1. Problem: Develop a color chart for the pH INDICATOR, PURPLE CABBAGE JUICE.

2. Background Information:

1. The pH of a solution indicates how A_ _ _ IC a solution is.
2. Measure pH with a substance called an IND _ _ _ _ _ _ or a pH meter.
3. The pH scale is a series of numbers from _____ to _____. A pH of 7 means _ _ _ _ _ _ _ .
4. A pH of less than 7 means an _ _ _ _;. more than 7 means _ _ _ _..
5. The right amount of ACID added to a BASE in solution (or BASE to _ _ _ _) will _ _ _ _ _ _ _ ize it.
6. A _ _ _ _ is also called an ALKALINE or an ANTACID.
7. Strong ACIDS have a pH value closer to ____; weak ACIDS closer to ____.
8. Strong BASES have a pH value closer to ____; weak bases closer to ____.
9. To clean up a STRONG ACID, you should use a WEAK _ _ _ _, such as _ _ _ _ _ _ _ _ _ _.
10. Examples: ACIDS:_____ _____ _____ BASES:_____ _____ _____
11. pH INDICATORS are paper or liquid and change C_ _ _ _ _ .
12. Each INDICATOR has its own C_ _ _ _ _ and its own range of pH values.
13. ACIDS are solutions that have extra _____ ions.
14. BASES are solutions that have extra _____ ions.
15. IONS have lost or gained ELECTRONS, so they have an electrical _ _ _ _ _ _ and are attracted to others with an _ _ _ _ _ _ _ _ electrical CHARGE.

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3. <u>Safety RULES</u>: Initial each rule as you agree to it. Then SIGN.

___ 1. Work in your own lab. No more than 2 people to a group.

___ 2. Everyone records data and saves any proof needed.

___ 3. Equipment should be cleaned before use. DO NOT dry.

___ 4. Get solutions or substances as you need them.
DO NOT take Main Container. **(continued)** →

___ 5. DO NOT POUR BACK. If you get too much, ask.

___ 6. Goggles MUST BE WORN for pouring and mixing.

___ 7. LISTEN…..READ….Follow directions and WARNINGS.

___ 8. CHEMICAL SOLUTION SPILLS must be rinsed with water before drying.

SIGN NAME here (BEFORE doing the LAB) :_____

4. <u>Procedures</u>: <u>√ as you go.</u>

_1. Get a plastic stirring straw. Make a "tweezers" by cutting one end.

_2. Obtain about 25 ml of Purple CABBAGE INDICATOR in a graduated cylinder. Store it in a clean beaker or other container.

_3. Obtain 5 ml of a TEST SOLUTION in a clean graduated cylinder. RECORD (WRITE) the name of the solution in your chart.

_4. Use a clean small plastic dish to MIX your 5 ml of TEST SOLUTION with 5 ml of Purple CABBAGE INDICATOR. STIR mixture with a clean plastic straw.

_5. Obtain about 1 cm of pH indicator paper. Hold pH paper with your "tweezers" and dip it in your mixture. RECORD the <u>first color and</u> RECORD pH NUMBER from the colorchart.

_6. ATTACH pH indicator paper for proof. (It will change color.)

_7. Pour your mixture into a clean test tube. Stand it in the test tube rack. Place a white paper behind it. Describe and RECORD the <u>color of the mixture</u> <u>using 2 words</u>.

_8. RINSE WELL all containers <u>and</u> your stirring straw.

_9. REPEAT Procedures #3-8, using a <u>new</u> TEST SOLUTION

_10. If you run out of time…or finish
Have your results CHECKED BEFORE YOU CLEAN UP.→

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5. Observation Chart:

Trial #:	TEST SOLUTION Name	pH INDICATOR PAPER COLOR:	pH of MIXTURE	COLOR of MIXTURE Use TWO words!	Attach papers ↓
1				-	
2				-	
3				-	
4				-	
5				-	
6				-	
7				-	
8				-	
9				-	
10				-	

>>>>>>>>>>>>>>>>>>>>>>>>**Have Checked before you Clean UP**_____

6. Analysis:

1. Rearrange your MIXTURE COLORS in the chart below according to their pH number.
   If you still have your test tubes, arrange them in order of pH number, also.
2. You will have some missing colors. Circle the blanks.
3. Try to find a pattern of color change. Look at a color wheel for help.
4. Predict the colors that you are missing. Fill in your circles with colors to make a pH COLOR CHART for CABBAGE Juice INDICATOR. EXTRA for actual coloring!!

pH Color Chart for CABBAGE JUICE INDICATOR:

pH of MIXTURE	CABBAGE Juice INDICATOR COLOR IN MIXTURE
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13-14	

EXTRA-EXTRA:
a) Write the Neutralization Equation.
b) Ask about the Neutralization Lab.

>>>>>>>>>>>>>>>>>>>>>>>>**Have Checked before you Clean UP**_____

7. Conclusion: The main colors for Purple CABBAGE JUICE INDICATOR are:

Acid_____ **Neutral**_____ **Base**_____

>>**Have Checked**_____