**Ocean Acidification Module - Worksheet**

**Materials (per group):**

* 3 large cups (containers)
* 1 small cup (measuring)
* (at least) 3 shells
* Scale
* Gloves
* Tap water
* Citric powder
* Stirrers

**Shell experiment set-up:**

1. Fill 3 container cups half-way with tap water.
2. Measure out 1 volume of citric powder with the measuring cup, put it into a water cup.
3. Measure out 3 volumes of citric powder with the measuring cup, put it into a water cup.
4. Be sure to identify the containers.
5. Stir well each container until the powder is fully dissolved (the water should look pretty clear).
6. Weigh three different shells (try to get shells of approximately similar weight - you can combine several small shells to get the same weight as fewer larger ones), and record the weight:

Shell(s) n°1: \_\_\_\_\_\_

Shell(s) n°2: \_\_\_\_\_\_

Shell(s) n°3: \_\_\_\_\_\_

1. Put a shell in each cup (be sure to identify which shell was put into which cup).

**Shell experiment:**

1. (To be tested: measure either here, or at the beginning) Measure the pH of the 3 solutions with shells:

Shell cup 1: \_\_\_\_\_ Shell cup 2: \_\_\_\_\_ Shell cup 3: \_\_\_\_\_

1. One cup at a time, take the shells out of the solution, dry them with paper towels and weigh them:

Shell(s) n°1: \_\_\_\_\_\_

Shell(s) n°2: \_\_\_\_\_\_

Shell(s) n°3: \_\_\_\_\_\_

1. Calculate the difference between the current and initial weights:

Shell(s) n°1: \_\_\_\_\_\_

Shell(s) n°2: \_\_\_\_\_\_

Shell(s) n°3: \_\_\_\_\_\_

1. Did you expect this result? Why do you think the shells dissolved?
2. Assuming the reaction continues at the same speed, how long would it take for the shells to disappear in each solution?

Solution n°1: \_\_\_\_\_\_

Solution n°2: \_\_\_\_\_\_

Solution n°3: \_\_\_\_\_\_