**Acids and Bases worksheet**

**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |
| --- | --- |
| What is an **acid**?  How does it taste? |  |
| What are hydronium ions?  How are hydronium ions formed? |  |
| Acids are ***corrosive****.*  What does this mean? |  |
| * What is an **indicator**? * What is litmus paper? * What **colors** are they available in? * How do they change with acids and bases? |  |
| Name one use for each of the following acids: **Sulfuric Acid , Hydrochloric Acid, Nitric Acid, Citric Acid and Carbonic Acid**. |  |
| What is a **base**?  How does it **taste** and **feel**? |  |
| Name 3 substances that contain bases. See Fig. 5 |  |
| Discuss some uses of the following bases: Sodium Hydroxide, Calcium Hydroxide, and Magnesium Hydroxide |  |
| What does a **strong acid** do in water?  Name some examples of strong acids. |  |
| What does a **weak acid** do in water?  Name some examples of weak acids. |  |
| What’s the difference between a strong base and a weak base? |  |
| What is a **neutralization reaction?**  What forms when an acid and base neutralize each other? |  |
| What is the **pH of a solution**? |  |
| What does a **“7”** on the pH scale mean? What is one of the only **substances** that have a pH of 7? |  |
| What is the pH of acidic solutions?  What is the pH of basic solutions? |  |
| What is a salt?  What **salt** do you think would form from Hydrochloric Acid (HCl) neutralizing Sodium Hydroxide (NaOH)? |  |

**EXPERIMENT/ INVESTIGATION FOR ACIDS OR BASES**

**Required materials**

* Red cabbage leaves
* Water
* Bowl
* Colanders (food strainer)
* Vinegar
* Lemon juice (fresh squeezed or lemonade)
* Bicarbonate of soda (aka: baking soda)
* Milk of Magnesia
* Tap water
* Distilled water
* Several glass jars of the same size (vials preferred)
* Eye-dropper (optional)

**Step-By-Step Procedure**

**1.** Cut your cabbage leaves into small pieces.

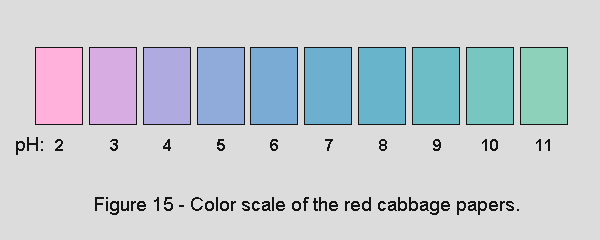
**2.** Boil several cups of water. They'll need to be enough water to submerge your cut cabbage pieces later on.

**3.** Place your cut cabbage in a bowl. Pour the boiling water into the bowl. Let the cabbage pieces soak for at least thirty minutes (your water should become a dark-purplish/redish colour depending on the cabbage).

**4.** Separate the cooled "cabbage juice" from the leaves. You can either take the cabbage out with a holed-spoon or pour the bowl of cabbage juice into a strainer over another bowl, allowing the strainer to filter-out the cabbage pieces.

**5.** Line up your glass jars, about one or two inches apart. Pour some of each chemical (vinegar, lemon juice, bicarbonate of soda, and laundry detergent) into each jar.

**6.** Now it's time to test if your chemical is an acid or a base. Pour a dash of your cabbage juice into each jar/vial. To avoid pouring too much, you may want to use an eye-dropper. You may also need to swirl your mixture around a bit. What happens to each mixture of cabbage juice and chemical? If your mixture turned pink, your chemical is an acid. If your mixture turns blue or green, your chemical is a base.



**FORMAL ASSESSMENT: ACIDS AND BASES**

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade:\_\_\_\_\_\_\_\_\_\_\_**

**Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Complete the table by following step 6, and answer the questions that follow. (18)**

|  |  |  |
| --- | --- | --- |
| **TABLE 1 – MEASURING THE PH OF SUBSTANCES** | | |
| **SUBSTANCE** | **OBSEVATION**  **(What do you see?)** | **pH**  **(according to scale)** |
| Tap water |  |  |
| Distilled water |  |  |
| Vinegar |  |  |
| Lemon Juice |  |  |
| Bicarbonate of Soda |  |  |
| Milk of magnesia |  |  |

1. What is the pH of the tap water and the distilled water respectively? **(2)**

\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_

2.1 What colour change was observed when vinegar was added to the indicator? **(1)**

The purple/red indicator turned\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.2 What is the ph value of the vinegar according to the scale provided? **(1)** \_\_\_\_\_\_\_\_\_\_\_\_\_\_

3.1 What colour change was observed when the lemon juice was added to the indicator?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(1)**

3.2 What is the ph value of the lemon juice according to the scale provided? **(1)**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4.1 What colour change was observed when the Bicarbonate of Soda was added to the indicator?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(1)**

4.2 What is the ph value of the Bicarbonate of Soda according to the scale provided? \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(1)**

4.1 What colour change was observed when the Milk of Magnesia was added to the indicator?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(1)**

4.2 What is the ph value of the Milk of Magnesia according to the scale provided? \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(1)**

5. What was kept constant when doing the experiment? **(2)**

The amount of\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ added to the amount of

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_was kept constant.

6. What is your conclusion based on the table that you have completed**. (6)**

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**[40]**