

Name: _____

Date: _____

What is Acid Rain?

Part 2: How does acid rain effect the world around us?

Materials

Each group will have:

5 cups containing 100 mL of 5 different liquids

5 pieces of chalk each measuring 4 centimeters

5 Rulers

Lab report and observation table

Procedures

1. Have 1 student get all of the supplies from the side table for your group.
2. Carefully measure the pH level of each mystery liquid in your group. (give each group member a turn to measure the pH of their sample)
3. Record the pH for each of the 5 mystery liquids in your observation table
4. Each take your own piece of chalk and make some observations before you submerge it in your mystery liquid

Sample	pH
A	
B	
C	
D	
E	

My Sample

I have received sample _____ which has a pH of _____. This means that my sample is considered _____ on the pH scale

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Chalk before:

In the space below, describe the piece of chalk you have been given. Include quantitative data (length, diameter) and qualitative data (Describe your chalk. What does it look like? What is its texture? Are there any distinct markings?)

STOP! Make a prediction!

In the space below make an educated guess as to what you think will happen to your piece of chalk when it is left in your cup for 5 minutes.

Chalk after 5 minutes

Carefully take the chalk out of your cup and dry it off.

In the space below, describe the piece of chalk you have been given after it has been submerged in your mystery liquid for 5 minutes. Again, provide qualitative and quantitative data. (Make note of things that have changed and also things that have stayed the same)

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Results Within your group, talk about what has happened to each of your samples and record the data in the observation table below

Sample	pH	Acidic, Basic, Neutral	Change?

Please use the following scale to rank any change you saw in your chalk:

No Change- My piece of chalk looks the same as when I submerged it. It has the same length and mass, I can still see the marking I made.

Slight change- My chalk looks almost the same as when I submerged it. Its length is almost the same, I can still see my marking, but it looks worn. Its texture is different.

Major Change- My chalk looks different. The length is different and I can't quite see the marking I made. The texture is different.

Reflection

1. If something is a 12 on the pH scale, is it considered acidic, basic or neutral? (circle one)

2. What did you notice about how acids, bases, and neutral liquids reacted with the chalk?

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3. Briefly explain (or draw a picture showing) how acid rain is formed.

4. Many buildings, gravestones, and statues from hundreds of years ago were built with marble and limestone. These two types of rock contain some calcium carbonate, the same compound found in chalk.

Why might some of these landmarks not look exactly the same as they did when they were first created?

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What is Acid Rain?

Part 1: How is acid rain formed?

Materials

- Straw
- 600mL Beaker
- 200mL of distilled water
- Vernier Interface
- Vernier pH sensor
- Lab report

Procedures

1. Have a group member collect all the required supplies
2. There will be several jobs in this experiment

Technician - Hold and operate the Vernier labquest. Start and Stop the Vernier at the appropriate time, alert breather when 60 seconds is up.

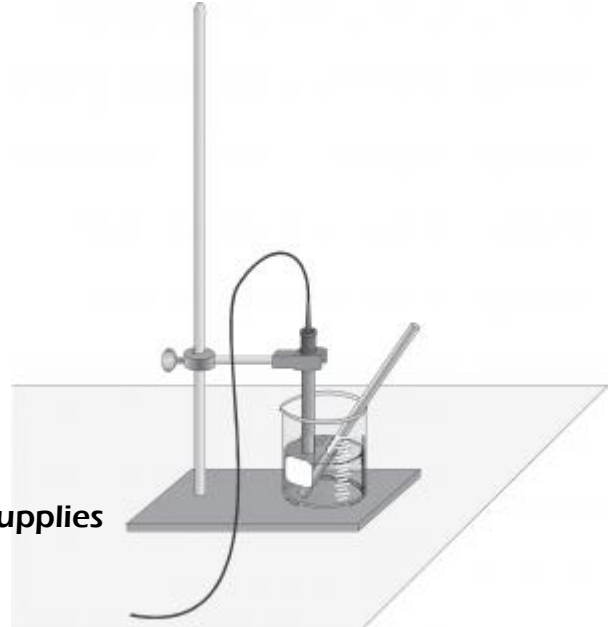
Recorder- Carefully, hold the pH probe in the water and record group data every 10 seconds

Breather- Blow air (CO_2) into the beaker of water for 60 seconds. YES, you may take several small breaths. If you feel extremely LIGHTHEADED, STOP IMMEDIATELY.

3. Recorder, place pH sensor in beaker of water. Make sure pH level is either exactly 7.0 or very close to 7.0. If it is not, come see me.

4. Breather, place straw in beaker. Alert Technician when they should start the lab pro, and begin to blow small bubbles into the beaker of water. Similar to blowing bubbles in chocolate milk.

5. Technician after every 10 seconds alert the recorder of the pH level. Recorder, jot down the pH of the water after every 10 seconds for 60 seconds.



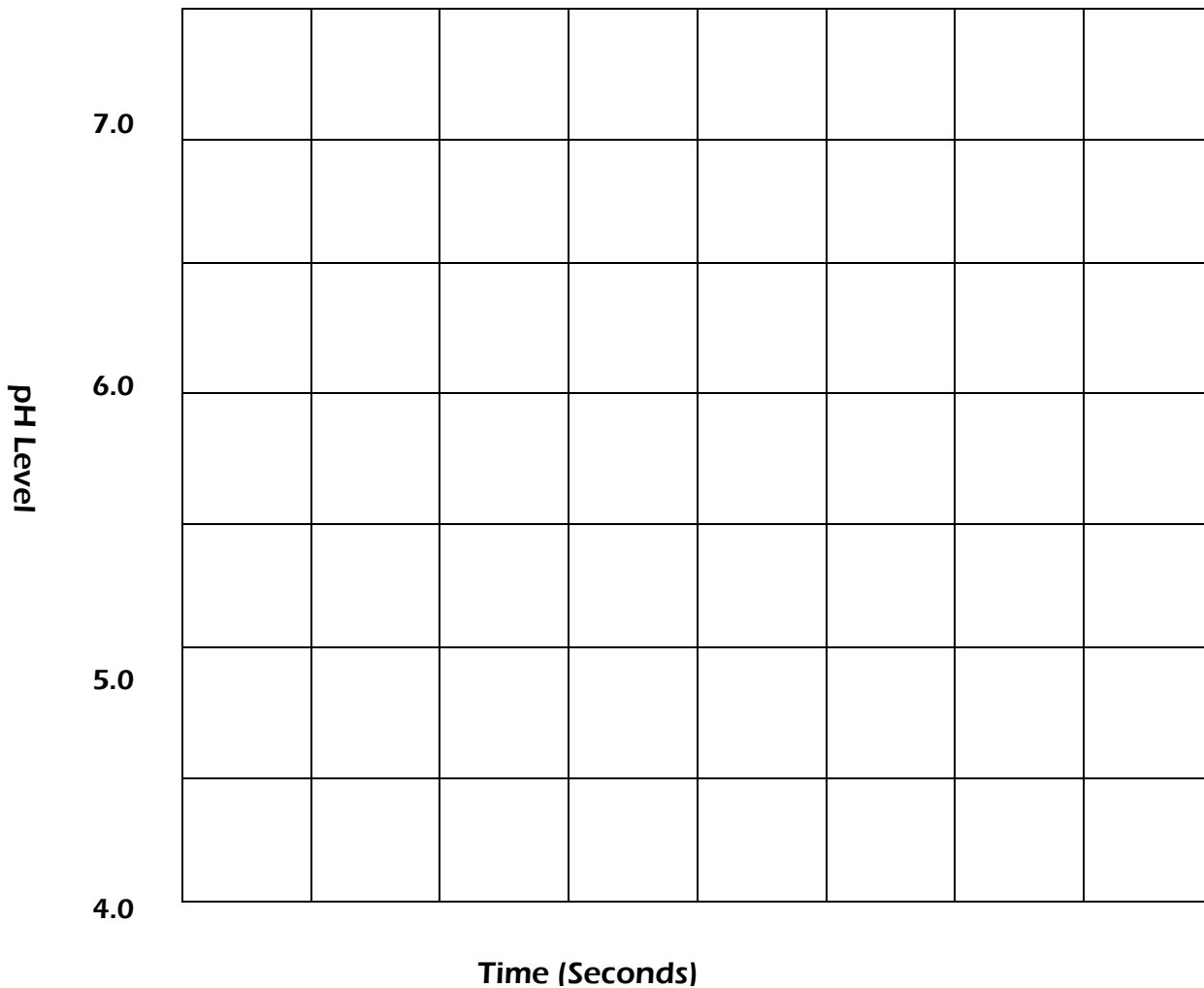
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Results

Time	pH
0	
10	
20	
30	
40	
50	
60	

In the space below, create a two-coordinate graph using the data you collected in your experiment.



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Reflection

1. Rain water has a natural pH of about 6.0. However, water that is evaporated(or distilled) has a pH of exactly 7.0. Based on what you found in your experiment, why might this be? Explain.

2. Similar to CO₂ there are other oxides that are released into the earth's atmosphere. These oxide mix to produce acids that are much stronger than carbonic acid (CO₂ mixed with Water) In what ways will this effect an ecosystem?

