**Activity Sheet Answers**

**Lesson 11**

**Neutralizing Acids and Bases**

***A person pouring liquid into glasses

Description automatically generatedDEMONSTRATION***

1. How did you know when the solution became close to neutral?

The solution became close to neutral when the color got close to the green color of the control universal indicator solution.

***ACTIVITY***

2. Does the solution become more acidic or less acidic as each drop of sodium carbonate is added to the indicator?

As more drops of sodium carbonate are added to the citric acid solution, the solution becomes less acidic.

***EXPLAIN IT WITH ATOMS & MOLECULES***

3. What happens to the protons from the H3O+ ions when a base is used to neutralize an acid?

When a base is added to an acidic solution, protons from the H3O+ in the solution are transferred to the base.

4. What do you know about the concentration of H3O+ ions and OH*−* ions when a solution is neutralized?

When a solution is neutral, the concentration of H3O+ and OH- are equal.

***ACTIVITY***

5. Did it take *more*, *less*, or *the same* amount of sodium carbonate solution to neutralize this more concentrated citric acid solution?

It takes more sodium carbonate solution to neutralize a more concentrated citric acid solution.

6. Thinking about the animation, why did you need more drops of sodium carbonate solution?

In a more concentrated acid solution, there are more H3O+ ions in the solution. It takes more molecules of base to accept protons from these ions to make the concentration of H3O+ and OH- the same.

***Take it Further***

1. After the Alka Seltzer was added to the universal indicator solution, you saw color changes in the solution.

What do you think caused the initial color change and then the rest of the color changes?

The initial color change was red so the acids in the Alka Seltzer probably dissolved quickly and reacted with the water and indicator first. Then the color went more toward orange, then yellow, and eventually green. This must have been caused by the base in the Alka Seltzer dissolving in the water and neutralizing the acid, causing the color to move toward neutral.

1. Even though a base can neutralize an acid, what do you think some challenges might be to adding a base to the ocean to slow down ocean acidification?

The ocean is so vast that it would probably be difficult to add the right kind of base in the right amount and in the right way to help neutralize the oceans of the world.