What To Do About CO_2?

Student Worksheet

Name: _____

Date: _____

Pre-lab knowledge

1. Read the statements below about carbon dioxide. Mark each one true (T) or false (F).

_____ Carbon dioxide is a gas made of two carbon atoms and one oxygen atom.

_____ Carbon dioxide is a type of metal found deep in the ocean.

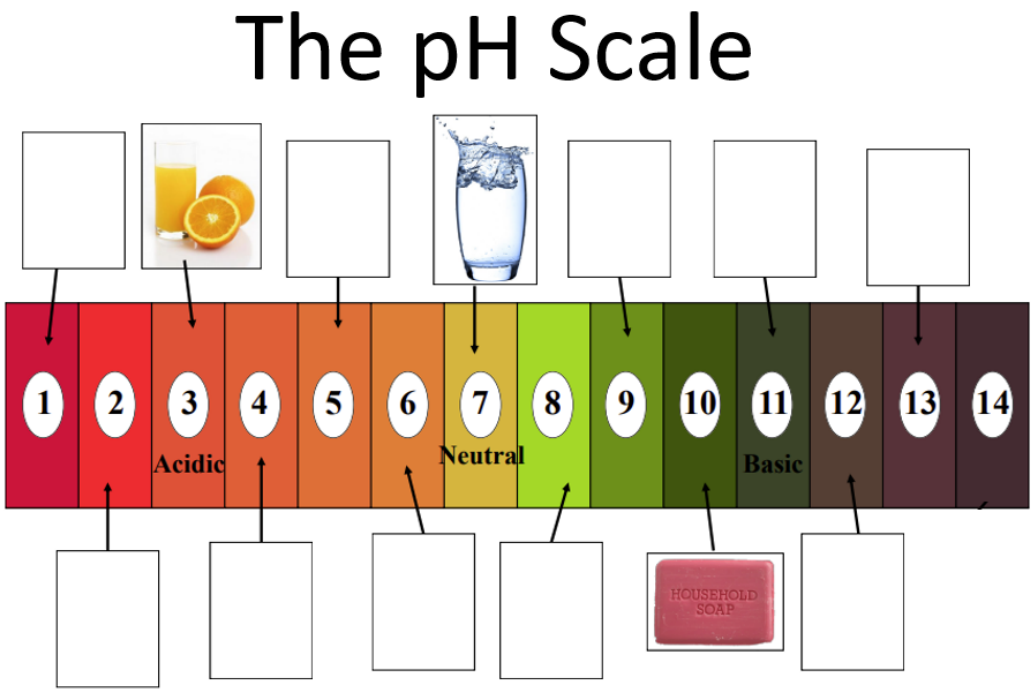
_____ Humans and other animals breath out carbon dioxide.

_____ Plants, including plankton, take in carbon dioxide and use it in a process called photosynthesis to convert sunlight into energy they can use to grow.

_____ The burning of fossil fuels, like petroleum and natural gas, releases carbon dioxide into the atmosphere.

2. With your class, add these items in the right spots on the pH scale below:

A. Stomach acid
B. Drain cleaner
C. Milk
D. Lemon juice
E. Bleach
F. Coffee
G. Tomato juice
H. Ocean water
I. Liquid laundry detergent
J. Antacids



Experiment #1

1. Draw and label the lab setup.

2. What is the source of carbon dioxide in this experiment?

3. How is pH being measured in this experiment?

4. Follow these steps to collect your data.
    a. Measure 50 mL of saltwater using the graduated cylinder.
    b. Pour salt water into a 100 mL beaker
    c. Test the pH of the saltwater with a pH strip. Record your results in your data table.
    d. Add 5 drops of universal indicator.
    e. Your teacher will place 2 pieces of dry ice in a wash bottle with some warm water for you. The wash bottle should have a steady stream of CO_2 coming from the spout. Insert the wash bottle spout into the container with the seawater for one minute. Observe what happens.
    f. Test the pH of the saltwater with a pH strip after adding $C0_2$. Record your results in your data table.

Data Table

	Before adding CO_2	After adding CO_2
Color of saltwater with indicator		
pH of saltwater		

5. Does adding carbon dioxide to saltwater make the water more acidic, basic, or not change it at all? Back up your answer with data from your experiment.

Experiment #2

1. Draw and label the lab setup.

2. What is the source of carbon dioxide in this experiment?

3. How is pH being measured in this experiment?

4. Follow these steps to collect your data.
    a. Fill the medium cup about a third of the way with soda.
    b. Add about 15 ml (a tablespoon) of saltwater to the small cup.
    c. Add 2 drops of indicator to the small cup.
    d. Place the small cup inside the medium cup on top of the soda.
    e. Place the large cup upside down on top of the medium cup so that you create an enclosed system.
    f. Hold the bottom of the medium cup flat on the desk while gently swirling the system.
    g. Make observations and record them in the data table below.

Data Table

	Before adding CO_2	After adding CO_2
Color of saltwater with indicator		

5. Explain whether or not your experimental observations support this claim: “Release of the greenhouse gas carbon dioxide into the atmosphere leads to ocean acidification.”