
6. *Add one squirt of vinegar to the beaker and* record your observations in the *Water and pH Notebook*
7. Cleanup
    - Throw all used test strips away
    - Wipe down the table
8. Answer the following questions
    - Arrange the colors from most acidic to least acidic
    - Do test strips give an actual pH value (a number)
    - The cabbage juice is an indicator solution. How does it indicate an acid vs a base
    - Does the cabbage juice provide an actual pH value
    - Even though cabbage juice is not as accurate as test strips, come with an example of when we might use an indicator solution

Station 3: Mysterious Floating Powder Investigating Surface Tension

1. Add water to the petri dish until it is approximately half full
2. Sprinkle a thin layer of baby powder across the top of the water
3. Observe what happens to the powder and record your observations in your *Water and pH Notebook*
4. Predict what happens if you dip one end of a toothpick into the water and record your prediction in your *Water and pH Notebook*
5. Dip one end of a toothpick into the water, observe what happens, and record your observations in your *Water and pH Notebook*
6. Dip one end of the toothpick in a beaker of dish soap
7. Predict what happens if you dip one end of the soapy toothpick into the water and record your prediction in your *Water and pH Notebook*
8. Touch the toothpick with the soap to the center of the powder in the petri dish
9. Observe the movement of the powder and record your observations in your *Water and pH Notebook*
10. Clean-up
    - Dispose of the toothpick in the trash
    - Pour out the water into the bucket
    - Rinse the petri dish
11. Answer the following review questions in your *Water and pH Notebook*
    - Define surface tension
    - Define adhesion and cohesion
    - Use the terms surface tension, adhesion, and cohesion in a sentence to describe what happened

Station 4: Experimenting with Pennies, Water, and Surface Tension

1. Place a penny, heads up on a paper towel
2. Copy the data table below into your *Water and pH Notebook*
3. Predict how many drop of water you can add to the penny before the liquid overflows and record your prediction
4. Predict how many drop of oil you can add to the penny before the liquid overflows and record your prediction
5. Predict how many drop of alcohol you can add to the penny before the liquid overflows and record your prediction
6. Test your predictions by slowly and gently adding one drop of water at a time to the penny until it overflow. Record your results. Clean the penny and repeat with the oil and alcohol
7. Repeat the experiment using the tail side of the penny
8. Clean-up
9. Make sure the droppers are in their correct containers
10. Place the used penny in the used penny jar
11. Answer the following questions
    - Which liquid has the strongest surface tension
    - Using the terms cohesion and adhesion explain what happened
    - Explain any difference in results between the heads and tails side of the penny
    - What was the independent variable in this experiment
    - What was the dependent variable in this experiment

Liquid	Prediction – Heads	Results- Heads	Prediction – Tails	Results - Tails
Water				
Oil				
Alcohol				

Station 5: Heat Capacity of Water

1. Using three different slides, add one drop of water, alcohol, and hydrogen peroxide to each slide. Make sure each drop is approximately the same size
2. Place the slides under the lamp
3. After five minutes look at each slide and determine which one showed the most evaporation and record your observations in your *Water and pH Notebook*
4. Cleanup
   - Rinse the slides
   - Dump all waste water into the bucket
   - Wipe down the table
5. Answer the following questions
   - Which liquid has the highest heat capacity
   - How might water having such a high heat capacity be important to the construction industry
   - How might water having such a high heat capacity be important to the transportation industry
   - How might water having such a high heat capacity be important to the health, cosmetic, and culinary industries

Station 6: Universal Solvent

1. Add 0.5 grams of salt to three test tubes
2. In one test tube add 10 ml of water
3. In one test tube add 10 ml of vinegar
4. In one test tube add 10 ml of alcohol
5. Shake all three test tubes
6. Observe how much of the salt dissolved in each test tube and record your observations in your *Water and pH Notebook*
7. Cleanup
    - Rinse the test tubes
    - Dump all waste water into the bucket
    - Wipe down the table
8. Answer the following questions
    - Which liquid dissolved the best
    - How might water being such a good solvent be important to the construction industry
    - How might water being such a good solvent be important to the transportation industry
    - How might water being such a good solvent be important to the health, cosmetic, and culinary industries